FACTORS INFLUENCING CARGO TRANSPORTATION BY ROAD: A CASE OF MAERSK SEALAND, TRANSPORTATION COMPANY IN KENYA

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A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILMENT FOR THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS IN PROJECT PLANNING AND MANAGEMENT OF THE UNIVERSITY OF NAIROBI

2013
DECLARATION

This research project is my original work and has not been presented for the award of a Masters degree in any other university

Signed………………………………………………Date………………………………………………

GRACE MUTHONI KAMURUCHI

L50/69330/2011

This research project has been submitted for examination with my approval as university Supervisor.

Signed………………………………………………Date………………………………………………

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DEDICATION

I dedicate this research project to my family; my Parents Daniel and Alice Kamuruchi and my siblings for their immense support
ACKNOWLEDGEMENT

My special gratitude and appreciation goes to Prof. Harriet Kidombo, my supervisor who willingly accepted to supervise my work and guided me with patience, understanding and encouragement throughout the period of shaping this work. I also wish to thank the entire management of the University of Nairobi for giving me the chance to further my studies at this advanced stage. Much as I would like to have, it would not have been possible without this opportunity. It has been an exciting and a wonderful period at the University of Nairobi and I feel privileged to have had the opportunity to be part of the student population of this great institution.

This study would not have been successful without those who in one way or another, directly or indirectly, played a role in the realization of this research proposal. Many thanks also go to all my lecturers, Prof. Christopher M. Gakuu, Prof. David Macharia, Prof Porkarial, Dr. Stephen Luketero, Mrs. Marie Mugo, Mr. Eliud Murithi, Mr. Samuel Njuguna, Mrs. Lizzie Gachie, Mr. Peter Busienei, and Mr. Michael Musyoka for imparting valuable knowledge which will go a long way to improve my working skills and add value to the rest of my life. To my Parents, Daniel and Alice Kamuruchi; I owe you my life and more; Thank you for all you have done for me. To my colleagues at work; thank you for all your support and to all my friends; thank you for always being there for me.
ABSTRACT

Road cargo transportation is today a key economic sector in providing essential services for exporters and importers engaged in international and regional trade within the country of Kenya. Road transportation has however, been adversely affected by exceptionally high transport costs that characterize the region’s transit corridors. This has been attributed to a wide range of factors including inadequate competency of the transport operators both in terms of quantity and quality leading to high loss of life, cargo and equipment through numerous accidents; low discipline and productivity of drivers and other operators; poor infrastructure; and, rampant corruption along the Mombasa- Nairobi transit transport corridor that handles most of the region’s export and import cargo. These various factors influence cargo transportation through road significantly. A descriptive design was adopted to analyze the existing situation at Maersk SeaLand. A census was used to collect data from the target population of 57 staff at Maersk SeaLand. The research achieved an 86% response rate. It emerged that cargo transportation by road is characterized by long transit times and high cost due to inadequate physical infrastructure and inefficiency partly attributed to limited skills pool that is a common feature in the transport industry. The cost of transport was a major component of the cost of doing business for manufacturers in Kenya and the Eastern African region. Transport services constitute a key component of Kenya’s service sector in both their contribution to the country’s employment and income generation and their role in external trade, especially at the regional level. A large proportion of the stakeholders attribute the poor state of training of transport operators to the government’s failure to establish strong and viable training institutions at all levels of demand.
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**LISTS OF ACRONYMS AND ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BICO</td>
<td>Bureau for Industrial Cooperation</td>
</tr>
<tr>
<td>EAC</td>
<td>East African Community</td>
</tr>
<tr>
<td>KTA</td>
<td>Kenya Transport Association</td>
</tr>
<tr>
<td>RARP</td>
<td>Rural Access Roads Programme</td>
</tr>
<tr>
<td>RTID</td>
<td>Road Traffic Injuries and Deaths</td>
</tr>
</tbody>
</table>
CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Globalization has transformed the world’s economy. The steady growth in world economies has tremendously increased industry’s demand for the rapid and timely delivery of goods. Efforts to promote external trade in the East Africa have been greatly hampered by exceptionally high transport costs that characterize the region. Kenya’s industry has risen to the challenges and opportunities that have been occasioned by globalization in recent years.

The country’s transport infrastructure is under pressure from the rising levels of traffic both on rail and road. At the same time, limited maritime infrastructure and poor inland infrastructure are under immense pressure from the massive increase in imports and exports. Kenya is major gateway country for the interior of Eastern Africa, through the Mombasa corridor. There is a dynamic private logistics services active on this corridor. At the same time several modes of transportation are competing including a history railroad system and a burgeoning air freight organization for export of horticultural product. Cargo transportation in Kenya through road is the widely used mode of transportation.

Historically, the port of Mombasa has always been an important trading point in the Indian ocean. Mombasa is the gateway for Kenya as well as a hinterland for the neighboring countries. The Port of Mombasa plays a strategic role in the regional economy as a gateway to the international markets and suppliers. This not only applies to Kenya’s economy but also to the economies of the landlocked Northern Corridor countries of Uganda, Rwanda, Burundi, DRC and Southern Sudan. The current port infrastructure is complemented by the presence of stations within the port run by private sector investors. The port also runs Inland Container Depots (ICDs) in Nairobi, Kisumu and Eldoret which are underutilized due to the failure of the rail system.

However, a large fraction in value (18%), smaller in volume i.e. 5% of the Kenyan exports are now shipped by air from Nairobi. In 2003, more nearly 12 million of tons were moved through Mombasa, including 9.3 million of imports for Kenya and landlocked countries, 2.1
tons of exports and 0.6 million tons of transshipments. Nearly half of the imports in volume, 4.5 million, are liquid products (oil). Out of the 9.3 million tons of imports, 2.2 million were transiting to Uganda and beyond. By comparison, air cargo represents about 200,000 tons (80% exports). Since cargo transportation from Mombasa to Nairobi is the most widely used mode of transportation, efforts to promote external trade in the East Africa have been greatly hampered by exceptionally high transport costs that characterize the region.

The region’s cost of transporting its exports is significantly higher than similar costs in other developed and developing countries ranging from 60-70% higher than the United States and Europe and 30% higher relative to Southern Africa. A recent study by the Northern Corridor Transit Transport Coordination Authority estimate that total logistics costs of transporting one 20ft container from the Port of Mombasa to various destinations within the region ranged from US$ 9,174 to Nairobi, and US$ 28,309 to Juba.

It is estimated that the road transport costs within the region account for 35% of the total logistical costs on average with delays contributing to about 44%.

