A Feasibility Assessment of Government's Road-to-Rail Policy Implementation: A Freight Logistics Perspective

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Abstract

A severe capital shortage in South Africa during the 1980s resulted in significant losses for both freight and passenger rail, which gave rise to cutbacks in new investments for rail. By 1986 expenditure on fixed rail assets was reduced from R1.44 billion to R500 million; this was the beginning of the decline of freight rail. During this period freight transport was deregulated and road freight used this opportunity to compete with rail transport in the same market segment by transporting bulk goods on long hauls. The result of this was an increase in truck traffic on the roads, causing a negative impact on the conditions of the road and placing freight rail in a continuous decline, leading to the obsolete state of the rail infrastructure, rolling stock and its under-utilisation. This had a detrimental impact on freight rail and the economy.

Having realised the extent of the problem, government, through the Department of Transport (DoT), decided to intervene by changing the current model of the freight transport system. To that effect the DoT is in the process of developing a National Rail Policy, with the main focus being to encourage the shift of freight transportation of bulk commodities from road to rail.

As the National Rail Agency, Transnet undertakes all South Africa's freight rail operations through its Transnet Freight Rail (TFR) division. As such, TFR is ultimately responsible for the implementation of the road to rail implementation project. To that effect, TFR developed the MDS to revitalise itself and ensure its success.

The objective of this research is to (a) assess the capacity of TFR to successfully implement the road to rail policy; (b) determine whether the implementation of road to rail will lead to freight rail efficiency and competitiveness, reliability and sustainability; and (c) establish the industry's reaction towards the shift from road to rail.

In order to respond to the research question, qualitative research was chosen as the most appropriate approach. This facilitated an in-depth exploration and understanding

of the issues around the road to rail project including how the industry feels about the issue, as well as an exploration of other possible alternatives which could provide the same or better results in a simpler and more effective manner.

This research may serve as additional information for authorities to consider during the implementation of the road to rail project, and could render a better chance of success.

Upon completion of this research the author concluded that Transnet Freight Rail has a good chance of success. The implementation of road to rail is being given adequate attention. Integration is possible as the industry welcomes and supports the road to rail programme, in fact a number of collaboration agreements already exist between rail and other transport modes. This will enable Transnet Freight Rail to achieve efficiency, sustainability and a competitive advantage within the seven year timeframe of the MDS.

Declaration

I hereby declare that this research is my own original work. It is not a duplication of anyone's work of any kind. The information used to support this research was genuinely obtained by me through documentation review and personal interviews with key role players in the rail industry. All interview participants were formally requested to be interviewed and were adequately informed of the purpose of the interviews. The interview questions were forwarded via email to all interview participants beforehand in order for them to familiarise themselves with the issues for discussion.

Furthermore, all contributions to this research made by different authors and participants are genuinely recognised, cited and referenced using the Guidelines for Referencing Source Material for assignments, articles, research reports and theses, as recommended and provided by UNISA.

Dedication

This research is dedicated to my two precious God given children, Dario and Wronelle, for their understanding, love and support, as well as to my husband Jacinto, for his unconditional love, continued support, inspiration, patience and motivation. I love you all.

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CHAPTER 1: INTRODUCTION

1.1 Background Information

Rail started in South Africa as a privately-owned enterprise in 1860 with the introduction of a steam train in Durban. The Freight Logistics Company, Transnet, became state-owned in 1989 and was mainly used for the transportation of military equipment and agricultural products. The South African Act of 1909 nationalised some transport services and the South African Railway and Harbours (SAR&H) was established, after which the railway services became partially regulated. Development and strategic decisions at the time were focused mostly on agriculture and industrial development. This position continued through to the 1960s, during which time freight transport became highly regulated. In 1981 SAR&H was renamed the South African Transport Services Act No. 65 (the SATS Act) in terms of the same Act. This Act brought significant changes to the rail transport services; however a severe capital shortage in South Africa during the 1980s resulted in significant losses, both in freight and passenger rail. This gave rise to cutbacks in new investments for rail, and by 1986 expenditure on fixed rail assets was reduced from R1.44 billion to R500 million. During this period freight transport was deregulated and road freight began competing with rail transport in the same market segment - the transportation of bulk goods (South African Department of Transport, 2012).

The deregulation of freight led to the deterioration of rail freight services, and road transporters took advantage of the opportunity to transport rail friendly cargo by road. The increase of truck traffic on the roads had a negative impact on the conditions of the roads, however. The situation placed freight rail on a continuous decline, which led to the obsolete state of rail infrastructure and rolling stock, and the under-utilisation thereof. This had a detrimental impact not only on freight rail, but also on the South African economy.

According to the Development Bank of South Africa (2012), South Africa does not have a national rail policy to direct and guide the development of rail, which has made the situation worse. Having noticed the decline of the freight rail industry and the continuous deterioration of the roads, the South African Department of Transport (DoT) decided to intervene by changing the current model of the freight transport system. In this regard it is developing a policy, the National Rail Policy which is still a Green Paper, with the intention of developing the existing rail industry to be a 'railway of the future' that will perform optimally and effectively; compete locally and abroad; satisfy the industry's needs; and positively contribute to the economic and social development of South Africa (Department of Transport, 2012: 23). The main focus of this intervention is to encourage the shift of the freight transportation of bulk commodities from road to rail.

As the National Rail Agency, Transnet undertakes all South Africa's freight rail operations and is the sole provider of rail freight services through its Transnet Freight Rail (TFR) division. Transnet owns all freight rails' related rolling stock such as locomotives and wagons, the entire rail track and its infrastructure. As such, TFR is ultimately responsible for the implementation of the proposed road to rail policy and all its related projects. To this effect it has developed a turnaround strategy, namely the Market Demand Strategy (MDS), and embarked on a revitalisation programme to ensure the successful implementation of the National Rail Policy.

1.2 Problem review

A critical reflection of the problem in context opened up the following themes for further reflection. These themes include: change; resources and capacity; and competitiveness:

- Change

The implementation of the MDS will inevitably result in changes within TFR. According to Karl and Schoemer (2009), “no matter what kind of change it is – whether it’s exciting, unexciting, eagerly accepted, unwelcome, or unwanted – our first and natural instincts are usually negative and resistant”. Karl and Schoemer further stated that when change occurs people normally experience a mixture of feelings, including a sense of loss; ambiguity and uncertainty; deterioration of trust; withdrawal; and self-preservation. The best predictor of the success or failure of organisational change is changeability, which includes leadership, internal routines, and organisational capabilities that make companies fit and ready to change (Jarrett, 2009). For change to be effective and lasting it needs to be managed not only by monitoring what happens outside the organisation, but also by responding to it internally.

In light of the changes brought about by the road to rail revitalisation programme, TFR needs to ensure that the organisation is ready for such change by assessing its changeability. In this regard it will need to implement a suitable strategy for the change at hand. The Overall Model is a tool with which its leadership can combine its external environment opportunities with its internal capabilities to assess its changeability and readiness.

- TFR's resources and capacity

The development of a National Rail Policy for the freight industry and the revitalisation of the freight rail sector by shifting from road to rail may be the solution for a more economic transportation of bulk goods in South Africa. The question is, however, whether TR and the government have the necessary capacity to implement this policy and successfully shift from road to rail to a position where freight rail in South Africa will be revitalised, efficient, cost effective, competitive, reliable, and sustainable and contribute towards the economic growth and development of the country. To answer this question, rail freight's internal and external environments were scrutinised and assessed. TFR's current and future capacity was also assessed to establish its resources and competiveness, as well as its readiness to change and successfully turn freight rail around.

- TFR's competitiveness

The proposed National Rail Policy aims at improving competition within the freight industry (South African National Rail Policy - Green Paper, 2012). In the business world of today, the Just-in-Time (JIT) lean system is a powerful management tool that could easily determine the success or failure of the manufacturing system (Yahaya, 2012). As a service provider, TFR also needs to support customers operating on the JIT system and achieve effectiveness and efficiency. In view of the current position of rail freight, which is characterised by infrastructure limitations and rolling stock which seems inadequate and insufficient to support road to rail and ensure the competitive advantage of freight rail, the question is how flexible rail transportation is and how well rail can meet all freight demands, as well as gain a competitive advantage in its industry.

1.3 Problem statement

Freight rail transport in South Africa has become uneconomic due to the decline and degradation of Transnet's infrastructure and rolling stock, as well as other limitations (South African National Rail Policy - Green Paper, 2012). Even worse is the fact that South Africa does not have a National Rail Policy to direct and guide the development of rail, or to adapt and reform the industry to respond to the changes in demand and competition from the road freight sector. As a result the road freight industry adjusted itself to cope and flourish in the absence of competition from freight rail. Although government is now in the process of developing a policy to encourage a shift back from road to rail, such a shift may be seen as draconian, especially in such a dynamic freight industry which has developed without the full presence of freight rail for decades. This may hamper the success of the implementation of the road to rail project.

1.4 Research objectives

The objectives of this research are:

- to assess the capacity of TFR to successfully implement the road to rail policy and the feasibility thereof;
- to determine whether the implementation of road to rail will lead to freight rail efficiency, competitiveness, reliability and sustainability; and
- to establish the industry's reaction towards the shift from road to rail and their willingness to integrate with rail.

1.5 Importance/benefits of the study

The importance of this study is twofold. First is the contribution towards a successful implementation of the road to rail project. Upon presentation of this study to the relevant authorities, it will serve as additional information to consider before and during the implementation of the project, which could offer a better chance of success.

The second importance of this study is of a personal nature. As a researcher whose career and interests has been in the transport field for almost 20 years, I wish to broaden my knowledge and understanding of the dynamics and inter-play between road freight and logistics. As such I am always interested not only in following the trends and happenings in the various spheres of transport, but also in contributing towards a better transport system which benefits South Africa as a whole.

1.6 Limitations and delimitations

Limitation, according to Leedy and Ormrod (2010), refers to the shortcomings, conditions or influences that cannot be controlled by the researcher, which place restrictions on the methodology and conclusions of the research. In this research, the following limitations included: (1) Finding the right people at the right positions to interview within the limited time frame of the research; (2) Having the population find time to be interviewed. Some kept postponing until the researcher ran out of time, while others never responded to the requests.

Delimitations refer to the boundaries that the researcher chooses to set for the scope of the research; they are what the researcher does not intend to do in the research (Leedy and Ormrod, 2010). For the purpose of this research the freight industry was investigated, but the focus was mainly on freight rail.

The researcher conducted interviews using unstructured questions and documentation review to collect data. The financial aspects of TFR or any other organisation was not scrutinised in this research.

CHAPTER 2: PROBLEM ANALYSIS / THEORETICAL CONSIDERATIONS

The approach of the problem analysis was to further interrogate the themes identified in the problem review by applying appropriate business theories and management models. The following themes were interrogated:

- Change
- Resources and capacity
- Competitive advantage

According to Porter (1985), competition is at the core of the success or failure of any organisation. The fact that freight rail has been declining means that one can assume that TFR has not been able to compete effectively. The shift from road to rail as a solution to revitalise freight rail will only be successful and sustainable if the company is prepared in all three themes discussed here. Various models which were later used to assess TFR's capacity in this research are now introduced.

2.1 Change – The overall model of change

This model assumes that the internal capabilities that set the changeability of an organisation are seen in the strategic leadership, as well as the culture and structure of the organisation. It also assumes that environmental dynamics often create the drivers for change, and that the way in which the organisation responds with strategies affects its performance (Jarrett, 2009). It can be argued that the magnitude of the change that TFR had to contend with has led them to lag behind other modes of transport in South Africa. Furthermore, TFR's revitalisation programme, guided by their MDS, will also bring about change in the organisation. The Overall Model will be used as a tool to

establish the way in which TFR's leadership strategies can ensure changeability and readiness for the transition of change resulting from the MDS.

2.2 Resources and capacity – The relationship between resources, capability and competitive advantage model

This model suggests that in order for a company such as TFR to operate efficiently and achieve a competitive advantage, which will ultimately contribute to economic growth, all its resources have to complement one another and be strategically combined in the most efficient and cost effective manner (Jarrett, 2009). The Resource Based View theory is a tool used to identify the firm's potential key resources and evaluates whether those resources are valuable to the company, if they are rare and inimitable, and if they are non-substitutable. According to Barney and Clark (2007), this theory assumes that the organisations are heterogeneous, meaning their resources differ from other organisations'.

As explained in the problem statement, freight rail transport in South Africa has become uneconomic due to the decline and degradation of Transnet's infrastructure and rolling stock, as well as other limitations. When assessing the feasibility of the success of the shift from road to rail, TFR's resources were assessed to establish whether they can be a source of competitive advantage. The company's capabilities should be built with various resources to acquire a competitive advantage, which include the organisation's human resources such as special skills and knowledge; motivation; communication and interactive abilities within the organisation; and intangible and tangible resources comprising of financial and physical resources (Bakhru and Gleadle, 2005).

2.3 Competitive advantage – Porter's Five Forces Model

Competitive advantage is at the heart of firm's performance in the competitive market (Porter, 1985). It can be argued that TFR has not been competitive in its industry as it has been in a continuous decline. In this research Porter's Five Forces Model was used to assess TFR's competitiveness in relation to its industry.

Porter's Five Forces Model can be used as a tool with which to understand the structure of the sector of an industry and to create a framework with which to identify possible structural changes. It is a very simple but useful approach to determine whether a firm has any chance of success and profitability in its industry. It is also useful to identify whether new products or services have the potential to be profitable and to understand the balance of power in other situations (Bakhru, 2005). The model identifies five types of competitive advantage within a sector, namely established competitors, new entrants to the market, substitute products, and the bargaining power of suppliers and customers.

CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

This chapter deals with the literature review and gives an overview of the relevant literature which covers the research topic, namely 'An assessment of government's road to rail implementation'. It is used to discuss the relevant literature around the topic, which helped the researcher to obtain a clear understanding about transport in general, as well as more specifically about freight transport, and to gain knowledge of the different views of the road to rail issues and complexities.

Cooper and Schindler (2011) defined a literature review as an evaluative report of information found in the literature related to the selected area of research. It is both a summary and an explanation of the complete and current state of knowledge on a limited topic, as found in academic books and journal articles (University of Guelph, n.d).

According to Saunders, Lewis and Thornhill (2009), there are two kinds of literature reviews. One is a stand-alone literature review which is normally a university assignment; while the other is written as part of an introduction to, or preparation for, a longer work, usually a thesis or research. The latter was used for the purpose of this research. Saunders et al. (2009) explained that the main purpose of a literature review is for a researcher to develop a good understanding and insight into the relevant existing research and the trends that have emerged.

In this literature review the recent and historical issues around the topic of this research were analysed by examining the relevant previous research studies, journals and publications. The aim here was to understand what others had done in areas that are similar, although not necessarily identical, to the topic of this investigation. This enabled

the researcher to understand the significant issues around the problem in order to pin down the research problem and provide the reader with a clear understanding of the issues around the topic of this research (Leedy and Ormrod, 2010).

3.2 Overview of Transport

The previous section gave a brief overview of the previous chapter and an introduction to the literature review. This section will provide an insight into transport in general, looking specifically at the role it plays in an economy.

3.2.1 Introduction

Transport plays a pivotal role in South Africa as it enables the country to achieve economic growth and facilitates the movement of freight and people (Diza, 2013). Common forms of transport include planes, trains, automobiles and other two-wheel devices such as bikes or motorcycles (Wessel, 2012)**.**

Londoño-Kent (2009) described logistics as the management of the flow of goods, information and other resources, including energy and people, between a point of origin and the point of consumption to meet the requirements of consumers. It is the integration of transport with the management of the flow of goods and goes and-in-hand with transport as it adds the value of time and place utility to it. It also involves the integration of information, transportation, inventory, warehousing, material-handling, packaging, and security.

3.2.2 The role of transport in an economy

According to Quinet and Vickerman (2004), transport plays a key role in economic activity and is the first of all the sectors in an economy to contribute to national output. Moreover, transport is a derived demand and growth in that the transport sector follows the growth of the economy as a whole. Quinet and Vickerman further stated that transport improvements can also determine the rate of economic growth and lead to positive externalities in the economy.

Rodrigue and Notteboom (2014) stated that transportation is an economic factor of goods and services, where small changes can have substantial impacts on costs, location and performance. An efficient transportation system with modern infrastructure leads to positive economic changes. Rodrigue and Notteboom further stated that the economic impacts of transportation can be direct or indirect; they are direct when accessibility enables employment; contributes towards growth of markets and saves time and costs, thereby adding value to the economy. They are indirect when prices of commodities, goods or services drop as a result of efficient transportation. There are also, however, significant negative impacts on individuals and societies, the most significant being mobility gaps, cost differences and accidents.

3.2.3 Road and rail freight transport

Freight transportation is the movement of goods to and from producers to retailers and finally to customers. Factors such as cost of transportation modes, reliability and cost of holding inventory affect producers' logistical choices and supply chain configurations. Freight transport is facilitated by using transport logistics processes, which enable producers to make use of just-in-time inventory management by combining the fastest and most reliable transportation with information technology to reduce the need for maintaining large inventories. This improves the overall efficiency of the logistics process and reduces costs (Envision Freight, 2011).

High value industrial and consumer freight are more demanding than low value bulk freight, however, and are therefore more costly for railways to carry. Nonetheless, as the tariffs for high value industrial and consumer freight are much higher than bulk and semi-bulk, the profit margins are more often much lower (Amos, 2004).

According to Londoño-Kent (2009), transport in general facilitates trade, which creates wealth, reduces poverty and sustains growth. Of all modes, road freight transport has the most direct impact on poverty as it employs millions of people and generates a significant portion of GDP, especially in low and middle-income countries.

Londoño-Kent (2009) further suggested that the road freight industry is comprised of carriers that transport commodities for shippers using commercial motor vehicles. Although trucking competes with other forms of cargo transportation, including rail, air, and water, the shift toward intermodal transportation means that these modes of delivery are often more complementary than competitive. According to Russell (n.d.), in the UK, for example, only a few goods can complete their entire journey by rail alone, therefore shippers tend to prefer the road shipping industry over rail for better service, despite the higher freight rates. Furthermore, Londoño-Kent (2009) stated that once the rail service in a developing country loses its market share to trucking, it is hard put to reclaim it in the short and medium term. Similarly, Amos (2009) also argued that road freight is more penetrative; more immediately responsive to urgent orders; faster door-to-door; more flexible and can be dispatched more frequently. Therefore road freight has the advantage over rail if the latter has higher tariffs and road has sufficient capacity.

3.2.4 Rail Freight

“Rail freight is important to economic development because of its comparative economic advantages in serving certain forms and flows of freight, if its wider benefits compared to road transport and sometimes its significant implications for national budgets (Amos, 2009:2).

Rail freight bulk and semi bulk are considered to be low value and slow-growing markets; however they are high in volume and if well run, can provide low costs to these markets through economies of scale, economic generalisation and economic growth. However, a study by Transportation Economics and Management Systems Inc. (2008) revealed that in monetary terms, the rail operation cost increases is much less than other modes as overall rail costs start from a lower base. This study further revealed that the overall rail costs are affected much less by fuel price increases, reflecting the relative energy efficiency of rail over trucking.

Rail freight can only potentially achieve a competitive advantage if it operates at a low cost and meets its customers' minimum service expectations. However, Amos (2009) argued that costs and services are not the only considerations in freight transport, as there are still issues of regularity and reliability to be met, even if it is for bulk transport. Amos claimed that rail freight cannot always match that to the advantage of road freight, and suggested that rail freight needs activity management accounting tools encompassing the variable costs of infrastructure, train operations and corporate administration if it is to attain a commercial advantage. It further needs to attain the most efficient base levels in all its cost categories, offer attractive tariffs, attain economies of scale and traffic density, and have a low incremental cost. Moreover, Amos (2004) also stated that the so-called economies of scale in rail freight are actually economies of scope, because they arise out of the decreasing costs of adding additional traffic to a pre-existing railway infrastructure.

According to Amos (2004), successful freight transport companies are those that strategically target markets which best suit their modal capabilities and then adapt a specific performance to meet their customers' needs. Those needs include a good price, capacity, service characteristics and specific demands. Eeden and Havenga (2010) added that rail needs to identify freight transport segments that suit the long-haul, high-density nature of its core competence.

Because passenger rail is more a government responsibility in terms of provision of services to the public, to make rail a business means that the passenger and freight rail have to be split, each with their own structures and accounts, boards and shareholdings. In cases where both passengers and freight rail share the infrastructure and where freight dominates the network utilisation, it is best that freight rail manages it. Although sharing the network has its own challenges, there are also benefits of cost reduction (Amos, 2004).

According to Magliolo (2005), using rail to move goods is increasingly the most cost-effective way of transporting freight, because it is more fuel efficient than road haulage. In Britain, for example, their largest power stations were built around “merry go round” rail facilities so that their bulk fuel can be delivered at a rate of millions of tonnes per year. This, according to Magliolo (2005), would have been uneconomical and unsustainable if it were transported by road.

According to Amos (2009: 20), “a typical investment on infrastructure normally relates to the number of tracks, source of motive power, maximum train speed, length of crossing loops, weight of rail, rail connections, loading gauge, method of train control, and methods of maintenance”. However in order to be effective in its market, a freight railway must always transform its investments in such a way that it simultaneously delivers cost savings, capacity that can be sold and service improvements that can attract new rail freight markets. The choice of investments in a railway can enhance or limit its comparative advantage, and train performance improvements are only useful to customers who value them. For these reasons, Amos suggested that any upgrade to railway infrastructure needs to be justified in the context of local markets and economic conditions. Investing in infrastructure to achieve cost reductions can always be translated into value for customers or higher returns for the provider, however, creation of additional capacity is only valuable if there are growth markets available to use it.

3.2.5 Dynamics of road and rail freight

Freight rail is the transportation of goods by rail, whilst road freight is the transportation of goods by road (Quinet and Vickerman, 2004). According to Amos (2009), freight rail is more cost effective in the heavy haul of bulk freight with both high traffic density which delivers low unit cost of infrastructure and large train size which deliver low train operating costs. It can also provide the lowest costs across short distances than other modes when it runs from the pick-up directly to the delivery points.

Londoño-Kent (2009) stated that the main qualitative attributes of a freight service include transit time; reliability of meeting expected times; likelihood of loss; damage and theft; availability of capacity; and convenience of departure times and frequency of service. Rail rarely meets these factors. Moreover, for freight customers and services, issues such as door-to-door, service frequency and delivery times are crucial, which is very limited in rail freight. Road freight is more immediately responsive to urgent orders and more flexible. These, combined with transhipment times, train assembly and low speed, produce distinct disadvantages for freight rail for general freight in relation to road freight. However, Amos (2009) asserted that rail can mitigate this on busy routes and long hauls.

With regards to freight competition, Quinet and Vickerman (2004) stated that most modes of transport, with the possible exception of road haulage, tend to be a natural monopoly. This is due to the extent of economies of scale and scope, network economies, and the need for expensive and lumpy infrastructure, which are the basis for a natural monopoly and are often accompanied by a public service obligation, for example, railways. Furthermore, Quinet and Vickerman (2004) also stated that one of the intended objectives of rail reform is the introduction of competition between operators to reduce inefficiencies. However, different firms providing the same product or service is virtually non-existent in rail freight; rather, direct competition is most common. An example of such a situation can be found in Germany and Sweden, where a principal operator occupies the major part of the market and the national rail operator

is in direct competition with other modes. Another example is also found in South Africa (SA) where freight rail still has to compete with road haulage operators (Development Bank of Southern Africa, 2010).

Quinet and Vickerman (2004) argued that it is rare to find a clear-cut case of a direct or indirect market in transport, as most markets are likely to be oligopolistic. The authors also argued that a national rail operator is, after all, a competitor with other modes; even relatively small road hauliers have some power over some individual geographical markets or routes and build up preferential dealings with certain clients. Furthermore, Quinet and Vickerman also argued that competition in transport occurs most often in the domain of price, especially when price is interpreted as including elements such as time and convenience. Moreover, in terms of road and rail transport, competition tends towards perfect competition when the number of operators is large and each of them is small. As the number of operators decreases, competition tends towards a Bertrand-type oligopoly and the shipper uses operators with lower prices. When it comes to rail, however, assuming that price is the only variable, shippers base their decision on whether their marginal cost is higher than roads. If that is the case, rail will be excluded from the market. Amos (2009), however, argued that costs and services are not the only considerations in freight transport, as there are still issues of regularity and reliability to be met, even if it is for bulk transport.

3.2.6 Role of Government in transport

According to Quinet and Vickerman (2004), the government has a general role in the oversight of economic activities, verifying that laws and regulations are being observed; ensuring the quality and safety of products; and protecting the rights of workers. In transport specifically, there is a particular need to ensure meeting obligations to provide public services, often through the protection of a monopoly provider.

Quinet and Vickerman (2004) further stated that governments can also impose control on a monopoly as an alternative to imposing competition, especially when the monopoly is invested with a public service obligation and when the external effectiveness is in direct contradiction to the profit motive. This supports Thompson's (2009) view that monopolies which are sustained within the freight logistics sector contribute significantly to high levels of inefficiency, which leads to a situation in which there is little incentive to reduce costs. Moreover, a government's intervention also fulfils an efficiency function by correcting the negative impacts of external effects through taxation and relaxation thereto. Intervention can take many forms, depending which areas need most attention. A country may, for example, regulate or deregulate a market to protect a certain market, increase competition and/or improve efficiency therein (Amos, 2009). In the 1940s Germany regulated road haulage in the two main markets, short and long-distance, to protect both railways and inland shipping, whilst in the UK there was a deregulation of road haulage. In South Africa the economic regulation of freight was terminated in 1990 (Pienaar, 2010). The results in all three examples were similar to what Quinet and Vickerman (2004) stated, a decline in rail freight and the substantial increase of road haulage traffic in relation to other modes.

Furthermore, according to Amos (2004), a study on three different continents, Latin America, Africa and Australia, revealed that it is not always clear why countries wish to stay in the business of transport freight, but evidence shows that private participation in rail freight has always been successful in improving performance almost everywhere it has been tried. Germany, the UK and South Africa are somewhat similar in that their road haulage traffic increased to the detriment of other modes, especially rail freight (Quinet and Vickerman (2004). Moreover, Quinet and Vickerman also stated that more recently there has been a tendency for governments to reduce interventions around the world, partly due to changing political ideologies and partly due to understanding the ways different economic mechanisms work. However, Van der Walt (n.d.) argued that ownership and competition are key considerations in rail reform and rail performance improvements. It is because of the inherent monopolistic nature of rail infrastructure and other public transport assets that governments are influenced to rather regulate

and/or retain a say in the provision of those assets, especially rail or mass transit infrastructure created or governed by transport policy interventions.

According to Quinet and Vickerman (2004), in most African countries where governments rule out competition in rail freight transport, exclusivity measures in the rail freight industry is in such situations justified, and rail freight can still be made contestable by ensuring that a transparent and competitive process is followed in the granting of exclusive rights, thereby creating at least periodic competition for the market. In fact, Quinet and Vickerman also stated that governments are almost never totally absent from transport markets; they can at various times be seen as promoters of competition whilst on the other hand legalising monopolies.

With regard to deregulation, Quinet and Vickerman (2004) argued that it is generally beneficial for users because prices and costs are reduced, while services expand, are diversified and are better adapted to users' needs. Moreover, deregulation also encourages new techniques and technologies as well as hub-and-spoke networks.

3.2.7 Road and rail freight in South Africa

According to the South African Department of Transport (2012), South African rail is regarded as the backbone of the country's future transport industry as it plays an important part in its economy and promotes social development. South Africa has an extensive rail network – the 14th longest in the world - which connects with all the networks in the sub-Saharan region. Its railway system is the most highly developed in Africa and is the most important element of the country's transport as all major cities are connected by rail (SAinfo Reporter, 2012).

South Africa's freight rail is a publically-owned monopolistic company, with rail freight being solely provided by the state owned agency, TFR. TFR is a division of Transnet, which owns all the railway lines and the entire railway infrastructure. Pienaar (2010) stated that TFR is a monopoly only as a rail operator and not from a competitive

intermodal perspective, because there are other alternative modes such as road freight that compete with rail. According to Amos (2010), railway cannot provide a complete freight service without integration; it needs intermodal collaborations with other transport modes to provide such services. In South Africa though, an integrated alternative to road and rail competition was never developed due to the rapid deregulation of freight transport (Havenga, Simpson, Fourie and Bod, 2011). However, Havenga also stated that according to DoT, 2005 and 2011, policy makers have recently been expressing the desire for a modal shift and a domestic intermodal solution. Moreover, private partners also expressed interest in participating in such a solution through both direct investments and cooperation using licensed technology such as RoadRailer. Domestic intermodal freight transport in South Africa refers specifically to road and rail.

According to Thompson (2009) the South African government controls the entire network, which it justifies on the basis of competition with other nations, believing that it is somehow nations that are competing to form logistics chains. Thompson further stated that such interventions by governments to influence logistics are complex sets of interacting pieces and are almost always certain to fail.

With regards to freight regulation, freight in South Africa is currently deregulated. Road and rail transport compete in the same market segment, transporting bulk goods and long haul freight (South African Department of Transport, 2012). However, according to Stander and Pienaar (2005), rail freight in South Africa has a small impact on metropolitan and rural markets as there is only one-third of rail corridor movement. Road and rail are therefore only in competition in a small portion of the freight market.

While it is generally considered that higher value goods should ideally be transported by road and bulky lower value materials should be transported by rail, this is not the case in South Africa. A study by Ittmann and King (2010) revealed that over 60% of road transport volumes of goods should primarily be transported by rail, but in South Africa only 34% are. Furthermore, Stander and Pienaar (2005) stated that when comparing road with rail in terms of freight movement, rail freight appears to be less effective.

3.2.8 Integration within the freight sector

Thompson (2009) described integration as a spectrum of possible relationships that distinguish it from true independence, which can be defined as separate activities or entities that interact only at arms' length. The degrees of integration can begin with information sharing, moving to various kinds of cooperation, joint ventures to own facilities, and extending to common ownership either in a single company or within a broader conglomerate or holding company. Amos (2009) argued that technologies define railways, but railways have always depended on their integration with other modes and most rail freights have always been part of a longer supply chain. According to Havenga et. Al. (2011: 151), "integration requires the promotion of efficient interconnection and interoperability between network and modes – intermodal freight transportation. This process consists of short-distances and road feeder services to an intermodal terminal in a logistics hub where freight is consolidated into main-line block trains running the length of the corridor to a destination terminal where it is then transported to end destinations via road transport.

Integration in the sector can involve a wide range of businesses. Horizontal integration can be between shipping lines, terminal operators, logistics providers, rail companies or between other inland carriers. In rail markets, the integration of companies providing parallel and competing routes have different implications for efficiency than end-to-end mergers that link companies along a route OECD (2009).

Thompson (2009) suggested two types of integration - horizontal and link integration. Horizontal integration is a logistical process involving various stages; however Thompson believed that such integration is generally considered questionable because of its impact on intra-modal competition, especially when the owner is a private entity. The second type of integration is link integration, where a mode, for example a railway, also owns part of a port or a trucking company. In theory this type of integration could

increase competition on links, but it could also suppress competition, especially if it denies others access to one of the links. There could also be a negative affect if the transfer from one link to another is defective, however this challenge can be mitigated by allowing a liner company to own port facilities; allowing a railway to own part of a port; or by allowing a railway to own a trucking company. This could guarantee effective and low cost linkages and thereby increase efficiency (Thompson, 2009).

Both Ilie (2011) and Amos (2004) suggested another way of integration in which rail can respond to competition from other modes of transport, which is to seek better connections with them. Amos stated that railway freight managers should assess the opportunities not to replace but to co-operate and partner with other modes, as well as freight forwarders and logistics services providers, failing which they will become disconnected from final markets and become price-takers from middlemen. Moreover, Amos added that railways can increase market reach without increasing network length through intermodal activities. This involves the movement of goods in one loading unit or vehicle, which successively uses several modes of transport without handling the goods themselves between changing modes**.** Multimodal transport involves using at least two different modes of transport on the basis of a single multi-modal transport contract to move a load of goods from origin to destination.

The bulk of freight rail and port assets are integrated in a single national company in some countries. In theory this should contribute to technological and network efficiencies (OECD, 2009). According to Thompson (2009), it could also provide increased scope for market power and the inefficiency that sometimes accompanies market power. Examples of such situations, according to Thompson, are found in Turkey and SA, where, as a result of this kind of integration potential efficiencies are lost, because revenues from profitable activities are used to subsidise other parts of the system, robbing the profitable businesses of funds for investment. As a result prices for shippers are inflated and service declines.

Furthermore, according to the OECD (2009), vertical separation of ports and railways is the starting point for improvement in performance, because it increases the transparency of financial flows and provides for support to the railways to be subject to tests of value for money. On the other hand, horizontal separation of the ports brings benefits of competition and freedom to price services according to local conditions that are likely to outweigh any advantages of port integration. The railways could also benefit from horizontal separation, especially in South Africa where the iron ore and coal lines are viable without public support and are very different businesses from the general freight network (OECD, 2009).

Furthermore, according to Quinet and Vickerman (2004) collaboration within the freight industry is of utmost importance, as the services of combined transport, where a number of operators use a variety of modes, can provide a through-type of services particularly to exploit the possibilities of open access to rail network. Quinet and Vickerman added that in a number of countries combined transport has been heavily controlled by the national rail company.

3.3 Organisational change, capacity and competitive advantage

3.3.1 Change

According to Jarrett (2009), change is a natural part of a business' life if it is to grow and remain competitive. Rodrigue and Notteboom (2014) argued that transportation is an economic factor of goods and services, where small changes can have substantial impacts on costs, location and performance. According to Sturges (2009), there are many factors trigger change including globalisation, technology, competition, organisational restructuring, and other market forces. An example of such is the revitalisation programme of the South African Transnet Freight Rail guided by their MDS. This would inevitably lead to changes in various, if not all, the areas of the

organisation, including strategies, culture, leadership, technology, structure and processes. However, to make change stick, organisations need to be ready for such change (Jarrett, 2009).

Management needs to assess what type of changes they are facing and be ready to implement them. According to Jarrett (2009: 8), “change favours a prepared mind”. Jarrett further suggested that changeability is a combination of leadership, internal routines and organisational capabilities, which make companies fit, ready for change and helps to predict the success or failure of organisational change. Jarrett (2004) stated that successful change is a function of how well an organisation’s internal capabilities – its management, capacity, culture, processes, resources and people match the requirements of its external environment. In support of Jarrett (2009), Burtonshaw-Gunn (2008) added that for any change to stick it has to be properly managed, supported and sponsored by senior management, but more so, there must be readiness for, and acceptance of change by the people whom that change is applicable to.