<table>
<thead>
<tr>
<th>Destination</th>
<th>Distance (Kms)</th>
<th>No. of days</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mombasa-Nairobi</td>
<td>494</td>
<td>2</td>
<td>1,300</td>
</tr>
<tr>
<td>Mombasa-Kampala</td>
<td>1,140</td>
<td>10</td>
<td>3,400</td>
</tr>
<tr>
<td>Mombasa-Kigali</td>
<td>1,742</td>
<td>12</td>
<td>6,500</td>
</tr>
<tr>
<td>Mombasa- Bujumbura</td>
<td>1,910</td>
<td>14</td>
<td>8,000</td>
</tr>
</tbody>
</table>

**Source: The Kenya Shipping Council, Logistics Performance Index 2011**

Various studies attribute these high transport costs in the East African region to poor infrastructure, bureaucratic transit procedures and generally inefficient transport facilities and logistics, heavy reliance on road transport due to low capacity railway transport which handles less than 10% of the cargo in the two corridors, slow adoption of modern technologies that facilitate more efficient communication and automation of cargo handling and the limited pool of appropriately skilled personnel involved in various direct and indirect transport operations.
1.2 Statement of the Problem
The ultimate focus of the study was to examine the factors influencing cargo transportation impact on the economy characterized by long transit times and high cost due to inadequate physical infrastructure and inefficiency partly attributed to limited skills pool that was a common feature in the transport industry. The cost of transport is a major component of the cost of doing business for manufacturers in Kenya and the Eastern Africa region. It is a key contributor to the competitiveness of firms involved in import and export. Key factors that raise costs include low productivity of the trucking industry in Africa, notably because of infrastructure constraints (Pedersen 2001); low levels of competition between service providers (Rizet and Hine 1993); and weak infrastructure (Limao and Venables 2001). Limao and Venables also suggested that weak infrastructure accounted for most of Africa’s poor trade performance. From a cross-country regression, they concluded that trade was highly sensitive to transport costs As a result of these factors influencing cargo transportation leading to very high costs of transportation of good and to address this problem, the EAC region has recently attracted a number of studies focusing on various sources of inefficiency in the transport of goods. For instance, the study launched in February 2012; the Central Corridor Road Safety Programme: Commercial Freight (Eastern Africa) supported by the World Bank and involved Transaid and its partners.

Despite road transport being the most expensive of all inland modes of transport, it is the most prominent mode used due to capacity constraints of rail and pipeline. Fuel cost represents 46% of the total cost of hiring a truck, with VAT at 11.6%, vehicle maintenance and tyres at 11.6%, and insurance and labour costs representing 5.7% and 5.6% respectively. Rail would be the preferred mode due to its cost effectiveness. This study therefore seeks to understand the dynamics and the existing operations characterizing road cargo transportation, examine the capacity to meet demand of the ever increasing user’s demands for reliable and predictable services. The Study also examines driver behaviors’ and their contribution to road accidents, the study also seeks to review the legislative framework, road infrastructure, road transport operators training standards and Heavy Goods Vehicles (HGV), Rwanda and Uganda. The surveys are a collaborative effort between the Northern and Central Corridors authorities, relevant academic institutes and road transport associations whose responsibility
was to help mobilize road transport operators to participate in the survey aimed at bringing out key features of road transport operators and the industry as a whole. (Source: The Kenya Shipping Council)

This study sought to examine the government regulatory controls through licensing regimes, axle load controls and random checks on the pressure that the road transport is putting on the existing infrastructure coupled with high maintenance costs, overloading, security and environmental concerns. This included examination of Policy and institutional framework to reduce costs and improve competitiveness; institutional and regulatory changes to cushion cargo owners from being penalized for inefficiencies of their service providers; regulations on waivers due to operational delays, compensation for delays arising from regulatory and government agencies and benchmarking and monitoring of freight costs, processes and logistics in Kenya against best practice.

1.3 Purpose of the Study
The purpose of this study was to establish the factors influencing cargo transportation through roads by studying a transportation and Logistics organization, Maersk SeaLand. The study examined the impact of these factors.

1.4 Objectives of the Study
The general objective of the research project was to investigate the factors that affect and influence cargo transportation through roads in Kenya.

The specific objectives of the research study were as follows:

i) To examine the institutional factors which influence the road cargo transportation industry from Mombasa to Nairobi

ii) To examine the legal frameworks which influence the road cargo transportation industry from Mombasa to Nairobi

iii) To examine the influence of human resource factors on the road cargo transportation industry from Mombasa to Nairobi.

iv) To examine the influence of the various stakeholders management factors and the main players in the road cargo transportation industry.
1.5 Research Questions
The research project attempted to answer the following questions:

i) How do the existing institutional factors prescribe and regulate adequate procedures to guide the road cargo transportation industry?

ii) How do the existing legal frameworks prescribe and regulate adequate procedures to guide the road cargo transportation industry?

iii) To what extent do the human resource factors including health and drug use affect the road cargo transportation industry from Mombasa to Nairobi?

iv) To what extent do the various stakeholders influence road cargo transportation between Mombasa and Nairobi?

1.6 Significance of the Study
The study would have significance to several stakeholders.

Private Sector - The private Sector would use this study to enhance its involvement in the financing, construction and maintenance of roads.

The government - The project report would also be of benefit to the government and the policy makers as they sought to institute policies and procedures to govern their operations and promote accountability in different institutions. Accountability is a major issue in many organizations and most of these organizations are always making improvements to their processes to ensure transparency and accountability. This paper would help policy makers decide on how to redesign their operations.

Academicians - This report would be of benefit to future researchers, who could utilize it as a point of reference on road cargo transportation. Cargo transportation is broad and covers many aspects. This project did not discuss the other cargo transport modes of air and rail. Future researchers could thus utilize the report as a starting point for further research.

1.7 Limitation of the Study
The constraints of time and finances limited the researcher. The researcher dealt on a case of one organization, the results of which would be generalized to other Logistics and transportation organizations.
1.8 Delimitation of the Study

The research study focused on staff that directly or indirectly involved in cargo transportation. It also included reviewing all the relevant acts which regulate and control cargo and road traffic and infrastructure as well as issues dealing with security and insurance on goods on transit. Questions were posed to the different respondents from different departments to obtain reliable data and also to get a wide perspective of the topic and to gauge if respondents had an understanding and knowhow of their roles.

1.9 Assumptions of the Study

There was no attempt to offer any solutions to any problems identified or to prescribe alternative procedures that could have been adopted by the organizations dealing with cargo.

1.10 Definitions of significant Terms

**Inland Container Depots** otherwise known as ICDs are dry ports equipped for handling and temporary storage of containerized cargo as well as empties. This means that hinterland customers can receive port services more conveniently closer to their premises. In addition to managing and operating the sea ports, Kenya Ports Authority owns and manages three Inland Container Depots strategically located in Embakasi- Nairobi, Kibos in Kisumu, and Eldoret. ICDs are a convenient shipping alternative extending port services closer to hinterland customers. The depots are directly linked to the container terminal at the port of Mombasa by rail through a service called ‘rail tanker’ provided by the Rift Valley Railways. This service transports containerized cargo by rail, on Through Bill of Lading (TBL) status.