Schoemer (2009) did not dispute the steps suggested by Jarrett and Burtonshaw-Gunn (2008), but stated that for every change process there are always various stages which the process goes through. These stages include betrayal, denial, identity crisis and searching for solutions, and failure to recognise and understand these stages means that a process of change is bound to fail.

3.3.2 Resources, capacity and capabilities

Resources here are defined in line with Bridoux (2004) as well as Barney (1991) in Kraaijenbrink, Spender and Groen (2009), as all assets, capabilities, organisational processes, firm attributes, information, knowledge and more, which are controlled by the firm that enables it to conceive and implement strategies that improve its efficiency and effectiveness. They consist of tangible assets which are made up of financial and

physical resources; and intangible assets which are made up of the firm's intellectual property, reputation and organisational culture (Bakhru and Gleadle, 2005).

Bakhru (2005) stated that a company's capabilities should be built with various resources to acquire competitive advantage, including human resources such as special skills, knowledge, motivation, communication and interactive abilities within the organisation; intangible resources, including technology, reputation and culture; and tangible resources comprising of financial as well as physical resources, including infrastructure.

Various management models can be used to assess organisational capacity and its competitive advantage. These models include, but are not limited to, the Resource-Based View (RBV), Porter's Five Forces Model, and the Relationship between Resources, Capabilities and Competitive Advantage (RBRC&CA) model (Fenton-O'Creevy and Stapleton, 2007). The RBRC&CA model assumes that all organisations possess unique bundles of resources, but it is how these resources are used that determines the competitiveness of the organisation. According to Rumelt (1991) in Viney and Gleadle (2005), resources and capabilities of an organisation are the main source of its competitiveness. Whilst Porter's Five Forces model is used to assess the external environment in relation to the internal analysis of the company, the RBV as well as the RBRC&CA model assess the company's internal capabilities.

The Resource-Based View (RBV) model is used to explore how an organisation achieves competitive advantages with its resources. Either the RBV or the RBRC&CA model can also be used as a supplement to Porter's Five Forces model. The RBV can also be used to assess how resources can be interlinked and combined to achieve competitive advantage (Bakhru, 2005).

One of the criticisms of RBV is that it is difficult to identify those resources and capabilities which are considered to be valuable. Bakhru and Gleadle (2005) stated in their book that, according to Barney (1991), the RBV assumes that organisations differ

from each other in respect of their resources and capability, and that the productive resources and capabilities cannot easily be transferred from organisation to organisation without cost. Bakhru and Gleadle (2005), in support of Barney (1991) and Szulanksi (2003), stated that the RBV assumes that the company's resources should possess five characteristics to give the company a competitive advantage: valuable, rare, inimitable, non-substitutable**,** and in limited supply. The RBRC&CA model, on the other hand, assumes that resources should confer competitive advantage when they are inimitable, durable, relevant and appropriate (Fenton-O'Creevy and Stapleton, 2007). However, in Bakhru (2005), Peteraf (1993) suggested four conditions underlying sustained competitive advantage, which include superior resources heterogeneity within an industry, ex-post limit to competition, imperfect source to competition and ex-ante limits to competition. Most recently, according to Bridoux (n.d.), a study by Sampler (1998) revealed that many resource based approaches have been focusing a lot more on intangible resources such as knowledge and information.

In their article, Kraaijenbrink, Spender and Groen (2009) pointed out eight criticisms of the RBV, five of which are considered useful as the variables; boundaries and applicability are more clearly specified. The other three cannot be dismissed as they "cling to an inappropriately narrow neo-classical economic rationality … and do not sufficiently capture the essence of competitive advantage, neither statically or dynamically" (Kraainjenbrink et al., 2009: 3).

However Jarrett (2009) recognised the various limitations and critiques of the RBV and Porter's Five Forces Model, and suggested they should be supplemented with additional tools such as a relationship between resources, capability and competitive advantage model in order to analyse the company's resources holistically. This model illustrates that in order for a company to operate efficiently and achieve a competitive advantage which will ultimately contribute to economic growth, all its resources have to complement one another and be strategically combined in the most efficient and cost effective manner (Bridoux, 2004).

3.3.3 Competition and competitive advantage

A firm needs to know its exact competitive position in relation to its competitors. This requires both an internal and external assessment of its environment in order to determine its sources of competitive advantage (Porter, 1985).

According to Porter (1985), competition is at the core of the success or failure of any organisation. For any business to be successful and profitable it needs to possess a competitive advantage, as well as a competitive strategy that enables it to compete with other organisations. Bidroux (2004) described competitive advantage as the superior differentiation and lower costs by comparison with the marginal competitor in the product market. This means that an enterprise has a competitive advantage if it is able to create more economic value than the marginal competitor in its product market. However, Bidroux argued that competitive advantage does not automatically lead to higher performance in relation to other competitors. Viney and Gleadle (2005) added that any competitive strategy should consider the potential, resources and capabilities available to the firm; the nature of the external environment available to the organisation; and the objectives of the key stakeholders.

Bidroux (2004) stated that firms can take any kind of action they deem fit to improve efficiency and competitive advantage in relation to their competitors. In so doing, they may, amongst others, use their resources to decrease buyers' willingness-to-pay for rivals' products; or leverage their resources to hurt competitors and affect prices in the product market. However, it is not always in the firm's best interests to behave aggressively toward competitors, as cooperation may sometimes be more beneficial .

Porter's Generic Strategy is commonly used and helpful for organisations to understand potential sources of competitive advantage, and is therefore widely implemented. Porter (1985) argued that the collective strength of the five forces determines the ability of an organisation in an industry to earn, on average, rates of returns on investments in excess of the cost of capital (Fenton-O'Creevy and Stapleton, 2007). Viney and Gleadle (2005) stated that various authors, including Kotha and Vadlamini (1995) as

well as Hambrick (1983), also support Porter's generic strategy. However, despite the vast support thereof, several researchers also criticised Porter's typology for its conceptual limitations, arguing that his generic strategies are not collectively exhaustive and are thus unable to adequately describe the strategies. This includes Mintzburg (1998) in Viney and Gleadle, who questioned its simple notion of low cost and differentiation in the current corporate environment, which is characteristic of increased global competition and technological change.

Furthermore, according to Miller and Dess (1993) as well as Sandberg (1986) in Viney and Gleadle (2005), Porter's generic strategies are not truly generalisable in that none of the strategies are truly generic; they do not permit segment differentiation and do not allow for organisations to utilise differing strategic approaches in the different product/market segments in which they operate. For these reasons, according to Viney and Gleadle, Porter's original analysis is now often broadened to include potential combined strategies of integrated cost leadership and differentiation.

On the other hand, McGrath (2013) stated that Porter's Five Forces Analysis and other models that help analyse the competence of the firm are important ideas, but argued that they are all based on a single dominant idea that the purpose of strategy is to achieve a sustainable competitive advantage as the most fundamental concept, which is no longer relevant for more and more companies. McGrath disproved Porter's generic strategy model to analyse the competitive advantage of the firm, and suggested a different approach called the 'playbook' for strategies where different leadership behaviours need to be deployed in businesses with different levels of maturity. This approach is based on a set of assumptions as opposed to earlier assumptions that gave the useful frameworks and tools which have been used for the past several decades. The strategy playbook is based on the ideas of transient competitive advantage – where, according to McGrath, things work differently now and the way of competing is no longer sustainable. McGrath (2004) further argued that the resource allocation process is perhaps the most significant way to influence what gets done and who does

it in the organisation, saying that firms need to think of the customer rather than on supply and demand for the job to be done.

Viney and Gleadle (2005), on the other hand, were of the view that interrelationships amongst business units can have a powerful influence on competitive advantage as they may benefit from shared activities, which is the impact that corporate strategy should have on competitive advantage. When it comes to rail, however, Amos (2004) stated that it is very different from any other organisation. Amos suggested collaborations with other modes as a way to respond to competition. This implies physical connections with container hubs, logistics centres, river ports and seaports looking for markets where connectivity of rail with other modes will improve service and/or reduce costs.

3.4 Conclusion

This chapter examined the views of different authors and sources on the issues around road and rail. It provided a background of the nature of transport with a specific focus on freight, and discussed the dynamics of freight rail in relation to road freight, with a few examples from different countries with similar situations. A review was also done on the use of different models, which will be used to assess the capacity and competitive advantage of a company later in this study. This will enable the researcher to understand them and select the most appropriate models with which to assess the TFR's capacity in line with the research topic.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Research design concepts

4.1.1 *Introduction*

A research design is the plan and a structure for investigation, prepared to obtain answers for the research questions. It is an overall programme for the research and includes an outline of what the investigator will do, from writing hypotheses and assessing their operational implications, to the final analysis of data (Cooper and Schindler, 2011).

This aim of this research is to assess the feasibility of the implementation of the policy to change the movement of goods by road to rail. The objectives of this study were to assess the capacity of TFR to successfully implement the road to rail policy and the feasibility thereof; to determine whether the implementation of road to rail will lead to freight rail efficiency, competitiveness, reliability and sustainability; and to establish the industry's reaction towards the shift from road to rail and their willingness to integrate with rail.

4.1.2 Quantitative and qualitative approaches to research

According to Coldwell and Herbst (2004), quantitative research involves the collection of primary data from large numbers of individual units, frequently with the intention of projecting the results to a wider population. It seeks explanations and predictions that will generalise to other people and places, and is intended to establish, confirm, or validate relationships, as well as to develop generalisations that contribute to existing theories.

Cooper and Schindler (2011) described qualitative research as a method that involves looking at characteristics or qualities that cannot easily be reduced to numerical values. The researcher aims to examine the many nuances and complexities of a particular phenomenon and starts with an open mind, immersing themselves in the complexities of the situation and interacting with their participants.

For the purpose of this research the qualitative approach was selected as it was the most appropriate. It enabled the researcher to conduct an in-depth exploration and gain an understanding of the issues around the road to rail project and how the industry feels about the issue.

4.2 Population

According to Coldwell and Herbst (2004), a population can be a group of people, items or units under investigation. As a population can be very large, impractical and uneconomical to collect information from, a sample of the population can be used instead of the whole population.

A sample is a representative portion of the population whose properties are studied to gain information about the whole population, which enables the researcher to gather information faster (Coldwell and Herbst, 2004).

Sampling is the process of selecting a representative part of the population for the purposes of determining the parameters or characteristics of the whole population (Coldwell and Herbst, 2004). It is used in research due to factors such as financial limitations; time constraints; the impracticability of collecting information from every single unit of the population, and inability to reach the whole population. The sampling techniques available are probability sampling and non-probability sampling.

According to Saunders, Lewis and Thornhill (2009), there are two methods for drawing a sample, namely random sampling and quota sampling.

The population for this research was the whole freight industry in South Africa, but mainly rail freight. It is a very large population which consists of various institutions, the main ones being the DoT as the transport policy maker; the Department of Public Enterprise (DPE) – Transnet's shareholder; TFR as the custodian of all rail freight services in South Africa; the Road Freighters; freight users; and experts in the transport field in South Africa. Each of these organisations is very large individually, which made it impractical to collect information from every single unit in the population. A sample of the population was therefore used, from which information was collected for this research.

Non-probability sampling was selected as most appropriate sampling technique due to limited resources and time. With this technique the researcher was able to select anyone within the population group who was in a position to provide the relevant information. The quota sampling technique was used which allowed the researcher to select participants in certain categories or with select characteristics.

The participants selected for the interviews were ten key role players from the TFR and DoT, as well as stakeholders from the freight industry who are responsible for handling or involved in the road to rail issues in their respective organisations. This decision was due to factors such as the limited time within which to complete this research; the impracticability of collecting information from every single unit of the population; and inability to reach the whole population. The sample was made up of people leading the road to rail programme, who were in a position to provide the researcher with first-hand information on their views and decisions.

4.3 Data collection methods

In this research interviews were conducted to collect primary data. Secondary data was also gathered by scrutinising existing documents and reports on the same topic. This enabled the researcher to supplement the information collected through the interviews. There are three types of interviews, namely structured, semi-structured and unstructured interviews (Leedy and Ormrod, 2010). For this research, unstructured interviews were used. These are informal and more like every day conversation with no pre-set format. They are normally open ended, flexible and free flowing. The questions are not pre-set, but the researcher normally has certain topics to cover which gives the interview some structure and direction (Coldwell and Herbst, 2004). The use of this type of interview enabled the researcher to prompt and probe for answers and to gather valid and reliable data that were relevant to the research question; to the objectives of this research; as well as to gather in-depth general information which gave a better insight of the subject matter. The researcher started by conducting the interviews, followed by documentation review which entailed scrutinising existing written material in the public domain and material provided by some interviewees.

4.3.1 Data collection instruments

As mentioned in the preceding paragraphs, this research is qualitative and used unstructured interviews with open-ended questions to collect primary data. A documentation review was also conducted to collect secondary data. The questions were strategically designed for unstructured interviews and the questions were designed based on the research objectives to allow the interviewees to freely explore and share their thoughts around the topic. This enabled the researcher to ensure that the interviewees provided responses that addressed the research objectives and therefore the topic of the research. With these questions the researcher was able to conduct in-depth interviews and probe to better understand the issue. An audio recording device was used to record the interviews, with permission from participants. On average the interviews took 45 minutes each.

The lists of questions for the unstructured interviews are attached as Appendix A of this document; there were two sets of questions for two different groups. Group 1 consisted of TFR and DoT as the operators and custodians of freight rail. Group 2 consisted of different stakeholders in the freight industry. The reason for dividing the population into two groups was because during the first few interviews, both the DoT and TFR interviewees provided more facts during the interviews as opposed to the industry stakeholders who provided more views and opinions on the matter. The questions therefore had to be structured differently but with a level of consistency across both sets. Follow up questions were also asked to balance the two sets of questions to ensure consistency.

4.3.2 Data analysis

Qualitative Data Analysis (QDA) is the range of processes and procedures whereby a researcher changes the qualitative data that have been collected into a form that can easily be explained, understood or interpreted about the people and/or issue being investigated; it is based on an interpretative philosophy (Lewins, Taylor and Gibbs, 2010). As previously indicated this research is qualitative, therefore the data analysis was qualitative and a thematic analysis approach was used.

Thematic analysis is a method for identifying, analysing and reporting patterns or themes within the data; it organises and describes the data set in rich detail. There is no clear agreement about what thematic analysis is and how to go about doing it; it is a method which works both to reflect reality and to unravel the surface of reality. For this reason Braun and Clarke (2006) suggested that it is important that the theoretical position of a thematic analysis is made clear.

With this approach the researcher identified a number of codes which are reflected in the textual data. This entailed identifying, analysing and reporting patterns which were turned into codes. These codes were organised and grouped as themes as suggested by Braun and Clarke (2006). The main purpose of coding was to make connections between different parts of the data and to allow the researcher to identify what the respondents were trying to say. The data was therefore collected through interviews using open ended unstructured questions. The responses were recorded and later transcribed using an audio recorder. The transcripts were organised and analysed using the thematic analysis and patterns and consistency in the data were analysed, producing codes which were then themed. The researcher used the themes as headings to analyse the responses from the interviews. The complete process followed to develop the codes and themes is listed as Appendix C.

4.4 Validity and reliability

Validity determines whether the research truly measures that which it was intended to or how truthful the research results are. Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others (Golafshani, 2003). According to Coldwell and Herbst (2004), there are two types of validity: internal and external.

For the purpose of this research, triangulation was used where multiple data sources were compared in search of common themes to support the validity of the findings. In this regard the thick description strategy was used by describing the situations in sufficiently rich detail so readers can draw their own conclusions from the data presented (Leedy and Ormrod, 2010).

Reliability is concerned with the credibility of the findings of the research and refers to the extent to which the obtained scores may be generalised to different measuring occasions, measurement/test forms and measurement/test administrators (Wellman et

al., 2005). Saunders et al. (2009) added that reliability refers to consistency, and is concerned with the robustness of the questionnaire as to whether it will produce consistent findings at different times and under different conditions.

In terms of validity for this qualitative research, the contents of the questions were tested and re-tested to check the extent to which the questions provided adequate coverage of the investigation as a whole. In order to determine the reliability of this research, relevant questions were asked as to whether the evidence and conclusions would stand up to the closest scrutiny, and ensured that whichever measurements were used, it would produce the same results to anyone who may decide to do the same research. Therefore, as Leedy and Ormrod (2010) suggested, the researcher used the interrater reliability approach to measure the extent to which two or more individuals gave the same results about the issues under investigation. The responses were compared to the responses from different interview participants and ensured that all the information collected was adequately recorded and referenced accordingly (Saunders et al., 2009).

4.5 Ethical considerations

Research ethics are standards that guide the moral choices of the researchers' behaviour and their relationships with the participants of the research. The importance of ethics in research is to make sure that no one is harmed or suffers adverse consequences from the research activities (Cooper and Schindler, 2011). In order to safeguard all participants involved in this research, the researcher ensured that:

- The reason, purpose and relevance of the research was clearly explained, and it was guaranteed that a copy of the dissertation would be made available to participants if required;
- No pressure was used in any way to obtain information from participants;

- For every interview the researcher provided a signed confidentiality letter, from both UNISA and the researcher, which ensured that the data collected was used solely for the purpose of this research;
- Due recognition was given in appreciation for participants' contributions; and
- All participants were given as much information about the research as possible before involving them.

CHAPTER 5: RESEARCH RESULTS

5.1 Chapter overview

This chapter consists of a short profile of the interviewees; the results from the primary data collected from the interviews; interview questions and answers, an assessment of TFR's capacity; as well as an analysis of the findings. Both TFR's internal and external environments were assessed to establish its capacity and competitive position in its industry. This was made possible by investigating existing documentation in the public domain, as well as documentation provided by experts and TFR themselves to the researcher.

The responses from the interviews facilitated the development of codes and themes were allocated to them in order to facilitate the analysis of the information collected from all interviewees (refer to Appendix D). This ensured that all the responses were adequately categorised so that the research questions were answered.

Upon acceptance of the interview by the participants, the researcher emailed each of them a brief summary of the research topic, together with the list of questions for the interview, giving them the opportunity to familiarise themselves and apply their minds to the issue beforehand. Before each interview started, the researcher requested permission from the participants to record the interviews. The recorded interviews were transcribed to facilitate analysis and were archived for safe keeping future reference.

The researcher divided the interviewees into two groups. Group 1 was TFR and DoT as custodians of rail freight, whilst the other was the freight industry at large. There were thus two sets of questions for these different groups, although each participant was interviewed individually. The reason for the two groupings was that the researcher realised that during the first few interviews, TFR and DoT were providing more facts

regarding the shift from road to rail as opposed to the industry which could only give their views and opinions.

The section to follow contains the questions and responses from the interviews. Each question has the respondents' answers for that particular question allocated to it. This was done to enable the researcher to easily compare the different responses from the different interviewees and to holistically analyse the information gathered from every interview for the same questions. It will also enable the reader to follow all the responses provided by all the respondents for each of the questions asked.

The two sets of questions are provided under Appendices A and B of this document. This allows the reader to follow the line of questions asked and see the slight differences between the two sets of questions.

5.2 Brief profile of interviewees

1. Ms Nisha Jones

Ms Jones is an Executive Manager at Transnet Freight Rail.

2. Ms Mathlodi Senyatsi

Ms Mathlodi Senyatsi is the Director: Logistics Infrastructure at the National Department of Transport and is currently acting Chief Director: Freight Logistics.

3. Mr Ravi Nair

Mr Nair is the General Manager: Steel and Cements Business Unit of TFR.

4. Mr Prema Govender

Mr Prema Govender is a Senior Advisor: Climate Change Mitigation at the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. His area of responsibility includes energy efficiency, transport and waste to energy. The GIZ is currently conducting research on the Social Impact of the Road-to-Rail Policy.

5. Dr Jan Havenga

Dr Havenga is an Associate Professor with the Department of Logistics at Stellenbosch University. He is the Director: Centre for Supply Chain Management, Department of Logistics. Dr Havenga is also a member of the Editor Panel and Reviewers of the Journal of Transport and Supply Chain Management. He is an experienced market researcher; macro-logistics researcher and consultant; strategic and change management specialist in corporate strategy; and a marketing expert. He also specialises in practical strategy applications on a macro level and the role of macro-strategic decisions on logistics and supply chains.

6. Mr Norman Mbazima

Mr Mbazima is the Chief Executive Officer of Kumba Iron Ore. Kumba Iron Ore is a major client of TFR.

7. Mr Frikkie Burger

Mr Burger is currently the Manager: Growth & Optimisation: Logistics at Kumba. He is responsible for the future expansion projects of the Iron Ore Export Channel and represents the logistics function on all internal growth projects that require export capacity to coordinate the liaison with Transnet for capacity. Mr Burger is also

responsible for Asset Optimisation for logistics and drives optimisation initiatives for the Iron Ore Export channel (joint initiative with Transnet).

8. Mr Abrie De Swardt

Mr De Swardt is the Managing Director of Abrie De Swardt & Associates. He is a well-respected leader in the logistics and supply chain management industry in Southern Africa. He has more than 22 years of experience in the fields of marketing and supply chain management, including manufacturing, procurement, warehousing and distribution. His extensive experience encompasses the entire supply chain discipline from the buy to the sell side. He holds various management qualifications, including a MComm from the Stellenbosch University.

9. Mr Max Braun

Mr Braun is currently the Chairperson of the Annual Transport Legislation Workshop and a team member of the CSIR/US National Freight Logistics Survey. Previously he held several senior management positions in the vehicle manufacture and retail industries, including responsibility for large vehicle workshops. He studied advanced transportation management at NW University in Chicago, Illinois, and holds an advanced diploma in transport management from UJ. He has lectured at Stellenbosch University's Transportation Centre, the Department of Transport Economics at UJ and WITS University's Materials Handling Department, and regularly writes for FleetWatch and other publications on a variety of transport and related topics. He is affiliated to IRTE, SARDA and PPECB.

10. Patrick O'Leary

Mr Patrick O'Leary is the Editor of FleetWatch.

5.3 Interview questions and responses

5.3.1 Questions and responses: TFR and DoT (Group 1)

The responses from all the participants are quoted directly from the interviewees and are placed under each question. This approach enables the reader to easily see all the responses that all participants provided to the same question, and makes it simpler to see the consistency of answers or lack thereof for each question. Some of the follow-up questions are also included.

1. The proposed policy (The National Rail Policy – Green Paper) talks about the intention to shift from road to rail, and I understand that TFR is embarking on a revitalisation programme to ensure that the move is successful, but how do you propose the shift itself to be rolled out? Is there going to be some legislative instrument which will prohibit the road transporters from carrying the freight naturally fitted for rail? If not, how?

Mathlodi Senyatsi

"…Currently as you see in the newspapers Transnet is waiting for locomotives, you know, from China and they've made restructure CAPEX for the period of ten to twenty years. So our review then will look into those things and see, okay would it work for us. Yeah, so, so from a policy perspective that's how then the roll out would be made. We would, we would look at what Transnet has invested to date. So our interactions with the industry, they, they are for the idea that your rail friendly cargo needs to move to rail. However Transnet needs to be ready with that and that, from where I'm sitting I think it

would require some kind of legislative framework…you have regulations in terms of how that needs to be. So yes some kind of a mandate that says to us, you know, from this day government has pronounced that certain commodities…Sometimes market forces work best in certain instances. But sometimes you need some kind of government intervention. Some kind of regulation and, and, and let me, let me substantiate why I say that. For an example we expect our state owned entities and in this instance Transnet and our Transnet Freight Rail. Their responsibility is not only to focus on their commercial aspect. They are also expected, they are also expected to look at the social aspects. So their responsibility is socio-economic. Right, now a lot of times as government we… the mandate for our state owned entity is to look at the commercial side but also at the social economic aspect. So a lot of times without, if we don't monitor our state owned entities we tend to see them not, you know, pulling their weight when it comes to socio-economic aspect… I think when it comes to them being competitive and being a global player, that's fine. I think you can leave that aspect... but when it comes to your socio-economic aspect government needs to come in and make sure that they, they, they contribute to that otherwise then the responsibility of government, of ensuring that we, we develop our most rural areas would not happen…"

Nisha Jones

"…we don't provide end to end services. We always need a collect cargo from a point (inaudible) we collaborate with private enterprises. How can we work together remember of consideration when one (inaudible)…container need to be connected from the customer which will be brought to the siding route to put on the train and then the cargo comes back to the (inaudible) we need to get back off the siding from delivery so there is also a role for the (inaudible) look at the road, how deep the damage is on the road…"

Ravi Nair

"What we are looking at here, Judith, is we, we don't want to go and force a road to rail shift by, by way of legislation… You know government wants a very competitive economy. Whilst we are government owned we need to compete equally out there with customers. So we want to earn our right to move traffic from road to rail by purely our service offerings, our solutions, our service levels that we are going to commit to. Our investment in our resources, in our people and so forth and we want to leave it up to the customers to decide…"

2. What kind of support and/or objections are you getting from the industry?

Mathlodi Senyatsi

"I must say that… with the road industry there's a bit of a grey area in the sense that we have an association called the Road Freight Association… They've indicated to us that even sometimes government is notorious of not consulting thoroughly with what they want to do. So I think we are very conscious of making sure that we get that buy in …as truckers, we are their biggest culprits when it comes to deteriorating the infrastructure, the road infrastructure. They do admit to that, you know. So for them their biggest cry to government was that if you can make sure that Transnet is ready, you know, when the shift is about to happen or when we are negotiating the shift then they, they are happy. Because for them what they've said is that moving their cargo by road is expensive… So I can say they, they do support the shift from road to rail…"

Nisha Jones

"We are getting support and we demand collaboration (inaudible) the industry is beginning to see the benefit of it.

Ravi Nair

"…we have not seen any explicit objections coming through from the industry. What we observe at the moment is, surprisingly is that a large number of players in the industry are knocking on our doors to sign up, cooperation agreements with us… We are even getting enquiries from the industry in the support and the commitment of the industry wanting to invest in rail wagons, in locomotives and so on and so forth. In some cases is a bit… people are a bit anxious and they want to see things happening quicker."

3. In today's business environment, time and speed is of utmost importance. In most cases people prefer to pay more for faster and more efficient services. To what extent can freight rail gain competitive advantage in that regard?

Mathlodi Senyatsi

"I think government needs to make sure that we make the proper investment on the freight rail for infrastructure and for the locomotives. Both our wagons and our… what do they call them, the ones that pull the, the wagons. But yeah, so if, if we do proper investment then, then freight will, will gain competitive advantage because at the moment the biggest draw, drawback or the biggest challenge with, with freight rail is that they cannot compete with road when it comes to speed and time. Solely because of the, the, the infrastructure that is old. Infrastructure that is, in some instances that has been vandalised and, and…locomotives that are old. The signalling system that is old as well. So once we make proper investment on those elements then freight rail will gain

its competitive element, advantage. But also, I think with government intervention as well, with the pronouncement or the rolling out of the shift from road to rail, that will assist as well for them to gain the competitive advantage."

Ravi Nair

"From a rail point of view I think on the assets side we are improving our investment in assets, not just new assets but also how we maintain the current existing old assets. There are new ways and means that our Engineering Division is working on in terms of how they improve the reliability and the availability of the current assets… We have invested a lot of new technologies to have real time monitoring of our trains…all of this is targeted at making sure that we deal with time and speed because that is of utmost importance; running longer trains, bigger consignments, is going to assist us in terms of competitive advantage and this will assist also the customers in terms of what type of stockpiles do they need to keep at the port. "

4. Is the implementation of road to rail going to be successful?

Follow-up question: what do you have in place to ensure the success thereof?

Mathlodi Senyatsi

"It has to be successful. It's not a matter of yeah or no. No, it has to be successful. Because of the challenges that we are now faced with and I think maybe using this classical example of our road network it will explain my conviction that it has to be successful. From a policy perspective I've mentioned the three policy documents that as a department we are looking at. It's the National Freight Logistics Strategy. It's the

draft Rail Policy and it's the draft Road Freight Strategy in making sure that rail, freight rail in particular is sustainable and it's reliable."

Nisha Jones

"Yes, it is going to be successful. Freight rail has been around for about 150 years, so is a successful business… Our business model and principle is the most important underpinning factor of the sustainability on the road to rail and the help of the collaborative relationships..."

Ravi Nair

"I want to say that I am firmly of the view that the road to rail is going to be successful…we are going to have to make sure that there are no delays on our investment in locomotives, our investment in wagons, our investment in technology, our investment in infrastructure, our investment in people, our investment in Lean Six Sigma, no room for delay…on the operational side, daily meetings, operational meetings at the shop floor…have implemented a schedule railway concept in TFR and we are working towards, in the next few months, where we will even issue a timetable to customers".

5. One of the major challenges for TFR is capacity. What progress has been made since the implementation of the MDS?

Mathlodi Senyatsi

"Capacity in the sense of their…their wagons, rail wagons capacity when it comes to the infrastructure, remember when I mentioned they need to upgrade their signalling and all

that. …if you read in the newspapers recently, well not recently but when, when DPE, the Minister of DPE or, or the…CEO of Transnet, Brian Molefe, every time when he talks to what, what improvements or what they've done to date when it comes to making sure that they deal with capacity he will always mention this programme of new locomotives coming in. But also they are prioritising infrastructure rehabilitation and upgrading for their long haul."

Follow up question: Do you think within seven years a lot more will be achieved?

Mathlodi Senyatsi

I think something must happen. I don't want to say a lot but it will be good if a lot happens. … But right now nothing really in terms of that movement that, that road is, is carrying. No honestly nothing tangible that you can see except for this coordinating role that is now played by the Minister of Economic Development with the SIPs, the Strategy Infrastructure Project. That's where we would see the, the changes. I think for now the concentration is more on the infrastructure that we have. Remember the City dip that I talked about. …So I think right now we, we, we will only see the infrastructure investments and, and obviously after that then we'll see the operations now starting to change."

Nisha Jones

"…We also have to communicate with the industry; we need to express our interest in terms of doing business with us, so we check the industry what type of services do you want and what type of volume of capacity do you need for us to make provisions for you for hopefully for a long period of time. We've have a lot of industry interest so we gave the market what (inaudible) so in terms of rail friendly cargo we say the projected demand will be satisfied in time, we have the MDS and the roll out of the infrastructure

upgrade, so the capacity will be there for the cargo that will be attracted to rail." You must remember, the time for investment and the time for deploying infrastructure, it takes time, with our MDS we are on track but we have all that information on our website (inaudible) for the duration of the MDS".

Ravi Nair

"On the people side we have done a workforce planning model that determines the people and the skills and the competencies and the numbers of people that we need over the next seven years of our MDS…training and development; strategy and mentoring and coaching strategy in the organisation that we have implemented…started a number of programmes to automate many part of the business…started investing heavily in our locomotives, in wagons, in infrastructure…we have a very serious safety programme that we have implemented in Transnet Freight Train."

6. What integration strategies is TFR implementing?

Mathlodi Senyatsi

"The operators are only coming in to operate on the infrastructure. So we felt for them then to compete we need to level the playing field. Therefore one proposal was to then do a vertical integration."

Nisha Jones

"…The feasibility of road to rail is very sustainable, we just have to collaborate with each party so we all remain in business. The reason why we need to close relationships with (inaudible) to continue to work closely, (inaudible) the car gets to a cargo (inaudible) we would not provide a solution unless we know we have capacity, do we will not load

cargo on rail and send it to a port to sit stranded at the part and what that means is that the cargo cannot be handled because capacity is not there. We need to make sure when we talk to customers, for a cargo we do it simultaneously, make sure the colleagues at the port knows about it, the NPS Authority that's the landlord, know about it, so we know what they are working on and they know what we are working on – whichever way it does not matter what, what matter is that we know exactly who we working with so that together we can prepare for the cargo and make sure the cargo is not stranded. So we make sure that we have collaborative relationships with the sister companies and we talk to each other all the time. We have to make sure we work together and not compete with each other."

Ravi Nair

"…we have set up strategic initiatives with all our large customers on the major corridors so that our customers can integrate their expansion programmes with our programmes."

5.3.2 Questions and responses: Industry stakeholders (Group 2)

1. How receptive is the industry to the road to rail programme and how willing do you think they are to integrate with freight rail?

Prema Govender

"The industry is certainly receptive to road to rail. However there are, there are components within the industry. The smaller distributing agencies who use road still find road to be far more effective. Quicker in terms of time and loss of goods and breakage is also minimised. From a, a, if there's going to rail freight they're keen on it

but it's got to be efficient in terms of time. It's got to make sure that the goods are expeditiously moved from, from rail onto the smaller vehicles, which they don't see happening yet and they don't believe that the industry, you'll hear from them when, when they speak to you. But all in all they are saying there is a need. Recognise the need. They see the value of it and they do want to make it. Then it's the type of goods. And then the issue then is saying what do we do with the smaller type of goods and we think that the smaller type of goods still has opportunities for, for freight."

Dr Jan Havenga

"The railway is still not too happy about being a step away from the client which, in this case, what it would mean if you think about a service like this with Imperial, Imperial will own the chain and Imperial will sell a logistics solution to, let's say for instance, a Tiger Brands and an Imperial is the logistics service provider who will contract the railway to do the long haul and they will do the short haul. Now, not everybody likes that approach on the railway side…but people are beginning to understand that that type of solution is also necessary and also joint venture; this can also be done by joint venture with a third party logistic service provider that puts this whole thing together. So I think there are lot of positive feelings about this but I also think it is borne out of necessity because of things that we've been predicting now for many years. Whether it is feasible and whether people are positive about the railway, or whether people think that it is executed in the correct way, that's a different question, we will get there but more or less everybody is for it."

Norman Mbazima

"Very receptive in my view. The reason being, the first and foremost industry is, by and large, are not worried about whether the freight is going by road or it is going by rail. It is a question of how quickly the goods can get to the destination and what cost. Those

are the main factors that industry worries about. At the more senior levels the industry does realise the effect of freight on the road, on the infrastructure, on the system and so on and so forth. So there is some, in addition to the pure cost and time aspect, there is a feeling that the right to do is to put the bulk freight on the rail. There's that feeling and I think the CEOs will be willing to push that in that direction. So I think that's where we are."

Frikkie Burger

"My understanding is they are keen to do it, or they are prepared to do it. I get the impression but I think obviously they will also want to protect their interests in this whole business. So I think my view, the way they look at it, is to say yes. When you talk about integrate they see it as okay but rail can do the long hauls, let's say Jo'burg to Cape Town, Jo'burg to Durban but then the freight will do the short distribution around Jo'burg, around Durban, around Cape Town, those type of things. I think there is certainly the industry would be because I think everybody sees the need for it in a sense, because everybody says our roads are suffering and we need to keep the trucks off the road for some reason. But I think Transnet or the rail operator needs to give them comfort that there will be business at both ends. Then I think it can work."