**Logistics Performance Indicators (LPI)** refers to the pro-competitive business and benchmarking tools to promote efficient, reliable and sustainable transport logistics and infrastructure systems. These tackle congestion, to improve efficiency and promote alternative modes of transport.

**Road transport operators (RTO)** are the various road haulage operators as well as the road passenger transporters. These include the main players undertaking road operations by means of motor vehicles so constructed and equipped as suitable for carrying more than one person.
including the drivers, trucks and trailers, passenger transport services for the public or for specific categories of users in return for payment by the person transported or by the transport organizer.

The Kenya Shipping Council (KSC) is the umbrella body representing cargo owners, it advocates for a reliable logistics environment for better trade competitiveness. It monitors the implementation of agreed reforms and proposals identified through benchmarking and best Practice studies. These studies assess the regional logistics performance and identify areas of reform that policy makers and private sector stakeholders should address.

The Northern Corridor is the main artery of transport facilities and infrastructure linking the landlocked countries in the Great Lakes region of East and Central Africa. The corridor links the Mombasa port with Burundi; D.R. Congo; Rwanda and Uganda. The Northern Corridor anchored by the port of Mombasa in Kenya, and the Central Corridor, anchored by the port of Dar es Salaam in Tanzania, are principal and crucial transport routes for national, regional and international trade of the five East African Community (EAC) countries

1.11 Organization of the Study
This project was organized in chapters, Chapter one, two, three, four and five. Chapter one is titled Introduction and it covers the background of the study, the purpose and objectives, the research questions, limitations and delimitations. Chapter two covers the literature review; chapter three covers the research design and methodology, chapter four covers data analysis and presentation of findings while chapter five covers the summary of the findings, conclusions and recommendations.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
Hayuth (1992) has described that the underlying approach to most transportation studies has been the separate treatment of individual modes and nodes of transport, such as sea transport (Drewry, 1996), sea ports (Hoyle, 1996), dry ports (Beresford & Dubey, 1990), railroads (Jung & Beresford, 1994), inland waterways (ESCAP, 1998 & 1995a), road transport (OECD, 1996) or air transportation (O’Connor, 1995). Certain studies have been conducted on intermodal or multimodal transport issues (Ashar, 1993; Adjadjihoue, 1995; Jung, 1997; Wong, 1997; Woxenius, 1998; Beresford, 1999) but they are still a minority in transportation and logistics research. According to McKinnon (1989), the selection of freight between transport modes, often called modal split, has been one of the most controversial topics in the field of transport logistics. This is because modal choice decisions are not always based upon a full and rational appraisal of options available. Traditionally, it has been assumed that modal choice was dependent on three main factors: price, speed and reliability. Nonetheless, a country’s or a region’s freight modal split is also influenced by a range of other factors, such as its physical geography, the spatial distribution of its population and industry, the density of its transport networks, the structure of its economy and governments’ policies on transport regulation, investment and taxation. The choice of transport mode has a direct impact on the efficiency of a logistic channel. Each transport mode possesses different characteristics, different strengths and weaknesses.

2.2 Review of Theoretical Framework
The concept of cargo transportation has evolved over time and in the process has undergone changes in terminology and meaning. Several studies have investigated dry cargo shipping markets and transportation and some of them attempted to construct a composite index of freight rates (Isserlis, 1938; Mohammed & Williamson, 2004; Klovland, 2008 among others). These indices depicted long term movements in general (Veenstra and Dalen, 2008; Mohammed and Williamson, 2004). The theory of cargo shipping productivity was investigated by a long term composite freight index and fluctuations. Importance of seaborne
trade and cargo transportation was indicated by several studies (Metaxas, 1971; North, 1958; Jacks, Meissner and Novy, 2009 among others). Seaborne trade and transportation is a value of how much cargo is transported in how much distance between two seaports. Increasing stability on global politics triggered trading activities and finally shipping industry stepped up to enhance facilities and capacities. Statistics for shipping volume and transportation costs were presented and investigated by various studies (Isserlis, 1938; North, 1958; Harley, 1988 among others). By the presence of proper transportation data, they explored that shipping played a key role on economic development and reasons of freight rate fluctuations were discussed for understanding such economic interactions and results. Cargo freight rate was investigated by many scholars and the theories on shipping productivity were indicated according to several hypotheses (Harley, 1988; North, 1958; Mohammed and Williamson, 2004). Particularly on long distance transportation, shipping cost was crucial and was critical especially in the 18th and 19th century’s era. Capacity of shipment was highly limited, speed of service was tied to proper seasonal winds and cargo traffic was a single way long time rather than both directions. Under the conditions of the various factors, shipping service evolved and freight rates were broadly affected from the particulars of maritime transportation characteristics. From 18th to 20th century, declining freight rates and increasing productivity were introduced and accepted widely

Leon Isserlis (1938) published his outstanding study “Tramp shipping cargoes and freights” and provided one of the noteworthy sources of freight market fluctuations. As one of the important statistician, he served at the Chamber of Shipping, UK and compiled several freight rate data which mainly benefited from Angier (1920). Hull and engine technologies improved safer navigation and prevented loss of property i.e. due to piracy attacks. North (1958) also concluded an important aspect of the post-discovery term of the world which was presence of cargoes for returning to homeports that was named backhaul cargoes. After the industrial revolution, both in North America and Asian destinations, exporting products were supplied and backhaul cargoes could be carried on a highly competitive price as compared with ballast voyages of empty cargo holds. New regions expanded in population and income with new export trades and further export products were implemented. North (1958) extended the knowledge about the long term decline of freight rates in the 19th century and the freight rate data was deepened.
C. Knick Harley (1988) pointed out that the main source of increasing cargo productivity was metallurgical developments which were broadly improved by industrial revolution. Harley’s argument supported the notion that technological improvements provided stronger hull designs i.e. metal ships, increasing capacity of ships, increasing service speeds i.e. steamship technology and therefore sea transport ensured productivity gains due to technical performance. Harley (1988) indicated that North’s freight rate data for cotton trades had important shortcoming since the packaging technique of cotton bags somehow changed. Compressing of cotton into the bags provided additional transport volume and the cost of carriage was lesser per tons of cargo. By this way, capacity reached to 20-25 pounds per cubic foot from 8-12 pounds per cubic foot. It was almost twice of previous measures. North’s evidence for the sharp decline at the beginning of the 19th century was arisen mainly by such technical metamorphosis. In spite of the long term moderate decline on the rates, it was not expected as deeply as indicated for the first half of 1800s. Harley (1988) summarized the reasons of the freight rate decline on six items which included the innovation of steamships against the sailing ships, opening of Suez Canal and superiority of steamers on Asia-Europe transport and larger sailing ships not suitable for Red Sea navigation because of lack of proper winds, metallurgical technology which provided safer ship design, decreasing number of crew, lesser loss of ships, increasing capacity of cargo space; increasing productivity on steel industry reinforced shipbuilding industry for cheaper production and stronger and larger designs, packaging technology which ensured increased use of transport volume and presence of tugs supported by maneuverings of larger steamers in the port.

A study by Duru and Yoshida (2009) provided a long term freight rate index (LFI) by combination of un-weighted average growths of several freight rate data. LFI was based on dry cargo and general cargo. LFI was a series of long term data. Such long term records and data ensured comparative analysis between several centuries. Before, shipping transportation was based on one-way traffic throughout centuries, and after the Industrial Revolution of Europe and America, backhaul cargoes became available.
2.3 Transport Models: Intermodal Freight Models

The idea behind intermodal transport is to utilize the strengths of different transport modes into one integrated transport chain. The road network has the advantage of being able to access almost any location and also of being very flexible, while rail and sea networks have the ability to transport goods over long distances at a low cost. Jensen (1990), Woxenius (1998) and Barthel and Woxenius (2004) argue that the use of alternative technologies and/or better planning and management could change this notion. Another key issue in intermodal transport is that all the parts of the system must work together, both on a technical level and on a management and system design level. This interdependence makes great demands on the design of the intermodal transport system. The system needs to be well coordinated to fully utilize the benefits of intermodal transport. A combination of the two networks could, thus, reduce the cost of transport. The structure of an intermodal transport system and intermodal transport between road and rail, also known as combined transport, has received a large interest in recent years as part of a possible solution for a sustainable and efficient transport system.

2.3.1 The Heuristics Intermodal Transport Model, or the HIT model

The Heuristics Intermodal Transport Model, abbreviated the HIT-model, is a large scale heuristics computer model developed by Jonas Floden to design and evaluate intermodal transport systems. The HIT model takes its starting point in a competitive situation between traditional all-road transport and intermodal transport, where the potential of intermodal transport is determined by how well it performs in comparison with all-road transport. The model can also be used as a tool to calculate the costs and environmental effects of a given transport system. A transport buyer is supposed to select the mode of transport offering the best combination of transport quality, cost, and environmental effects. Intermodal transport is also required to match, or outperform the delivery times offered by all-road transport. Given a demand for transport, this model determines the most appropriate modal split, sets train time tables, type and number of trains, number of rail cars, type of load carriers, etc. and calculates business economic costs, social economic costs and the environmental effects of the transport system. The heuristics can further be controlled by a number of control parameters to adjust the behavior and modal choice of the model. The model is flexible and can be used to test different suggested system layouts, conduct sensitivity analyses, and test the effect of the intermodal transport system on specific factors, e.g. changed taxes, regulations or...
infrastructure investments. The model is useful for both large scale national transport systems and small individual transport systems. The model is programmed and the model size is only limited by available computer memory. Output from the model is the modal choice for each demand occurrence with departure time, arrival time, train departure used, position on train, type of lorry used, number of lorries used, business economic cost, social economic cost or environmental impact. If all-road transport is selected, the model also shows the reason why intermodal transport could not be selected (e.g. violated time constraint, economic constraint, etc.). The suggested train system is output with time tables, train lengths, business economic costs, social economic costs and environmental impact.

Figure 1: The Heuristics Intermodal Transport Model overview
2.3.2 Intermodal road rail freight transport (IFT) model

Intermodal road-rail freight transport (IFT) theory is defined based on the elements of transport time, order time, timing, punctuality and frequency. Intermodal road-rail freight transport (IFT) is often mentioned among the top priorities for turning the European transport system into a sustainable direction; (European Commission, 2001). IFT development has followed some-what disappointing trajectory and scenarios point at steeply rising volumes for all road transport. Numerous studies on why IFT is not really taking off have been initiated by authorities and research boards at European, national and regional level as well as by the stakeholders within the industry.

Intermodal road-rail freight transport model relates to shippers’ preferences when choosing a particular traffic mode. Examples of studies specifically addressing preferences for IFT are Evers et al. (1996), Golias and Yannis (1997), Harper and Evers (1993), Ljungemyr (1995), Ludvigsen (1999) and Shinghal and Fowkes (2002). Among the parameters making up the transport quality, transport time, punctuality and other time related ones are top ranked in many studies e.g. Evers et al., 1996; Swedish Rail Authority, 1999; cullinane and Toy, 2000. The concept of time in relation to transport operations is truly multi-faceted but although it is an integrated part of many studies, it has not attracted abundant attention from researchers (ECMT, 2005). Transport time, punctuality and frequency are almost mandatory parts of surveys for shippers’ mode preferences. Shinghal and Fowkes (2002), for instance, used these as the only quality attributes when investigating mode choice for freight services in India. In a content analysis of modal choice literature, Cullinane and Toy (2000) identified the major modal attributes. Speed (considered synonymous with transit time and, however less logically, terminal time and transshipment time) and transit time reliability ended up second and third both when counting number of appearances and when trying to estimate relative importance in the surveyed studies. Service (unspecified) was most frequent, while cost was considered most important. Frequency was far lower ranked and timing and order time were excluded in this study.

The Swedish Rail Authority (1999), however, found that Swedish shippers rated timing (formulated as the shipper’s ability to affect the departure or arrival time) together with speed as the far highest ranked quality parameter. Also here, cost was top ranked. Nevertheless, another Swedish study (Ljungemyr, 1995), contradictory ranked punctuality (referred to as
reliability) as the most important, transport time as the least important and frequency as the second least important out of five quality factors besides costs. Nelldal (2000) divides the process of choosing traffic mode into restrictions, choices and inertias, where restrictions (including elements of time) may eliminate traffic modes. The qualified alternatives are then compared weighing in total costs incurred by each one. Some shippers, however, work with target cost but mainly in renegotiations with an LSP. Evers et al. (1996), Harper and Evers (1993) and Ludvigsen (1999) all acknowledged that shipper preferences were circumstantial. The latter two studies also detailed the investigation for individual routes used by the respondents, significantly increasing the accuracy of the studies.

2.3.3 Jensen (1990) and Woxenius Combined Transport System
In the Jensen (1990) and Woxenius (1994) transport system model, Jensen divides the combined transport systems into administrative and physical systems. See Figure 2.2. A complex interdependence between the systems does exist. The physical boundaries are adjustable depending on how well the administrative system performs, and vice versa. A successful administrative system could, for example, create a demand for an extended rail network, new terminals, better rail cars, etc. On the other hand, a change in the physical system, e.g. a reduction in loading capacity, would affect the administrative system. Interdependences within the systems themselves also exist. A better designed timetable could, for example, attract new customers, which would force recourses to be moved to serve these new customers, resulting in a reduction in service and lost customers in other parts of the system.
Figure 2: Jensen’s general model of the combined transport system (Jensen, 1990, p. 43)
Research shows that most clients do not take any interest in the actual transport or modal choice of the transportation or shipment (Sjogren 1996). Most clients are satisfied as long as their general requirements of delivery time, price, transport quality, etc are met. Some, however, have more specific requirements, such as environmental requirements or preference for a specific operator. In general, the more goods they send, the higher their interest in the transport (Woxenius, 1994). The end transport customer has little interest in the mode used for his transport. The transport customer mainly focuses on quality and price factors. Road transport is by far the most important mode of land freight transport. However, the development of road transport does not just depend on the development of road infrastructure, but also on the development and structure of the truck fleet. The modern road system in Kenya started with the Mackinnon-Slater roads from Mombasa through Nairobi to Busia and Uganda, which were built during the 1890s as a predecessor to the railway. During the first half of the 20th century the road network was gradually extended to serve the British administration and the consecutive waves of European settlements and mining areas, though feeder roads were also built into the African reserves (Ogonda 1986, 1992). By 1950 closer networks of roads were concentrated in Western Kenya, the Kenya highlands and at the coast, while the road networks in the northern, north eastern and southern parts of the country were sparser; a pattern, which still pertains today. The 1950s and early 1960s witnessed an intensified road construction programme. Direct roads were developed between the most important centers, and sections of the main roads with heavier traffic were bituminized. This wave of road construction culminated with the building of the Nairobi-Thika dual carriage-way.