Abrie De Swardt

"It is different between what's in their heads and what's in their hearts. I think in their hearts they know – let me rather rephrase that, in their heads they know it has to be done because it is important from a, especially as from a cost point of view but in their hearts they don't want to do it because (1) they don't have the necessary time in Transnet's ability to deliver, the necessary services and secondly, from a service provider point of view, they stress because it will potentially take away business to provide a service that will potentially then be lost to Transnet."

Max Braun

"The commodities like iron ore, coal, chrome and so on, these are things that should be on rail and not on road. So those things I think would be very, very welcome indeed."

Patrick O'Leary

"I think the road transporters would be very receptive and I think an indication of that is already that there are Memorandums of Agreement, or Understanding, between both the Imperial Group and Transnet, as well as Unitrans and Transnet…my concerns would be the cost effectiveness and efficiency of rail because at the moment the whole manufacturing system around the world has changed."

2. What concerns do you have about the proposed shift? Do you know of any other group in favour or against this shift?

Prema Govender

"No. On the contrary my understanding, if you speak to because we worked with both industries through the Road Freight Association. They have their concerns. They still see that…and their concern is what I was saying to you earlier on. The issue…is the security of the good being transported; the speed at which the goods; the cost efficiency; it has to go back there. We have to increase rail. Internationally you'll see rail freight, especially for the bulk goods and all of that, have, are, are quite significant."

Dr Jan Havenga

"The first problem I have is maybe not so much a concern as a problem that I understand why the problem is there, if I can put it that way…I think there is a portion of poor management of the railways up to, I would say more or less when Maria Ramos took over. I think Maria Ramos started to steady the ship and then things started to get better and after her I think it got better all the time and the leadership there got better all the time and the company got itself sorted out. So up to the middle 2000s I think there was a management problem. The other reason is maintenance. There was no maintenance of the railway and that started in 1986 when De Villiers' report on the restructure of Transnet was released. There was a decision not to invest too heavily in the railway… Now I think they are solving the technical problem, they are solving the investment problem…"

"…The thing that bothers me is that the domestic intermodal stuff is still not receiving enough attention and with that I mean this is the stuff that's on the corridors; this is the Durban/Cape Town/Johannesburg freight. This is the process through that goes between the three cities and the chemicals and fast moving consumer goods and so on. I want us to move faster with that and to get going on that but they have, I think it is probably in the railways it the third priority. It is not the first or the second and that's the concern I have is that there is not enough work being done to solve that…but because these things are hard to turn around, I would like the people who are busy with it to stay with it. So I will be very upset if Brian goes and I am scared that this might be on the cards again. So I am hoping and praying… if he had to go, they have to appoint somebody from outside again and so on, if he goes. It is better to keep that management stable. Yes, if he goes and they put Siya in his job that might be okay, but I want them to keep that management stable. It has been working so let it go on working. That's the only thing that worries me…There are all those organisations and they altogether have also formed some part of a grouping. Many of the people I speak to in all of these associations they are very positive about this, all of them. I talk to the Shipper's Council, the Consumer Goods Council, all of them are positive about this.

They are not always positive about its feasibility, not all of them will be positive about Point 4. There are some really negative feelings about the ability to execute this but everybody would believe that it is important."

Norman Mbazima

"I think it is very simple. There is a lot of freight right now that moves by road and which ideally you could move that kind of thing by rail. It is really a question of where you've got bulk materials, heavy materials trying to put them on the train."

Follow-up question: What concerns do you have about the proposed shift? Do you know, or do you have any concerns as Anglo, as Kumba, about the shift?

Norman Mbazima

"No, not really, my concern is whether it is going to happen and how soon it is going to happen, what kind of processes etc. are being put in place to make it happen. So my concerns are more with implementation than it is with the concept of what we are trying to do. The implementation is not only about pieces of equipment etc., it is about people, how they think and so forth. So that's where my concerns sit."

Follow-up question: Do you think thus far they have already done a little bit to make the industry confident?

Norman Mbazima

"They have done a little bit but they still haven't done a lot. …we think that the will is there to make this happen. The coal sector for example. They announced that they are

going to do a 60 kilometre line to Majuba and that's positive, but in the end you have to see people with machinery sitting, trying to build the line – the construction team going there. To see the action on the ground, yes because all the planning we can talk about, all the good vision that we have we can talk about, but until you see somebody holding a pick or a shovel doing something..."

Frikkie Burger

"…the concerns that I personally would have about this would be whether, because right now the big concern is the fact that a container train takes three or four days, instead of a truck that goes overnight. It is basically the operations of the service provider, of Transnet, on this which the people are complaining about. I think that is the one aspect and the other one is some of the admin around it and that is clearing the paperwork, documentation in the port to get goods released and things like that that takes a bit of time. It seems like, especially an operator like a Transnet, will have to be very good with that bit and assist to make sure that the goods are released quickly so that the train can leave, those types of things. Where it seems like the private operators on the trucks have got a very good system to be quick with the release and for the truck to leave. So the concern from my side would be the operator, the state owned enterprise Transnet, can they do it efficiently…?"

Follow-up question: Ever since they started implementing that, have you noticed any improvement?

Frikkie Burger

"Look, in our business certainly we can see it because they are tracking the performance very much better I would say than previously. So literally there is a huge

focus on that because obviously the Marketing Demand Strategy is calling for some investments of R300 billion in rolling stock and all sorts of investment"

Follow-up question: It is a seven year strategy; do you think they will achieve much by the end of the seven year period?

Frikkie Burger

"If they implement yes, if they implement, but my concern is everything takes longer. They have now suddenly placed the orders for this huge number of locomotives. Some two weeks ago there was this big announcement but it is taking too long. Part of it, from our perspective, is an expansion of the iron ore export capacity but since we've been studying that, and they are still studying it, there is no final decision what to implement in terms of an expansion capacity. The latest now is 2022 for the expansion to happen. So it is already beyond seven years if you think about it. So a lot of these big decisions take very long for them to implement. That's why I am not too optimistic that they will be successful in seven years. No, it will take longer because they are too slow in their decision making, for sure."

Abrie Swardt

"Yes it could be but we are now talking about something that doesn't happen overnight; we are talking about a huge subject that takes an awfully long time to determine. And I think there's perhaps a third aspect and that is Transnet's own understanding about whether they should be in wholesale or retail. So they, certainly in my experience, operate cranes but with all due respect the specific service providers, the big ones especially, like Imperial and Barloworld, Unitrans have a different perspective way to logistics. They are truly integrated, they have that experience. I don't believe that Transnet has that experience."

Max Braun

"Yes, a number, because there is a lot that has to be done from the TFR side in terms of, it is just the right shot. There is the question of what priorities are they going to have, TFR."

Patrick O'Leary

"My concerns would be the cost effectiveness and efficiency of rail."

3. In your opinion is the shift from road to rail what the freight industry in South Africa needs now? Why?

Prema Govender

"…This is exactly what is needed now. It should, it was needed some years ago. Transnet will tell you that but I think we, if we don't do anything now we'll have a crisis on our hands with the growth in road freight…and congestion. But from an environmental point of view South Africa is signatory to the Kyoto Protocol and one of the target areas for reduced, reducing carbon emissions is in the transport industry and if we focus on freight, shifting freight to rail, then there would be significant reduction in greenhouse gas emissions. So it is certainly the right time from an environmental perspective. And the second reason for the right timing is that now is the time to bring about efficiency given the global economic downturn."

Dr Jan Havenga

"…two big things. The one is the fuel price and the other one is environment… the problem with the fuel price is, because our demand, because we would say but wait a minute, let's say something goes wrong and the oil price goes up five times, we would think but now the whole world has got a problem. The second point is the risk; it is an imported commodity that we require to keep our logistics industry going where we have 250 years' worth of coal in this country. So rather than running this economy on imported diesel, we can run this economy on our own coal. When you say it like that you just realise how critically important it is."

Norman Mbazima

"It is. It is what it needs now. South Africa, unlike many of the other Southern African countries, is quite endowed with rail infrastructure. You can go to almost any province and there's rail. If you go to Zambia where I come from, there is one rail from top to bottom and that's it, but South Africa has got quite an extensive rail network. Therefore, this kind of move should be really quite feasible, quite possible and South Africa has been building, as you know, a very good road system and for this to be balanced it will be the best way to ensure the long term viability of both systems. So I think now is the time."

Follow-up question: What in your opinion would be the government's role in this to make it happen? Do they need legislation to shift from road to rail?

Norman Mbazima

"I think it is a role to encourage rather than to legislate because when you get down to it there is a lot of regulation already about axle loads and things like that. So for me it is

encouragement. There is a lot of freight that is government freight already by itself. So they could be quite a catalyst in this by saying our own freight, this type of freight, is going to be on the rail. But I think more than anything else, what could make this work is the government's infrastructure programme on the rail. In other words, rehabilitate the rail, put in more locomotives, put in more rolling stock, and improve the efficiency of the general freight division of Eskom."

Follow-up question: Would you say that Transnet Freight Rail capacity at the moment is up to scratch to implement the road to rail?

Norman Mbazima

"No, I don't think so."

Follow-up question: Do you think they are going to be there in the next seven years that they say in their Marketing Strategy?

Norman Mbazima

"Yes. I don't think so now, but I think that we have seen huge improvements in Transnet in the last couple of years. In our line, in iron ore lines for example, we are struggling to keep up with them. In previous years they used to struggle to keep up with us. We would have iron ore and it would be sitting there at the mine because we can't get enough trains or enough wagons. Now it is the other way around. They are saying can I send another train tomorrow? No, no please we haven't got enough, which is fantastic, very, very good. So I think they will get there."

Frikkie Burger

“My view no, certainly not, they are not there because they don’t have the rolling stock, they don’t have the – I would say even some of their existing rail infrastructure in terms of rail lines, the maintenance of this, the yards and so on, is not where they should be. So they are working on that, they are investing in that, there’s a lot of focus on that but they don’t have, certainly as we speak today, enough locomotives. You can see that they are keen to do something but again, like I said earlier on, the other one is there decision making and the implementation is slow because these locos that they have ordered now will take another 18 months to two years to start implementing them. Then they might have enough locos but I am not sure because they will have to be very proactive.”

Abrie De Swardt

“We need to be able to integrate between the different modes but we also need to develop effective intermodal solutions, meaning that seeing this transfer of goods between modes we have to integrate more effectively between road, rail, the ports and we have to create the necessary inland ports. So it really has a logistic system that has to be fixed at a macro level, aspects such as, for example, whether to use Durban or Maputo as a port. I think there is this fear as a country that we will lose traffic to our neighbouring country and we should, because that is in some instances the right solution.”

Max Braun

“Yes, I think they are making progress but tell me, someone like me, which I would like to know more about is exactly where is the focus going to be… I think there are very,

very definite challenges for them in terms of getting ready for a major move towards general freight."

Patrick O'Leary

"…They also indicated that they had the money, but they are now gearing up, if you look at it they have made those big locomotive orders, they are gearing up their rolling stock. …now they have to move and gear up the sidings and all those types of things that have all gone to waste over the years. I think my concern is how fast they can do that and I don't think they are going to do it very fast. So I think we've still got a long way where road is going to be critical to the South African economy, road transport, but I do think the vision of Transnet is on the right track and it certainly seems like they have the money. …With Just in Time being the system, companies need those goods now and they want them fast and they want them on a cost effective basis and that is what worries me about rail; how fast can they get the goods to people compared".

4. **What are your views on its feasibility? What are your views on TFR's capacity to implement the road to rail?**

   Follow-up question: In today's business environment time and speed is of the utmost importance. In most cases people prefer to pay more for faster and more efficient services. To what extent can freight rail gain competitive advantage in that regard?

Prema Govender

"Competitiveness would be a key issue, I think. But I think Transnet's got the capability to, to do it. However that being said they have to do certain things internally to get up

and do it more on a, more, on a more, competitiveness, competitive based. Certainly those three things I said to you. Security, time and cost would be the basis on which Transnet would, would, feasibility would succeed. And they're going to show that to industry. I think they need to, to do that. Institutionally they're not there yet. They got to do certain things to bring in the kind of skills. One that gives competitive edge which they still think more in terms of a government perspective rather than a, private sector perspective in terms of cost and, and return. That being said the skills I've seen then, engineering skills are there, there but the business skills need to be improved. Transnet's got good strong management skills but strong management skills from a perspective of administration. I think they have the capability…if they run it more on business terms then, then they would get, they will quite well…but they need to look at it in an integrated transport perspective. And then be able to work out the logistics."

Follow-up question: Do you think they will be there within the seven years of the strategy?

Prema Govender

"Well they set the target for seven years then. Yeah and they should, and I think with the, the chief executive of Transnet putting pressure on there, I think he's a good guy. I think he's got the leadership capabilities. So I'm positive in that sense. It just comes back down to the operational level and where, where they'll be able to roll it out."

Follow-up question: Is there a need for government to pass a piece of legislation instructing the shift from road to rail?

Prema Govender

"No. I think market forces dictate that. I think that might be the worry around regulation, too much regulation and then, it can strain the economy."

Dr Jan Havenga

"I think it is getting there. I was extremely negative 15 years ago. In the late '90s I was very, very negative and I was negative up to when Maria Ramos took over in the Transnet side. I think when Maria Ramos took over in the Transnet side the management at TFR itself – I think it was still called Spoornet then – was still a little bit shaky and there were some issues and problems. I think that has improved vastly in the last five years or so, I think especially from 2006/2007 it has really improved and I talk to the people there, I see a massive focus on making this work. They believe to invest now again in engineering skills. They are bringing the railroad engineering type of skills back into the railway. So I think in many respects they can make it work and I already see. …You know the railways for many years, probably for two decades, they tanked up at 180 million tons. They could never get beyond 180 million tons, that was sort of the limit. So, all the growth in transport was taken out by road. That has suddenly jumped to 200 million tons. Just 180 million and suddenly 200. So that's a massive growth and I see improvement on the coal line, I see improvement on the iron ore line. In the last two or three years there has been a huge amount of positive reporting, from zero to Hero. …I think the only thing that we need to resolve in this country is the whole story about gauge, standard gauge and narrow gauge. …But because these things are hard to turn around, I would like the people who are busy with it to stay with it. So I will be very upset if Brian goes and I am scared that this might be on the cards again."

Follow-up question: Until now, do you think the industry is still a bit reluctant, still don't have enough confidence in the way to come?

Dr Jan Havenga

"No…I think it is improving a lot and I think it is like any exponential type of thing. It is extremely low but from a very low base I can see much more positive but it takes times…but it will take people time to realise that, but it is getting there. It is better than three years ago, much better, there's no doubt."

Mr Norman Mbazima

"It has a very good chance of being reliable. Why do I say that? Firstly I did say that they have the infrastructure in terms of the rails and their ability to go to the industries and to go to all the provinces etc. etc. That's a very good starting point to be able to effect this. Secondly, as I said, Transnet itself has become more efficient and more forward looking and better financed, etc. etc. So I think the capacity to be able to do this is good. Thirdly, as I said, it's manatox. So if you can get your goods from X to Y as quickly and at the right cost, you will take that route and especially for bulk things. Moving metals for example, you must do so and it makes sense. So if the economics work and the logistics work it is going to be successful."

Frikkie Burger

"They will be but it will be on, I would say, delegated point-to-point routes, Johannesburg to Durban, maybe Johannesburg/Cape Town, specific routes. I don't think, as a general statement, they will run between a small town here and a small town there. I doubt whether they will do it but big centres where they have big distribution yards where they can handle bulk containers, I think that can work and I think they will be because that is one way in which they can do it fairly easily. I get the impression that there's a political will but also a company will within Transnet to do that. So I have faith

that they will do it but partially. I don't think they will do it fully, as general let me say, all over the so-called general freight business rail network. They will do it on dedicated corridors in my view."

Abrie Swardt

"We know it isn't. Why would they be investing all this money in buying new locos and maybe it is not the only game…It is not only locos, it is rolling stock and it is everything else…"

Max Braun

"I don't think it is an advantage at all…for me to put it down again, collect it, correct it and deliver to wherever it is going, pick it up and put it down again and it is not as easy as delivering from door-to-door in a commercial vehicle or truck. So we'll have to see…Integration and collaboration strategies…well something is very positive and very definitely happening there. By receiving an MoU with the Imperial Group and the Barlow Group logistically and I think that is the way in which one needs to look at Rail's comeback into freight because this is looking at an intermodal concept…"

Patrick O'Leary

"They don't have any advantages I don't think because at the moment it doesn't come anywhere near road. …We have got to really get our transport systems very competitive and that means an intermodal co-operation between various transport modes. …If they can get it in place and we can get the intermodal going but they've got to get their rolling stock up and running, it has got to be efficient, the sidings have to be efficient and their staffing has to be efficient, and of course their costs have to be

competitive. …You cannot actually get it as fast as road, it is impossible and that is where intermodal co-operation can come in, such as the Railroader.

5.4 Assessment of TFR's capacity

5.4.1 Introduction

According to the Development Bank of Southern Africa (2012) Transnet Freight Rail's (TFR) Performance has been declining which has caused a detrimental impact on the economy. To address this crisis, government, through the Department of Transport, decided to intervene by developing the National Rail Policy (still a Green Paper), which amongst others calls for a shift from road to rail. To this effect, TFR, as the National Rail Agency, developed the MDS specifically to revitalise the current model of freight rail transport, to narrow the gap between what customers demand in terms of freight to be transported and to ensure that the rail system has the capacity to provide such a service (Development Bank of Southern Africa, 2012).

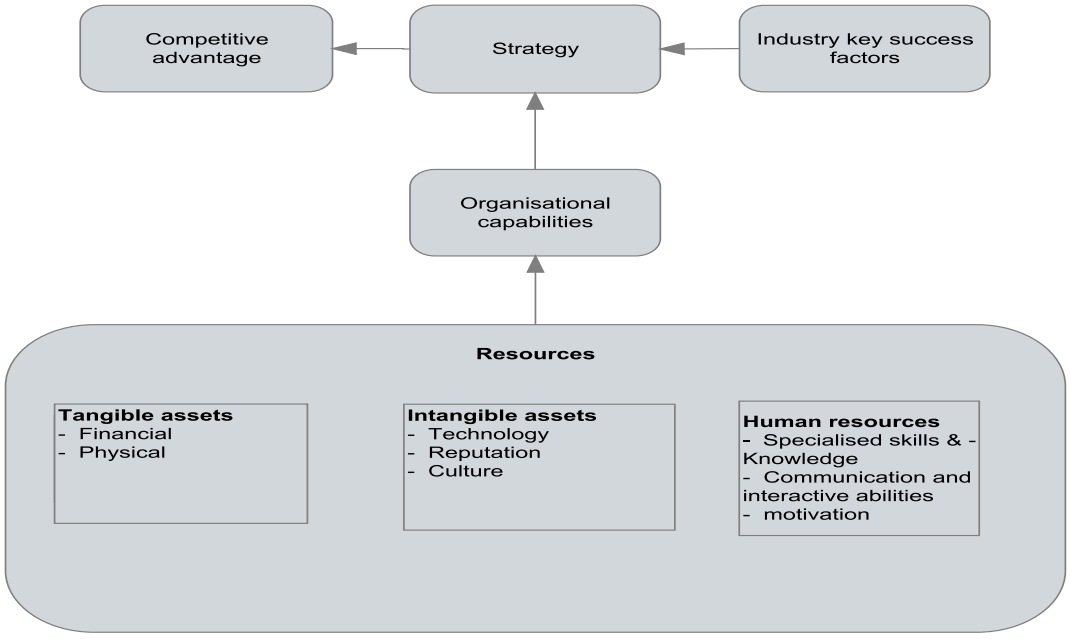
In the preceding section the researcher reported on the results of interviews which were used as a tool to collect primary data to answer the research question.

In the following section the researcher discusses an independent investigation held into TFR's capacity to assess its ability to successfully implement the road to rail programme. This was done in order for the researcher to assess TFR's ability to become efficient and competitive within its industry. The investigation entailed a detailed assessment of both the external and internal environments of TFR. For the purpose of this research the researcher decided to use three models, namely the Relationship between Resources, Capability and Competitive Advantage Model, Porter's Five Forces Model and the Overall Model of Change.

5.4.2 TFR's resources and capacity

According to Fenton-O'Creevy and Stapleton (2007) all organisations possess unique bundles of resources, but it is how these resources are used that determines their competitiveness. The RBRC&CA model was used to establish what resources TFR possesses and whether they guarantee competitive advantage when applied. A company's resources consist of tangible and intangible assets, as well as human resources. Together these form the capabilities of the company and can be used to develop strategies with which to achieve competitive advantage (Pierce and Robinson, 2003).

Figure 3: The Relationship between Resources, Capability and Competitive Advantage Model



- Organisations' Capabilities

According to Transnet (n.d.), Transnet Freight Rail operates using a scheduled railway philosophy. This encompasses operating trains in accordance with an Integrated Train Plan (ITP), which is appropriately resourced to optimise capacity through careful deployment of assets to extract efficiencies, with the aim of improving operational efficiency and customer service delivery. They also make use of the principle of extraction of operational efficiencies towards globally accepted benchmarks. This is embedded in all operations practices, using the Lean Six Sigma philosophy aimed at continuous improvement, value extraction and operational excellence.

The Transnet Rail Engineering (TRE) also does TFR's research, repairs, building and maintenance. The School of Rail is a well benchmarked, adequately designed and fully equipped to train specialists unique for rail. It has also the capacity to train their own train drivers and train control officers (Transnet Annual Report, 2013). The SoR is able to provide various specialised rail related training, including signalling training, which is the only one of its kind in the whole of Africa, ensuring a competitive advantage in relation to other African countries. This is all done with the resources they possess, as stated in the paragraphs below.

- Tangible Resources

Financially, TFR's revenue for the year ending March 2013 increased by 15,0%. The MDS resulted in these strong financial results, with revenue of R50.2 billion and a record level of R28,5 billion capital investment (Transnet Annual Report, 2013). R201 billion was injected into Transnet Freight Rail towards its MDS in order to expand its rail infrastructure and create capacity, as well as increase cargo volumes (Freight Rail, n.d.). R18,277 million was allocated to improve the export operations and services of iron ore and manganese plus several other investments.

The physical resources of TFR are composed of 20 500 km of freight railway network, including 1 500 kilometres of heavy haul lines for export coal and export iron ore and 3 928 kilometres of branch lines; over 2 255 locomotives; 71 036 wagons; 132 engineering depots; seven factories; and various offices spread all over the country. However, not all of the depots are conveniently and strategically located in areas where most activities take place (Transnet Annual Report, 2013). In addition to these resources, TFR is increasing capacity by purchasing new locomotives. They have recently placed an order for 1064 locomotives worth billions of Rand (Munshi and Allix, 2014). Of these locomotives 359 and 232 are from China South Rail and China North Rail respectively, whilst the other 240 and 233 will be supplied by global manufacturers, namely Bombardier and General Electric respectively. Munshi and Allix further stated that Transnet's aim with these orders is to increase the general freight volume from 82.6 million tonnes to 170 million tonnes by 2019. Mathlodi Senyatsi observed that Brian Molefe, Transnet's CEO, makes sure to constantly brief the public of their commitments towards improving capacity. Furthermore, Ravi Naire indicated that not only is capacity in terms of additional locomotives being addressed, but TFR is also prioritising infrastructure rehabilitation and upgrading for their long hauls.

- Intangible assets

Technology – The Transnet Rails Engineering (TRE) unit is equipped with capacity to conduct Transnet's own research in various areas of freight rail. There is also a sub-unit within the School of Rail which is responsible for benchmarking against various countries, including but not limited to, China, Brazil and Russia. The School of Rail also develops talented employees with specific and unique technical and scientific skills; and it is also equipped to provide numerous training courses in the telecommunications field, including radio, transmission, cabling training and computer software field (Annual Report, 2013).

Reputation – TFR carries the same brand and logo as Transnet. The notion behind the brand is led by growth, innovation, vibrancy and passion, which represent the

stakeholders, society and employees who are the reason for TFR's existence (Transnet Freight Rail, 2013). Having had the opportunity to interview some of the top management of TFR, it is apparent that they take the meaning of their brand with pride.

Culture – TFR introduced various initiatives to ensure a change or improvement in organisational culture to enhance employee satisfaction, sense of belonging, responsibility and accountability (Freight Rail Today, 2012).

- Human Resources

Specialised skills – TFR's School of Rail ensures that the required human resources are equipment with the necessary specialised skills through training and development. However, there are skills constraints in engineering, project management and technical expertise according to the Transnet Annual Report (2013). Furthermore, there are also shortages in operational critical skills, including strategic safety management, risk assessment, auditing and accident investigation (Furter, 2013).

Communication and delegation – The Group CEO (GCEO) appoints the Group Executive Committee (GEC) in consultation with the Board, which is responsible for coordination and co-operation within the Transnet Group, as well as for planning and monitoring. The GEC consists of eight committees. In addition to the GEC each operating division has its own executive committee, consisting of the CEO of the division, the CFO and all the general managers.

The Board delegates authority to the GCEO who in turn delegates to the GEC and other governance structures within the organisation. This delegation of authority applies to all employees, including the operating divisions. There are certain matters, however, which have been explicitly reserved for the Board. The CEO of TFR is delegated with the day-to-day running of TFR (Transnet Freight Rail, 2012).

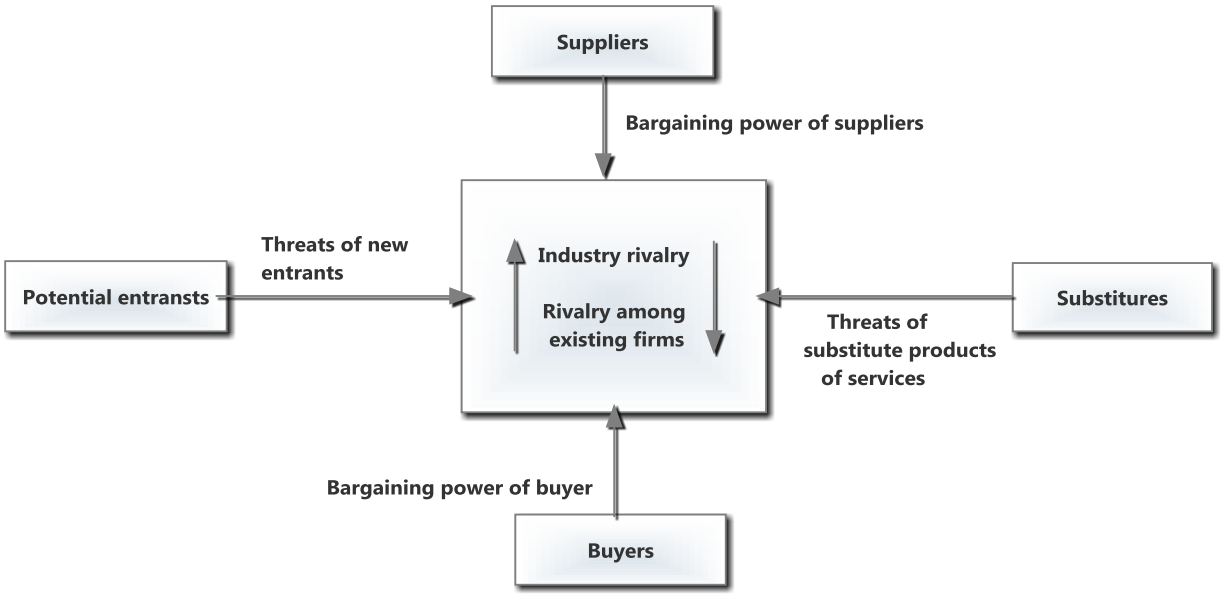
Motivation – There are programmes to reward and recognise good work as motivation for employees (Nair, 2014).

5.4.3 Competitive advantage

In order for TFR to be successful with its road to rail implementation programme it needs to be efficient, competitive and sustainable. The researcher used Porter's Five Forces Model to assess TFR's competitive advantage in its industry. This model suggests that a company's industry consists of new entrants, suppliers' power, buyers' power, threats of substitution and competitive rivalry. By assessing the powers of the difference variables as provided in Porter's Five Forces Model, one is able to assess the strength of competitiveness of a company in relation to its industry and whether it has any chance of success and profitability (Bakhru, 2005**).** As such the application of this model on TFR revealed the following results:

Figure 2: Porter's Five Forces model

Source: O'Creevy and Stapleton (2007)



- Supplier's power - It was established that TFR depends on the TRE, another operating division of Transnet, for almost all its operational requirements (Transnet Freight Rail, 2012). However, TFR also depends on Eskom for electricity and SASOL for fuel (Creamer, 2010).

- Threats of new entry – Entry barriers in the freight rail industry are very high. Building infrastructure and purchasing rolling stock is costly and does not attract private investors due to the amount of funding required, which is why Transnet is state-owned. There are no other freight rail companies in SA which guarantees TFR a monopoly, however road freight is a strong competitor of TFR's in the freight industry.

- Competitors / substitute – TFR is a monopoly in terms of being the only freight rail company in SA, however it is not a monopoly in providing freight transport; TFR's inability to provide sufficient capacity to meet the demands of the freight industry for

long hauls and bulky goods gives room for road transporters despite their higher cost. There is no substitute except for the road transporters.

- Buyers' power – Buyers demand cost effectiveness and efficiency. Despite TFR's prices being lower than roads, customers will go with roads due to the inability of rail to provide sufficient capacity.

- Rivalry amongst existing firms – The fact that road freight is currently competing with rail transporting rail friendly cargo is considered to be rivalry. Road has the advantage over rail on speed.

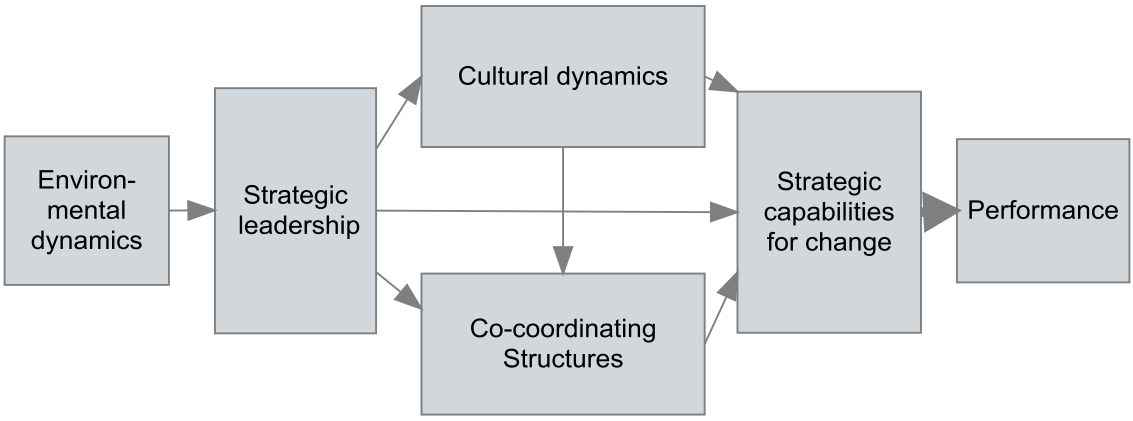
5.4.4 Change

The implementation of the MDS will inevitably bring changes, some by choice and others by the nature of the process. TFR's readiness for change will be assessed by looking at its organisational culture, structures and communication flows.

According to Jarrett (2009), change should be in the individuals' interests as well as the organisation's but will only be successful if all involved are prepared for it. The researcher used the Overall Model as a tool with which to investigate the readiness of TFR, as suggested by Jarrett. This was to establish the problems associated with the changes in TFR which were necessary for its revitalisation, and whether these changes will in fact stick.

Figure 3: The Overall Model

Source: Jarrett (2009)



- Environmental dynamics – TFR consists of both external and internal environments. Change at TFR was triggered by the demand in the industry for additional capacity of freight rail for bulky and long haul transportation. TFR responded with the MDS in order to stimulate economic growth, as mandated by government through the National Rail Policy to revitalise the freight rail through the MDS (Transnet Freight Rail, 2012). For the MDS Y to be effective, TFR needs to ensure that it creates appropriate structures which are equipped with a conducive culture, which will form a strategic capability with which to improve performance and ultimately competitive advantage (Jarrett, 2009).

- Strategic leadership – The environmental dynamics of TFR compel its management to exert strategic leadership to manage its cultural dynamics, as well as to coordinate its structures with which to build competitive advantage and achieve the objectives of the MDS, which is ultimately economic growth.

- Cultural dynamics – The culture of TFR is described in their culture charter as a vibrant family-like culture, with a focus on mentoring, nurturing, and doing things together, as well as being controlled with a focus on efficiency, stability and doing things right (Transnet Charter, 2008). These characteristics resemble those of Clan and

Hierarchy types of cultures. The combination of these two types of culture results in high morale amongst employees and efficient service delivery.

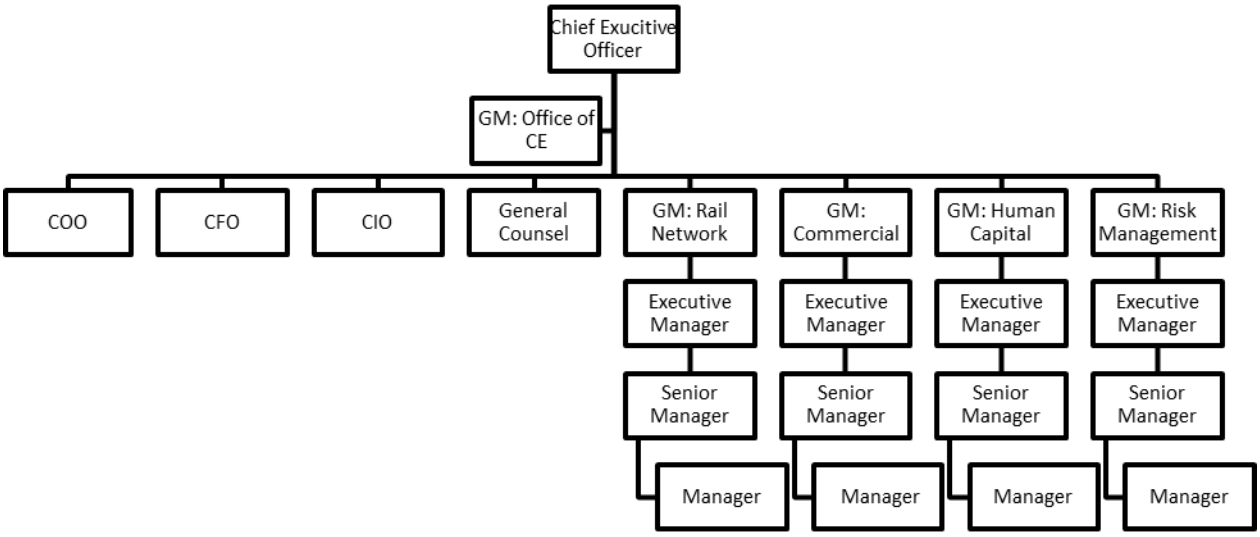
- TFR Structure – In terms of Schedule 3 of the Public Finance Management Act, 1998 (PFMA), Transnet and its subsidiaries, including TFR, are classified as National Public Entities. Its governance structure is composed of the following:

The Board – Transnet has a Board of Directors which consists of 15 members, two of whom are executive directors - the Group Chief Executive Officer (GCEO) and the Group Chief Financial Officer (GCFO). The members are appointed by the shareholders' representative - the Minister of Public Enterprises. It consists of five committees which also serve as the control structures of the organisation.