During the 1970s and 1980s the bituminization of the main roads continued, but much of the focus shifted from the main roads to the Rural Access Roads Programme (RARP) and Special Roads Programme (SRP), which especially during the early 1970s and late 1980s contributed to the expansion and improvement of the rural road network. Up to the mid-1980s, Kenya had a higher standard of road transport infrastructure and lower transport costs than most countries in Sub-Saharan Africa. However, during the late 1980s and the 1990s the situation changed, as the quality of the road network deteriorated during the last 10-15 years. The poor state of roads is largely due to inadequate maintenance and gradual erosion of public sector capacity to effectively plan, finance and manage basic road infrastructure. Other factors contributing to road deterioration are increased traffic volume, high axle loads, overloading
and inadequate capacity in railway transport. The financial constraints facing Kenya have contributed to lack of funds to maintain the roads. Of course, total revenues from the road transport sector through fuel taxes, motor vehicle import duties, licenses and fees have been rising considerably as a proportion of total tax revenues, but these revenues have not been allocated for road maintenance because of the government’s budgetary constraints (Republic of Kenya 1997; Wasike 2001). In 2003 there were 57,800 trucks and Lorries in Kenya and in addition 159,500 vans and pick-ups. Most of these vehicles were own account vehicles only allowed to transport goods owned by the truck-owner, while 17,700 of the trucks had licenses to carry freight for other’s account. These made up the trucking industry. Between independence and the late 1990s the number of privately owned trucks and lorries increased from about 10,000 to about 40,000, while the number of trucks in the trucking industry increased from 2,500 to 7-8,000. The number of privately owned trucks grew, especially from the mid-1960s to the mid-1970s. During the 1970s and 1980s the bituminization of the main roads continued, but much of the focus shifted from the main roads to the Rural Access Roads Programme (RARP) and Special Roads Programme (SRP), which especially during the early 1970s and late 1980s contributed to the expansion and improvement of the rural road network. Up to the mid-1980s, Kenya had a higher standard of road transport infrastructure and lower transport costs than most countries in Sub-Saharan Africa. (Wasike 2001)

2.4 Factors influencing effective transportation of Cargo by Road
The need for additional capacity has been identified in anticipation of increased transportation demand for goods movement as a result of population and employment growth and to support growth in tourism and trade. A number of elements have a bearing on the potential future transportation capacity deficiencies within a study area. These elements must be well understood in order to appreciate the scope and nature of the transportation problems and opportunities that must be addressed. The primary function of any inter-regional transportation system is to facilitate the movement of people and goods within and through an area. This is accomplished by using all available transportation modes and travelling across all jurisdictions with an emphasis on travel connections. (Ashar, 1993; Adjadjihoue, 1995; Jung, 1997; Wong, 1997; Woxenius, 1998; Beresford, 1999)
2.4.1 Institutional Factors and effective transportation of Cargo by Road

According to (Muisyo, 2012) Road freight and cargo haulers are set for a big challenge from their rail counterpart. This follows RVR’s launch of the KES 18 billion upgrade project of the Kenya-Uganda railway line dubbed Lunatic Express on Tuesday August 7th 2012. The upgrade is expected to bring onboard more customers as it will encourage consistence and reliability in cargo delivery. According to the Kenya Shippers Council (KSC), a trailer transporting a 20-foot container weighing 28 tons from Mombasa to Nairobi costs KES 109,200. Previously, rail cargo customers, who are mostly industry based, have suffered major delays as a result of derailments caused by worn out and poorly maintained tracks, thus the inefficiency. The project which has received funding in form of loans from International Development Fund Institutions (DFIs) and Equity Bank has kicked off. The repairs will see trains take only 17 hours between Mombasa and Nairobi from the previous 27 hours. Compared to road, a truck takes 2 days from Mombasa to Nairobi hence the convenience. From Mombasa to Kampala, a distance of 1,140km, the average driving time is 16 hours while the actual truck time is 10 days. A train will take at least 3 days.

Transportation systems are supported by a number of institutions that range from laws and regulations to informal conventions. These institutions are defined by and maintained at base by culture and values. Institutions can therefore be broadly defined as social rule structures with associated standing patterns of behaviors and procedures. This definition is general enough to take into account the diversity of organizational arrangement that characterize the transport sector in the member states where for example the road sector is managed at national, regional and municipal levels. Institutions may be defined as socially devised constraints that shape human interaction (North, 1990). A related definition is to describe institutions as social rule structures. These structures can be both formal and informal. An obvious example of a formal institution is a property right specified by legislation. But there are many informal institutions both within organizations and between organizations. Examples include management practices, governance and rules on who takes the initiative in large infrastructure projects. The essence of institutions is that they structure incentives in human exchange and interaction. A related distinction is due to Williamson (1994) who views institutions as being of four types: informal, formal, governance and resource allocation/employment related. More institutions are still evolving as a consequence of the
rapid growth in demand for road transport, and it seems like this growth in the number of institutions will continue as more constraints are taken on board in transport policy development. At any given time, societies have rules that define accepted behaviors and action patterns for institutions such as property rights, provision of infrastructure, management practices, governance, the role of markets etc In this study institutions will be defined broadly as rule structures and not as specific organizations so as to accommodate the diversity of organizations involved in transport management.

Property Rights refer to the laws created by governments in regards to how individuals can control, benefit from and transfer property. Government enforcement of strong property rights is a determinant regarding the level of economic success seen in an area. Individuals will create new forms of property to generate wealth, only when they are assured that their rights to their property will protect them against unjust and/or unlawful actions by other parties. The property rights index measures the degree to which a country’s laws protects private property rights, and the degree to which its government enforces those laws. The index also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. The Global Property Guide considers protection of property rights as a significant factor affecting the desirability of an investment.

Although labour productivity in Mombasa has been increasing, and the average number of port days per ship has decreased during the late 1990s and early 2000s, the waiting time in the port is still long, compared to international standards, due to complex bureaucracy, inefficient customs clearance and unavailability of railway wagons in the port (Anyango, 1997). Coase (1937) and North (1990) have called attention to the economic importance of institutions through the concept of ‘transaction costs’: when transaction costs are high, institutions matter. Transactions involve several types of costs such as the search for a supplier, contract negotiations related to measuring or defining the attributes of what is exchanged, and the enforcement of agreements. A high level of transaction cost often implies that transactions that are potentially beneficial will nevertheless not occur or occur less frequently and therefore impact market efficient outcomes. The importance of institutions, in addition to their justice or equity support role, is that they provide the structure for exchange that determines the cost of transactions and the cost of transformation. For example, laws defining property rights will
reduce transaction and production risks. The level of transaction cost will also have a strong impact on the formation of organizations and their structure. For example, large vertically integrated firms may be viewed as a response to high levels of transaction costs between firms

2.4.2 Legal Framework and effective transportation of Cargo by Road

This is a set of rules and regulations that create conducive environment for establishing good management practices for the road transport sector. It determines the roles and provides the authority for each stakeholder to act by setting out all the legislation for the regulation of the sector and gives each stakeholder the necessary powers for a range of activities. The first step in establishing an improved legal framework for road transport is to review road transport policy and how it fits in with broader policy aspects, especially aspects concerning road infrastructure and other modes of transport. The next step is to review the existing road transport regulations to identify those that are inconsistent with regulatory objectives and to define the need for new or alternative regulations. Infrastructure facilities such as tolls need sufficient funding. These projects and facilities require large capital investment (Rostiyaanti and Tamin, 2010)

The road transport legal framework is dictated to a large extent by the relevant transport policy for the given country. Ideally such a policy will define overall objectives and responsibilities for policy-making and implementation. It will state the respective roles of government and the private sector in road transport and the basis for road transport regulation namely to primarily promote safety and efficient use of roads. To guide improvements in transport service regulation, such a policy statement should endorse the primary role of market forces in determining price and service levels, with the role of government limited to ensuring that competitive conditions prevail and that safety and environmental considerations are met. For countries without a market economy tradition or with a legal framework that has remained unchanged for many years, the scope for changes in order to improve the Legal framework can be considerable. It may for example involve changes to the basic traffic regulations concerning driver training, testing and licensing, vehicle inspection and registration, and road and traffic management systems and rules, in order to provide a clear and sound basis for safety regulation. Regulatory frameworks enforce a system of rules and guidelines, (Hine et.al, 2009)
The four possible broad areas in which legislation is needed in road transport are; (i) road infrastructure, (ii) road traffic, (iii) vehicle and driver licensing, and (iv) road transport licensing & management. In developing road transport legislation, one important issue concerns the level of detail required in primary legislation. There is often strong pressure on the part of government legislators to incorporate considerable detail in the highest level of legislation in order to define closely the limits within which implementing regulations are drafted. The drawback with this approach is that the legal framework becomes too cumbersome, and minor regulatory changes in subsequent years require time-consuming changes in primary legislation rather than relatively simple changes to implementing regulations and ministerial decisions. The availability of legal framework to execute infrastructure provision accordingly, the legal powers held by appointed regulatory body, the clarity of roles in regulation, completeness and clarity of regulation, transparency, accountability are some of the principles required in enhancing regulation framework (Brown, et.al, 2006 and UNECE, 2007)

2.4.2.1 The Transport Licensing Board (TLB)

The Kenya Roads Act, 2007 and the Sessional Paper No.5 of 2006 on the Development and Management of the Road sub-sector for sustainable economic growth provided the legal and institutional framework for the management of roads. The Road Transport Department (RTD) was initially under the Ministry of Transport and Communications before being absorbed by the Kenya Revenue Authority on 1st July 1995 through an act of parliament. The Registrar of Motor vehicles heads the Department. Within the Licensing section is the Transport Licensing Board (TLB). The TLB discharges the provisions of the Transport Act as provided in the Transport Licensing Act (Cap. 404) of the laws of Kenya. It provides coordination and control of means and facilities for transport in the country. The transport Licensing Act stipulates that all vehicles carrying goods and passengers whose tare weight exceeds three tones must be licensed. Consequently, the functions of the Transport Licensing Board involve receiving applications, scrutinizing, approval of applications, and issuance of the following license categories. Road service license for passenger buses and tour vehicles, Limited “B” carrier license for lorries carrying goods on hire or reward. Private “C” carriers for lorries carrying own goods and short term license issued to applicants of “B”, limited carriers and Road service License (RSL) before the Board sits to deliberate on their applications,
authorizing variation of routes or goods to owners of TLB license, variation of timetable to owners of Road Service License, replacement of vehicles with TLB license from one owner to another, scheduling and preparing agenda and gazetttement of TLB meetings notifying the applicants when to appear before the Board, as well as gazetttement of successful applicants of TLB license and keeping records of all vehicles with TLB license (The Kenya Roads Act, 2007)

2.4.2.1 Road Infrastructure Legal Issues
Road classification and Declaration includes elements like administrative and management responsibilities, execution of Road works, road Financing, restrictions on use of Roads, weight limits for axles (of different configurations), overall vehicle and load weight limits, overall vehicle and load dimension limits (length, width and height) and exceptional use provisions (deciding conditions under which large loads can use the roads) Penal provisions. (CHAPTER 408 Nevada Revised Statutes- Highways, roads and transportation facilities). A legal infrastructure regulatory system is a combination of laws, processes and institutions applied by governments to control establishment and implementation (Brown et.al, 2006)

2.4.3 Human resource and effective transportation of Cargo by Road
Road transport contributes to the socioeconomic development of Kenya by facilitating movement of goods and people, opening up isolated areas, and promoting trade (Khayesi, 2005b). Unfortunately, the current road transport system is worrisome because the prevailing road traffic anarchy causes crashes that impact both household income and the national economy (Nantulya and Reich, 2002). Roads and Transit often strips families of their breadwinner, leading to increased poverty. Healthcare or funeral costs are common causes of impoverishment among affected families (Peden et al., 2004). Road crashes also exact a tremendous financial loss for Kenya. The cost elevation is due to the lost opportunity cost of injured persons, disabled persons, and family care, as well as loss of income, costs of health services, and damage caused to property. Road crashes consume massive financial and human resources that the country can ill-afford to lose (Afukaar et al., 2003: 73). In 1984, the estimated annual economic cost of road traffic injuries, using the human capital approach that comprises health care costs, administrative expenses, and vehicle and property damage, was 1.5 billion Kenyan shillings (approximately U.S. $ 19 million), an equivalent of 1.6% of country's gross national product (GNP) in 1988 and 3.8 billion or 5% of the GNP by 1991. In
1996, the costs were estimated to be between 5 and 10 billion Kenyan shillings. This translates into a loss of 26–52% of the total earnings from road transport (Odero et al., 2003: 58). Road crashes are undoubtedly a cause of poor health and material deprivation. Public resources are used to solve a problem which could have been prevented through safety measures and equity-promoting programs. The underprivileged are extremely disadvantaged in the situation, primarily because they are more likely to be injured or die from road crashes with consequent effects on their family. Since the underprivileged rely heavily on public institutions, the decrease in economic development adversely affects the poor more than the rich. The risk factors for roads and transit should be understood within the whole context of Kenyan social life.