The Group Executive Committee – The GCEO appoints the Group Executive Committee (GEC) in consultation with the Board, which is responsible for coordination and co-operation within the Transnet Group and for planning and monitoring, This GEC consists of eight committees. In addition to the GEC, each operating division has its own executive committee consisting of a CEO for the division, a CFO and all the general managers.

Delegation of Authority Framework – The Board delegates authority to the GCFO, who in turn delegates to the GEC and other governance structures within the organisation. This delegation of authority applies to all employees, including the operating divisions. There are certain matters, however, which have been explicitly reserved for the Board. The CEO of TFR is delegated with the day-to-day running of the company.

Figure 4: Governance structure of TFR



5.4.5 Development of codes and themes

After becoming familiarised with the data collected through the interviews, the researcher developed the initial codes by organising the data into meaningful groups. An example of this process is illustrated in table 1 below.

After all the data was coded and collated, the codes were sorted into potential themes. This process involved identifying interesting aspects in the data items, including repeated patterns and different relationships between codes, between themes, and between different levels of themes. This process is illustrated in figure 1 below.

Having developed the first level of themes, the researcher proceeded to identify which could be combined and which could be held individually. This led to a final set of themes as illustrated in figure 2 below: The process followed is listed as Appendix C.

This table contains a portion of the complete table with the developed codes and themes. The complete table is not included in this report due to its size; however it can be made available should it be required.

Table 1: Examples of few extracts with codes and themes

• "…so yes some kind of a mandate that says to us, you know, from this day government has pronounced that certain commodities.	Need for legislation	Legislation
• "One of the major challenges for TFR is capacity"	Capacity is a drawback of rail	Capacity
• "...and I think an indication of that is already that there are Memorandums of Agreement, or Understanding, between both the Imperial Group and Transnet, as well as Unitrans and Transnet…"	Existence of collaboration of rail with road operators	Competitiveness Feasibility
• "My concerns would be the cost effectiveness and efficiency of rail because at the moment the whole manufacturing system around the world has changed."	Concerns about efficiency and cost effectiveness of rail	Feasibility

• "They don't have any advantages I don't think because at the moment it doesn't come anywhere near road."	Rail has no advantage over road	Competitiveness

Figure 5: Initial thematic map showing seven themes

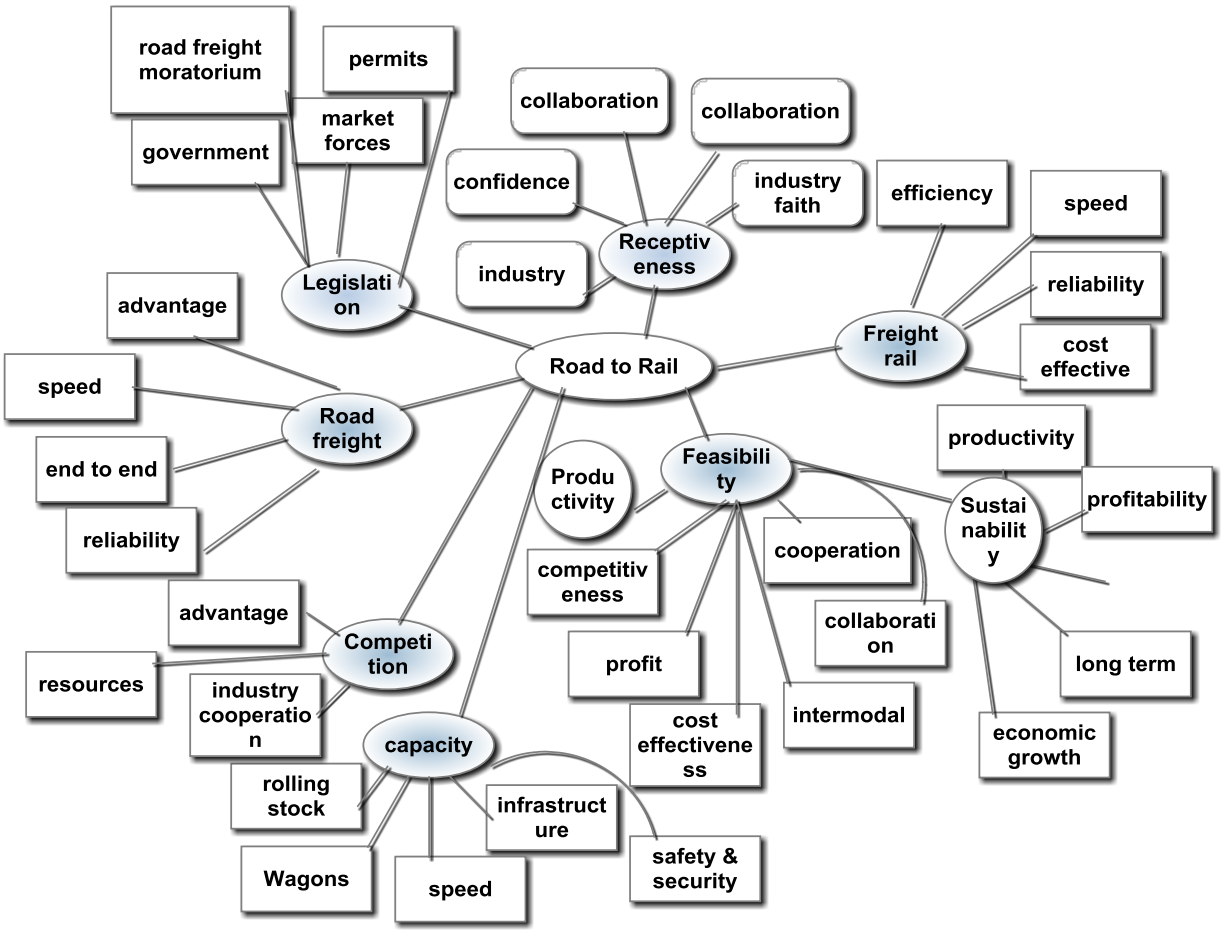
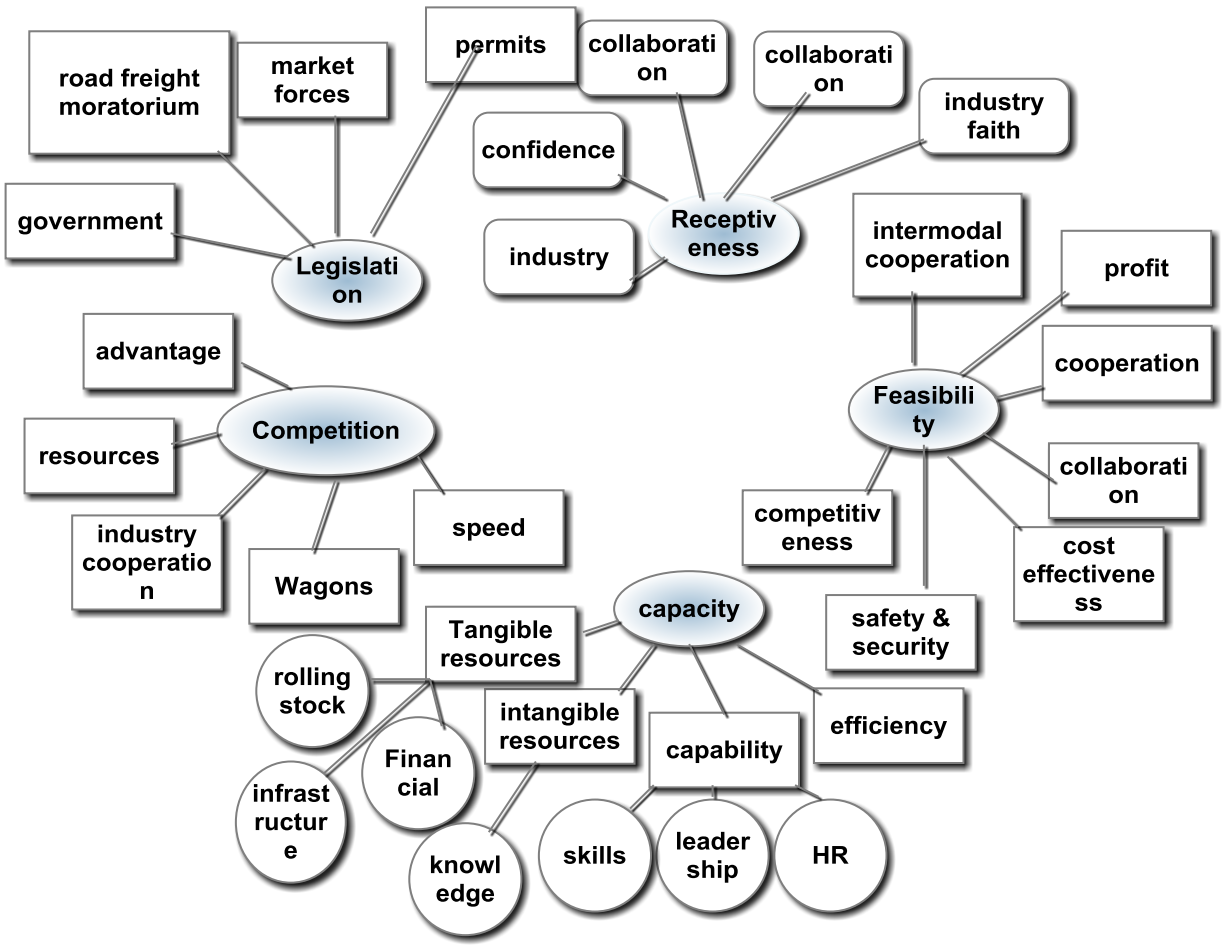


Figure 6: Developed thematic map showing five main themes



5.5 Finding and analysis

5.5.1 Introduction

For the analysis, the process listed in Appendix C was followed. After conducting the interviews the data was sorted and organised. Thereafter the extracts were coded, themes were developed from the codes and a theme map was also developed. This resulted in five themes, namely: legislation, receptiveness, competitiveness, capacity

and feasibility. This was followed with the assessment of TFR's capacity. For the purpose of this research these themes represent the following:

1. Legislation: The views of different interviewees about the need for legislation to implement the road to rail programme.

2. Receptiveness: The feelings and perceptions of the road to rail programme in the freight industry and the willingness for integration of railway with other transport modes

3. Competitiveness: The competitive position of TFR based on its resources and capabilities in relation to other freight operators in the freight industry.

4. Capacity: The current and future status of TFR's tangible and intangible resources to implement the road to rail programme.

5. Integration and feasibility and integration: The willingness to integrate rail with other transport modes and the possibility of the success or failure of the road to rail programme.

5.6.4 Analysis of the interview responses

Legislation

In responding to this question, two interviewees in Group 1 (Ms Senyatsi was the exception) indicated that there is no need for a legislative instrument to dictate the shift from road to rail. The same question was also asked to the other set of respondents as a follow-up question, who stated that they do not believe a legislative instrument is necessary, but rather the shift should be left to market forces. Mr Prema Govender, for

example, stated that too much regulation can strain the economy, whilst Mr Norman Mbazima was of the view that the role of government in this regard is to encourage rather than to legislate.

All interviewees from Group 2 expressed reservations against any legislative instrument being used to implement the road to rail; they suggested that it should be left to market forces using government's encouragement rather than legislation. The author observed negative facial expressions at the mention of legislative instruments, and is of the view that the introduction of such instruments would have been destructive, as the industry would have seen the shift from road to rail as more of a forced and imposed shift in favour of government's beliefs and wishes. This would have caused more harm than good for TFR.

It therefore became clear to the author that the roll-out of the road to rail is intended to be left to market forces. TFR is also of the view the move from road to rail should be left to market forces and not legislated. They seem determined to revitalise the company in order to achieve efficiency, competitiveness and sustainability. The aim is to allow the industry to gain confidence in freight rail and eventually move to rail over time.

Furthermore, from the interviewees it is clear that South Africa is in desperate need of an efficient, reliable and sustainable freight rail system, as they all expressed the need for one and gave reasons for this. Amongst the reasons provided include the fuel price which makes everything more expensive especially when the majority of goods are transport by road; to road damages and congestion; as well environmental issues and of the global economic downturn. All of which, when ignored, can lead to serious economic disaster.

Receptiveness of the road to rail in the freight industry

In responding to this question all three interviewees in Group 1 showed confidence and a sense of satisfaction that there is no real objection with regards to moving from road to rail. TFR and government seem very positive and confident that this is not only what the industry but what South Africa needs. They also seem realistic enough to admit that a lot still has to be done in terms of capacity and efficiency in order to convince the industry of TFR's new reliability. However, the author is of the view that TFR and DoT are not fully aware of the extent of scepticism the industry feels around the feasibility of the implementation of road to rail. From what the respondents in Group 2 explained, the industry at large welcomes the idea of road to rail and they believe it is overdue. They believe and seem excited that a lot is now happening, in terms of focus and investment to increase capacity. However they are still not confident that TFR will pull it off when it comes to speed, efficiency and reliability within the seven years stated in the MDS. The author is of the view that failure to fully recognise and understand these elements may lead to overconfidence on TFR's and DoT's parts, which will lead to a lack of confidence in the industry and jeopardise the success of road to rail.

All of the interviewees in group 2 were of the view that the industry at large is quite supportive of the shift from road to rail with the exception of one interviewee. From this it is clear that the industry, including the road freighters, recognise the need for this. This recognition stems from necessity, says Dr Jan Havenga, although not everybody likes the road to rail approach, people are beginning to feel positive about it now. This is borne out of necessity because of issues the people of this country have been predicting for many years and therefore only very few people in the country do not agree with the move from road to rail.

Furthermore, as previously explained, all interviewees in group 2 the expressed keenness with regards to the shift from road to rail road. The author observed the confidence with which most of the Group 2 interviewees expressed with regards to

TFR's ability to implement road to rail. However, whilst they indicated the need and accept the idea of shifting from road to rail, there seems to be some degree of scepticism regarding its feasibility. The industry believes that Transnet is making good use of the R201 billion dedicated to revitalising freight rail, that they have strong managerial skills from an administrative perspective and has made some progress in terms of capacity thus far, however the feeling in the industry is that TFR tends to think more in terms of a government perspective rather than a private sector perspective. They also feel that although TFR has already made some improvements and are better now than three years ago, it is still not enough to instil confidence in the industry when it comes to efficiency, cost effectiveness, security and reliability. The author could sense from all the interviewees that this is the general feeling within the industry, hence the scepticism. The industry's main plea is for efficiency, cost effectiveness and reliability.

Competitiveness of rail

In terms of rail's competitiveness, Ms Senyatsi seemed confident that once the issue of capacity is addressed with regard to infrastructure and rolling stock, TFR should be able to achieve competitive advantage. Ms Jones added a different view around speed vs. safety and the various benefits of freight rail for long haul and bulk. She argued that for TFR safety is their main concern, not necessarily speed. Ms Jones further explained that speed becomes less of a disadvantage if one compares the higher tonnage that rail is capable of carrying at a much lower cost and with less road damage than road freight which is only able to carry a limited amount of goods faster but with much higher cost and higher road damages. She proceeded to explain that it is not only costly for the owners of the goods but for South Africa as a whole, due to road damage and escalation of prices. Ms Jones mentioned the example of the train accident in Italy which derailed as a result of speed.

However, whilst safety is a very important element in terms of transportation in general, the industry seems to expect much more from rail than just safety as a main priority. As

explained in the preceding paragraphs, the industry worries about efficiency, cost effectiveness, security and reliability. In order for rail to be of commercial value for them it has to offer those elements. This was supported by almost all the interviewees in this research. It is clear from these interviews that the industry's need is for a combination of efficiency, cost effectiveness, reliability, safety, security and speed; not just one aspect. Failure to recognise this may lead to a mismatch of rail supply and demand, thereby limiting the potential success of the shift from road to rail.

Capacity

All interviewees seemed confident that the issue of capacity improvement in terms of locomotives is being addressed. In her response, Ms Senyatsi indicated that both government and TFR are making progress in terms of capacity and alluded to the fact that a number of locomotives have already been ordered, some of which have already been delivered to TFR and orders for additional locomotives have just been placed. Mr Nair added that it is not only capacity in terms of additional locomotives being addressed, but TFR is also prioritising infrastructure rehabilitation and upgrading for their long hauls.

Moreover, the industry seems very aware and positive with regard to the investment TFR is making toward adding, rehabilitating and maintaining the rolling stock and infrastructure. This instils confidence in the industry.

Furthermore, the assessment of TFR's physical resources revealed they are fairly well off financially. In terms of the physical resources, they also seem well equipped. It has impressively long railway lines and a huge number of locomotives, however they are not sufficient to meet the demand for freight rail and not all of them are in operational condition. Although this issue is currently being addressed, with locomotives being purchased, rehabilitated and maintained, it will take time until all rolling stock are

delivered and in good operational condition to become effective and considered as a source of competitive advantage for TFR.

In terms of human resources, the assessment revealed that, in the main, TFR has no major problems with human capital resources; in fact it has great organisational capabilities. However, its organisational structure seems long and complex. This results in centralised and slow decision making process and does not empower management at lower levels to take initiative and make certain decisions. Instead, it gives them little responsibility and accountability, which enhances delays and time wastage. Furthermore, the shortage of operational critical skills in strategic safety management, risk assessment, auditing and accident investigation is a major risk for an organisation that is striving to improve efficiency.

Technologically TFR should not have major challenges because TRE and SoR, amongst the divisions of Transnet, ensure that training and research are performed in-house as and when necessary (Annual Report, 2013). This can be regarded as a source of competitive advantage.

In terms of TFR's intangible resources, the author observed that its top management view the image and meaning imbedded in their logo with pride. However, it became evident to the author during the various interviews with the industry that being a state-owned entity, it has become marked by the general perception that government entities are slow in decision making and are inefficient and unproductive. Such a perception has damaged the image of TFR and enhanced scepticism about the feasibility of the move from road to rail in the industry, especially during this stage of the turnaround programme.

With regard to competitive advantage, when applying Porter's Five Forces TFR seems to have an advantage within its industry. This is because it is a monopoly in terms of being the only freight rail in the country; there are very high entry barriers to the freight rail industry; the demand for the services is very high; and there are no competitors other than road freight. However, that is not sufficient to achieve complete competitive

advantage in order to become successful with its road to rail implementation programme, TFR also needs to be efficient, cost effective, reliable and sustainable. At this stage, none of these elements can be attributed to TFR and therefore there is no competitive advantage.

In terms of change, the assessment revealed that there are signs of low morale. This happens when resistance to change is present due to a lack of awareness. This could be detrimental for an organisation going through a major turnaround implementation strategy.

Feasibility and integration

All respondents in this category recognised the need for integration between TFR and its sister companies, such as the National Ports Authority and the road freighters, as well as logistic service providers. The various agreements with some of the road freighters such as with Barloworld and Imperial Logistics are amongst some of the examples which will make the road to rail to succeed. Like other interviewees, Ms Jones also expressed the need to keep close relationships with counterparts and working together. This is in line with what Amos (2009) suggested, i.e. that railway freight managers should rather assess the opportunities not to replace, but to co-operate and partner with other modes, as well freight forwarders and logistics services providers. Failing this they will become disconnected from the final markets, and become price-takers from middlemen.

Furthermore, despite integrated alternative to road and rail competition was never developed due to the rapid deregulation of freight transport in South Africa, there is now a desire and efforts from TFR, DoT and the industry to change that. In fact, private partners also expressed interest in participating in such a solution through both direct investments and cooperation using licensed technology such as RoadRailer. Therefore, TFR's recognition of the need for collaborative relationships will not only guarantee the

successful implementation of road to rail, but also guarantee itself a chance to become efficient, reliable, sustainable and successful in its industry.

Despite the scepticism with regard to efficiency, cost effectiveness, speed and time, all interviewees believe that the road to rail project is doable, that it is desperately needed in the South African economy, and that Transnet has the ability to make it happen. Moreover, the industry is also very realistic in understanding that it is not an overnight game; it is a hard task to turn around and will take a lot of time, focus and effort to get to where freight rail is intended to be. Although according to the interviewees TFR is institutionally not yet where freight rail needs to be, the author observed a degree of faith from them that should both the government and TFR continue to focus and invest in freight rail as they started to do with the MDS, as well as take a more business-like approach, they can pull it off successfully.

5.6.5 Summary

It is evident that TFR has capacity challenges and there are concerns from the industry regarding the feasibility of the implementation of the road to rail programme. However, there is evidence that they are turning the situation around. There is a huge degree of effort and commitment from DoT and TFR to revitalise freight rail. There is also a high level of faith, confidence and support from the industry to make the road to rail programme work as well as to integrate with rail. This is a positive sign that road to rail can become a success.

CHAPTER 6: CONCLUSION

The objective of this research was to establish whether the implementation of the road to rail project is feasible. To find the answers, the author conducted research using unstructured open ended questions to collect primary data and conducted a documentation review to independently assess TFR's capacity to implement the road to rail programme. This was done by assessing and analysing both TFR's internal and external environments using appropriate models.

Having interviewed various stakeholders in the freight industry and having assessed TFR's capacity, the author was able to establish where TFR is now and where it is going in terms of the road to rail programme.

When assessing TFR's capacity, the author observed that TFR put a lot of effort into turning the organisation around using the MDS as a tool. Despite this programme and schemes in the Human Capital unit, not much is being done in terms of raising awareness to guide employees through the process. As a result, TFR still experiences various challenges, including low morale, job insecurities, resistance to share information, and high absenteeism attributed to sick leave. This problem was raised by TFR itself (Freight Rail Today, 2012).

Furthermore, whilst much effort is being put into improving and increasing efficiency and capacity, commitment towards changing the organisational culture is very low. The author is of the view that, because the MDS actions go beyond the scope of the existing paradigm of TFR, it requires members of the organisation to spread and share their core beliefs or their accepted ways of operating. If not, resistance to change becomes evident and as such, the strategy becomes jeopardised causing strategic drift (Schoemer, 2009).

In terms of operations, this research revealed that freight rail's state of decline and lack of competitiveness is not necessarily due to poor management alone. As Dr Havenga

stated, it was due to various factors including the constituents of the previous government who wanted railway lines to connect to each and every agricultural farm, the deregulation of the freight transport in the 1980s; the lack of investment in freight rail for over two decades; and the lack of maintenance of infrastructure and locomotives. These had a detrimental impact not only on the freight industry, but to the economy of the country as a whole.

Furthermore, this research also revealed that Government recognises the challenges associated with the problem and is determined to turn the situation around through Transnet's MDS. To this effect, TFR has for the last two to three years been working steadily to improve capacity to achieve what is needed to revitalise freight rail and alter the state of decline by encouraging the shift from road to rail.

The author observed that the industry is very receptive to the road to rail programme, there is a great amount of focus and investment to revitalise freight rail, there is ample support from government, and South Africans want to see the shift from road to rail to become a reality. This was observed during the various interviews undertaken for this research and through government public pronouncements. However, the interviews also revealed that the stakeholders understand that the shift from road to rail is not an overnight project. It is widely accepted that it will take time, effort and financial resources. Adding and improving capacity and revamping the entire infrastructure will not necessarily guarantee efficiency, cost effectiveness and sustainability, or a successful shift from road to rail. TFR still has to achieve cost effectiveness, efficiency, safety, security, reliability, and global competitiveness. These are the elements which will determine competitiveness and sustainability for freight rail. Furthermore, speed and timing as well as door-to-door services are also important in freight transport, a strength that freight rail does not currently possess. The author concluded that when it comes to competitiveness within its industry, TFR will not be able to achieve. If TFR is to succeed, the best is to collaborate and cooperate with roads and other third parties, rather than compete with them.

Furthermore, during the capacity assessment the author also observed that TFR is experiencing a capacity shortage. It was also observed that TFR is vigorously addressing the problem through their Market Demand Strategy and has made good progress thus far. In addition to capacity which they are currently working on, they also have other resources such as capabilities and human capital to successfully implement the road to rail programme. It can therefore be concluded that, despite the various concerns, should TFR address these areas as per the recommendations in the preceding chapter, TFR can become efficient, reliable, profitable and globally competitive. It can therefore be concluded that TFR has a good chance of succeeding in its endeavours to shift from road to rail in the long run.

CHAPTER 7: RECOMMENDATIONS

In the preceding section it was concluded that TFR has a good chance of successfully implementing the road to rail project. However, there are concerns in the industry that need to be considered and addressed to ensure this. The following recommendations will assist TFR in their journey to success:

TFR efforts to increase the rail provision of capacity through the MDS should be sufficient for now and going forward to the next 20 to 30 years, as Dr Jan Havenga suggested during his interview. However, as the economy grows so will the demand for freight rail. TFR should therefore also start thinking and planning for additional gauge, broader tracks and building cases for a core network, especially between the three main cities of Johannesburg, Cape Town and Durban.

In terms of management, a turnaround of an organisation of this size with this extent of degradation will probably take longer than desired. It is therefore recommended that the current management stays on to ensure stability and continuous progress without interruption and delays. Furthermore, in striving for efficiency and profitability, TFR should think less in terms of a government perspective, and more like a competitive business in a free market system which is conscious about costs and returns.

TFR should involve intermodal collaborations though joint ventures and integration with other modes, as well as third party logistic service providers. This will enable them to improve market reach without increasing network length. Furthermore, TFR should also concentrate a lot more on collaboration and intermodal cooperation rather than striving for pure competitive advantage, which might not necessarily be possible to achieve. In fact, as Amos (2004) and Ilie (2011) suggested, integration is another way in which rail can respond to competition by seeking better connections with them rather than competing with them.

Because TFR‘s quest is for countrywide service delivery, there should be integration between rail operations and rail tracks. This requires that the branch and main lines be

seen as an integrated system and not in isolation. Therefore uneconomic branches should also be invested into because they serve as feeders for the main lines. In this regard, vertical integration - separation of infrastructure from operations, is ideal for TFR. However this industry consists of very few highly specialised and highly integrated role players which could lead to strong relationships, cooperation and quasi-reintegration. TFR should therefore be wary that this can also limit the role of market forces and inhibit competition. It is also recommended that TFR should only specialise in those fields where it can provide services tailored to the needs of customers at competitive prices.

In order to enhance cost efficiency, TFR should first investigate the totality of the whole railway activity; their traffic costing methods, pricing policy, future financial validity as well as their level of support for public expenditure.

TFR also needs interventions to introduce flexibility to accommodate smaller businesses to utilise the freight rail services for their consignments. This would encourage competition within the industry and enhance economic growth.

Furthermore, Government should create and encourage a regulatory environment that makes it easier to form public private partnerships. It should also encourage freight rail users to have more confidence in the freight industry and the South African economy, and invest more in their expansion programmes in order to enhance economic growth.

The DoT, in consultation with the Department of Finance, must take the responsibility for and ensure that appropriate user-cost to external costs and the cost of damages to the road infrastructure is fully recovered from commercial road vehicle users, without cross-subsidisation with private light vehicles.

Moreover, in terms of change it is recommended that, because of the inevitable changes derived from the implementation of the MDS, TFR must manage these changes accordingly. Using the Change Kaleidoscope Model will enable TFR to successfully diagnose such changes in order to manage them accordingly and ensure

the successful implementation of the strategy. Failing this, resistance to change will become evident and as such, the MDS strategy may become jeopardised.

It is further recommended that TFR should apply the cultural web model to spread awareness about change and ease the process of change resulting from the implementation of the MDS toward the shift from road to rail programme. This will reduce the existence of uncertainties and low morale while increasing efficiency and productivity.

The development of an effective change management plan designed to deal with all the factors including the resisting of change factors is of utmost importance and therefore recommended. Such a plan should include addressing the following communication concerns: how and where to access the necessary information, information about the project, how and why it needs to happen, and how it is going to affect everyone in the organisation.

Introducing the matrix structure would be beneficial for TFR as it will best support the implementation of the MDS. This structure emphasises closer horizontal as well as vertical linkages and collaborations between teams and individuals. This will ease decision making process and avoid the danger of bureaucracy, silos and ineffectiveness.

Furthermore, in order for the MDS to produce positive results TFR needs its own people to champion the strategy. TFR should therefore increase employee empowerment using the four organisational ingredients, namely: Sharing information about the organisation's performance with front-line employees, rewards based on the organisation's performance, knowledge that enables employees to understand and contribute to organisational performance, and power to make decisions that influence organisational directions and performance. This would empower TFR's employees to take initiative, shoulder more responsibilities and become accountable for their actions.

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APPENDICES

Appendix A: Table 2: Interview questions for DoT and TFR: Group 1

No.	Question
1.	The proposed policy speaks about the intention to move from road to rail, and I understand that TFR is embarking on a revitalisation programme to ensure that the move is successful, but how do you propose the shift itself to be rolled out? Is there going to be some legislative instrument which will prohibit the road transporters from carrying the freight naturally fitted for rail? If not, how? **Follow up question:** Do you think that, after all the upgrading and investment on locomotives the rollout could be left to market forces or rather a mandate from government?
2.	What kind of support and/or objections are you getting from the industry?
3.	In today's business environment, time and speed is of utmost importance. In most cases people prefer to pay more for faster and more efficient services. To what extent does freight rail can gain competitive advantage in that regard?
4.	Is the implementation of road to rail going to be successful? What measures are in place to ensure sustainability and reliability of freight rail in the long run?
5.	One of the major challenges for TFR was capacity, where are you now in terms of capacity, and what progress have you made since the implementation of MDS

6.	What integration strategies is TFR implementing?

Appendix B:

Table 3: Interview questions for the industry: Group 2

No.	Question
1.	How receptive is the industry about the road to rail programme and how willing do you think are they prepared to integrate with freight rail?
2.	What concerns do you have about the proposed shift? Do you know of any other group in favour or against this shift?
3.	In your opinion is the shift from road to rail what the freight industry in South Africa needs now? Why?
4.	What are your views on its feasibility? What are your views on TFR's capacity to implement the road to rail?

Appendix C:

Table 4: Phases of thematic analysis

Phase	**Description of the process**
1. Familiarise yourself with the data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. For themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic „map" of the analysis
5. Defining and naming themes	On-going analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the

	analysis.

Appendix D

Table 5: Example of the initial coding developed for this research

Extract	codes
"…we don't provide end to end services. We always need a collect cargo from a point (inaudible) we collaborate with private enterprises. How can we work together remember of consideration when one"	1. weakness in rail to provide complete service 2. recognition of need of collaboration
"What we are looking at here, Judith, is we, we don't want to go and force a road to rail shift by, by way of legislation… You know government wants a very competitive economy. Whilst we are government owned we need to compete equally out there with customers."	1. No need for legislation. 2. confident in the market forces
"…We have not seen any explicit objections coming through from the industry. What we observe at the moment is, surprisingly is that a large number of players in the industry are knocking on our doors to sign up, cooperation agreements with us"	1. Road to rail is welcome in the industry
"Now, not everybody likes that approach on the Railway side. … but people are beginning to understand that that type of solution is also necessary and also joint venture; this can also be done by joint venture with a third party logistic service provider that puts this whole thing together"	1. Not everyone welcomes the road to rail is needed 2. Need for working together
"Very receptive in my view. The reason being, the first and foremost industry is, by and large, are not worried about	1. Concerns in the industry about

whether the freight is going by road or it is going by rail. It is a question of how quickly the goods can get to the destination and what cost. Those are the main factors that industry worries about."	feasibility of road to rail
"I think the road transporters would be very receptive and I think an indication of that is already that there are Memorandums of Agreement, or Understanding, between both the Imperial Group and Transnet, as well as Unitrans and Transnet…my concerns would be the cost effectiveness and efficiency of Rail because at the moment the whole manufacturing system around the world has changed."	1. Industry welcomes road to rail 2. Concerns about cost effectiveness and efficiency of rail
"My view no, certainly not, they are not there because they don't have the rolling stock, they don't have the – I would say even some of their existing rail infrastructure in terms of rail lines, the maintenance of this, the yards and so on, is not where they should be. So they are working on that, they are investing in that, there's a lot of focus on that but they don't have, certainly as we speak today, enough locomotives"	1. No confidence about the current status of rail 2. Industry aware that investments is taking place

Appendix E

Table 6: Themes and codes

No.	Themes	Code
1.	**Legislation**	**LEGIS**
1.1	Regulation	LEGIS – REG
1.2	Deregulation	LEGIS – DEREG
1.3	User pay	LEGIS – USRP
1.4	Market forces	LGIS – MRKTFRC
2.	**Receptiveness**	**RECEPT**
2.1	Communication	RECEPT – COM
2.2	Industry support	RECEPT – IND.SUP
2.3	Collaboration	RECEPT – COL
2.4	Intermodal cooperation	RECEPT – INT.MOD
2.5	Confidence	RECEPT – CONF
2.6	Faith	RECEPT - FAITH
3.	**Competitiveness**	**COMP**
3.1	Time	COMP – TIME
3.2	Speed	COMP – SPD
3.3	Cost effectiveness	COMP – CSTEFTV
3.4	Safety	COMP – SFTY
3.5	Reliable	COMP – REL
3.6	Security	COMP – SEC
3.7	Market Forces	COPM – MKTFRS
4.	**Capacity**	**CAP**
4.1	Rolling stock	CAP – ROLSTOC

4.2	wagons	CAP – WGNS
4.3	Financial	CAP – FIN
4.4	Human resources	CAP – HR
4.5	Double track	CAP – DBLTRC
4.6	Skills	CAP – SKLS
4.7	Capability	CAP – CAPB
	Infrastructure	CAP – INF
5.	**Feasibility**	**FEAS**
5.1	Efficiency	FEAS – EFFIC
5.2	Cost effectiveness	FEAS – CST.EFECT
5.3	Sustainability	FEAS – SUST
5.4	Reliable	FEAS – REL
5.5	Safety	FEAS - SFTY