2.4.4 Stakeholders and effective transportation of Cargo by Road

The broadest definition of the concept of stakeholders is found in the work of Freeman(1984) where a “stakeholder is by definition any individual or group of individuals that can influence or are influenced by the achievement of the organization’s objectives”. In the context of transport policy this definition can be transformed in: stakeholders are those people who have a vested interest in a problem by affecting it or/and being affected by it (Banville et al., 1998) Transport services constitute a key component of Kenya’s service sector in both their contribution to the country’s employment and income generation and their role in external trade, especially at the regional level (Ikiara et al. 2000). A large proportion of the stakeholders attribute the poor state of training of transport operators to the government’s failure to establish strong and viable training institutions at all levels of demand. The only exception is a small number of government training institutions in the five countries where the role of the governments is largely wanted. Most of the drivers for the ordinary personal and passenger PSV vehicles are trained by the numerous driving schools spread in the major cities and small towns all over the region. These schools do not follow any well established and regulated training programme so that often the quality of drivers produced is seriously compromised, especially in a situation where bribery and other malpractices are said to take place with regard to examination of drivers and issuance of driving licenses. These practices have led to some of these poorly trained drivers undermining the national and regional road safety through very high fatalities resulting from increasingly growing number of accidents involving passenger cars, heavy commercial vehicles and trucks.
The poorly trained drivers from the driving schools are usually the ones who graduate to transit truck drivers often informally taught by the experienced drivers, most of the time not getting an opportunity to undergo professional training as truck drivers, contrary to the best global practices in the world where truck drivers are required to undergo special training after a prescribed number of years of driving experience with the smaller vehicles, and requiring special licenses. Thus the failure to have a clear policy and training requirements for transit transport drivers and heavy commercial vehicles has led to the existing ad hoc training in the sector for most people. Dykstra and Jungerius (1997) attribute most accidents on Kenyan roads to poor road design, construction, and maintenance. Studies on urban transport problems have recommended intensive road improvement in Nairobi (for example, Ogonda 1976) and Mombasa (Irandu 1982). Most urban roads are relatively narrow single carriageways. What emerges from the study is that there are few well established training institutions as well as few well trained trainers in the region indicating that capacity building in institutions and trainers is urgently needed if the existing challenge of the low quality of drivers is to be effectively addressed. Virtually all organized transport bodies in the region were dissatisfied with the existing quality, quantity and type of training of drivers and other categories of transport operators in the region. Companies that pursue rigid, well established and implemented training programmes, tended to have negligible accidents and indiscipline among the workers. Companies like Shell, Bamburi, Coca Cola, WFP and others outsourced a large proportion of their transport needs but insisted on comprehensive training of all the staff of the contracted transporters as a condition for the offer of a contract to transport their cargo. Often such training involved drivers and other categories of staff involved directly and indirectly in handling the cargo. The level of accidents involving cargo trucks from these companies was negligible, a major contrast from many other long distance trucking companies. Jeremy Andrade, a leading trainer of transport operators in the region underlined this fact through an example of a case in 2011 where out of 500 trucks from companies which had had their staff go through their comprehensive training, only 1 truck was involved in a serious accident during the year. One of the main matatu associations in Kenya, the Matatu Welfare Association (MWA) has, for instance publicly called for complete overhaul of both the training and testing of drivers in the country as one of the strategies of reducing the current high rate of loss of human lives through road accidents (The Standard, June 8, 2012, p.33). The Kenya Transport Association hopes that the training institutes will serve as a
centre of excellence for the region. Jane Njeru CEO of KTA established that most road accidents in the Kenyan roads today involve a truck and KTA is determined to continue offering training to truck drivers so as to improve road safety in the country (Transporter magazine, issue no 015, Jan 2012, p.4)

2.4.4.1 The Kenya Transport Association
The Kenya Transport Association was established in 1968 and for a long time acted rather informally as a loose forum for truck transport operators. It became a professionally organized association in 2009 and currently has about 200 active registered members. Its main function has been that of a lobby organization for members mainly with government and various other public bodies such as tax and road authorities. KTA is concerned about the availability of adequately trained staff in the truck industry. The association is in the process of establishing a training institute to cater for training needs of its members and other transport operators in the region. The institute is scheduled to be operational by the last quarter of 2013. USAID which has been a key partner with KTA in the last three years has been one of the main bodies supporting the establishment of the training institute.

According to the executive officer Grace Maina Moseka, KTA was proposing about the curriculum that would be used. The institute was expected to provide relevant training to a wide range of categories of transport operators including fleet managers and supervisors, directors and owners of truck companies, drivers and various support areas like IT, vehicle maintenance, etc. The main objective of this initiative is to reduce the high number of accidents and in the process reduce insurance charges for the transported cargo, with the overall effect of cutting down transport costs in the region. KTA hopes that the training institute will serve as a centre of excellence for the region. Other functions and activities of KTA include enhancing road safety for the benefit of all stakeholders, improving transport sector management skills, organizing training workshops for transport operators in areas of interest to their members, such as road safety, fleet management; organizing driver training sessions both independently as well as in collaboration with other interested partners and improving operations of members to facilitate the reduction of operational costs.
2.5 Conceptual Frame Work

**Independent variables**

- Institutional Factors
  - Property rights
  - Markets
  - Infrastructure

- Legal framework
  - Road policies
  - Taxation
  - Customs & duties

- Human resource factors
  - Drug abuse
  - HIV & AIDs
  - Accidents

- Stakeholders
  - Truck owners & Drivers
  - Government
  - Insurance
  - Client/Customer
  - Investors

**Dependent variable**

- Improved Cargo transportation by road

Figure 3: Conceptual Frame Work
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction
To obtain reliable research findings, a research must be well designed with clear methodology for collecting and analyzing data. In this chapter, the researcher outlines the research design to be used, the target population, sampling methods, data collection methods, procedures, analysis and presentation of the research work.

3.2 The Research Design
The research design is the structure of the research. It can be regarded as an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance with the research purpose (Kombo and Tromp, 2006). A descriptive design was used in this study. Descriptive research design is a scientific method which involves observing and describing the behavior of a subject without influencing it in any way (Shuttleworth, 2008). It results in a description of the state of affairs as it exists. This design was selected because the researcher wished to collect information on people’s attitudes and opinions as well as facts from existing reports in relation to the factors that influence cargo transportation in a Logistics organization, with an aim to determine if these factors influence the handling and transportation of cargo for the organization.

3.3 Target Population
According to Mugenda (1999), target population is defined as “The totality of cases of people, organization or institutions which pose certain common characteristics that are relevant to the study”. This research sought to gain information from people involved in the cargo transportation process at Maersk SeaLand. This included procurement staff, finance staff, management staff, logistics staff and cargo handling staff within the organization. The target population was the 57 staff in the organization who were directly or indirectly involved in cargo transportation. Table 3.1 shows the distribution of the target population.
Table 3.1  Target Population

<table>
<thead>
<tr>
<th>Category</th>
<th>Target Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Management Staff</td>
<td>9</td>
<td>16%</td>
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<td>7</td>
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<tr>
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<td>21%</td>
</tr>
<tr>
<td>Finance Staff</td>
<td>6</td>
<td>11%</td>
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<td>23</td>
<td>40%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>57</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Maersk SeaLand

3.4 Sample Design

Sampling is the procedure a researcher uses to gather people, places or things to study. It is the process of selecting a number of individuals or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group (Kombo and Tromp, 2006). For this research a census of the whole population was done. The total number of people in the target population was significantly small. A census therefore enabled the researcher to collect a wide variety of views and hence promote reliability and validity of the data collected. The sample population is presented in Table 3.2.

Table 3.2: Sample Population

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</tr>
</tbody>
</table>

Source: Maersk SeaLand
3.5 Data Collection Procedures and Research Instruments

Data collection refers to gathering specific information aimed at improving or refuting some facts (Kombo and Tromp, 2006). The researcher relied on both primary and secondary sources of data for information. Secondary sources included the organizations policy documents, internal reports and audit reports. Primary data was obtained through the use of structured interviews and postal questionnaires. A questionnaire was designed and utilized also as an interview schedule. This is presented in Appendix 11.

Questionnaires were selected because some of the respondents are in remote geographical locations and the questionnaire provided an effective means to reach them. Structured interviews were utilized so as to expose interviewees to the same set of questions as those posed to the respondents in remote locations. This aided the researcher to obtain more reliable information and also to provide in-depth information about the subject of interest.

The questionnaire was pre-tested to check that it would collect relevant information and that the wording was clear. The responses from this pilot study were analyzed and the feedback used to improve the wording of the final research questionnaire. The questionnaires were administered through face to face interviews to respondents in Nairobi as well as by e-mail to respondents in Mombasa. The face to face interviews were conducted within a period of one week. The respondents in Mombasa were emailed the questionnaires and requested to provide feedback within the same week. The second week was allowed for follow up of unreturned questionnaires.

3.5.1 Validity of Data

Validity of a test is a measure of how well a test measures what it is supposed to measure (Kombo and Tromp, 2006). To ensure validity and reliability, the questionnaires were pre-tested to check that the questions were not ambiguous, emotional or leading and that the wording was simple and clear enough to draw relevant responses. In addition, the same set of questions was administered to respondents so that responses would be similar to facilitate comparison. The researcher reviewed all returned questionnaires and responses obtained
through interviews. Responses that were inconsistent, incomplete or irrelevant to the research questions were ignored.

3.5.2 Reliability of Data

Reliability aims at ascertaining consistency of responses collected by the instruments. Joppe (2000) defines reliability as the extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable. Reliability is a measure of how consistent the results from the test are (Kombo and Tromp, 2006). To ensure reliability, it is important to have an appropriately sized sample to achieve statistically significant and reliable results (Unite for Site, n.d). The researcher therefore conducted a census of expert staff in the organization to ensure that the data collected was reliable. The total population was 57 people. This was deemed to be too small to subdivide further. A census of all the expert staff would also provide different perspectives to the research questions and allow the researcher to compare responses and draw more reliable conclusions.

3.6 Data Analysis Methods

Data analysis refers to examining what has been collected in a survey and making deductions and inferences. Data was analyzed both quantitatively and qualitatively. Quantitative data was analyzed on an Ms Excel worksheet while qualitative data was summarized in an Ms Word document. Quantitative data analysed the closed ended questions and the outcomes were presented in terms of percentage. This was then presented using tables, graphs and charts. Qualitative data analysed open ended questions and summarized the views of the respondents on the effects of planning.
## Operationalization of Variables

<table>
<thead>
<tr>
<th>Research Objectives</th>
<th>Type of variable</th>
<th>Indicator</th>
<th>Measuring of indicator</th>
<th>Data collection method</th>
<th>Levels of scale</th>
<th>Tools of analysis</th>
<th>Types of analysis</th>
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<tbody>
<tr>
<td>Institutional factors</td>
<td>Independent</td>
<td>- No complaints</td>
<td>- No. of complaints</td>
<td>Questionnaire</td>
<td>Ordinal ratio</td>
<td>Mean percentage</td>
<td>Descriptive</td>
</tr>
<tr>
<td>- Property rights</td>
<td></td>
<td>- No delays</td>
<td>- No. times per week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Available markets</td>
<td></td>
<td>- No debts</td>
<td>- Outstanding debts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Infrastructure</td>
<td></td>
<td>- Increased demand</td>
<td>- Frequency of breakdown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Economy status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal Framework</td>
<td>Independent</td>
<td>- Good roads</td>
<td>- No</td>
<td>Questionnaire</td>
<td>Ordinal ratio</td>
<td>Mean percentage</td>
<td>Descriptive</td>
</tr>
<tr>
<td>- Road policies</td>
<td></td>
<td>- Speedy transportation of goods</td>
<td>- Consistency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Taxation laws</td>
<td></td>
<td>- Good returns</td>
<td>- Volume</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Customs</td>
<td></td>
<td>- Less spoilage</td>
<td>- Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Duties</td>
<td>Dependent</td>
<td></td>
<td></td>
<td>Interview</td>
<td>Ratio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human resource factors</td>
<td>Independent</td>
<td>Dependent</td>
<td>Reduced or less drugs intakes</td>
<td>State of health</td>
<td>Reduced accidents</td>
<td>Fewer deaths</td>
<td>Good health</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------</td>
<td>-----------</td>
<td>-------------------------------</td>
<td>-----------------</td>
<td>------------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>-Drugs abuse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-HIV &amp; AIDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Road accidents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Long absences from family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Independent</th>
<th>Dependent</th>
<th>New trucks</th>
<th>Road transport policy</th>
<th>Major investor projects</th>
<th>Less losses</th>
<th>No. of trucks</th>
<th>No. of new investors</th>
<th>Implementation</th>
<th>No of cargo deliveries</th>
<th>Frequency</th>
<th>Questionnaire</th>
<th>Ordinal</th>
<th>Mean percentage</th>
<th>Descriptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Truck owners &amp; drivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Questionnaire</td>
<td>Ordinal</td>
<td>Mean percentage</td>
<td>Descriptive</td>
</tr>
<tr>
<td>-Insurance companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ordinal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Investors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Questionnaire</td>
<td>Mean percentage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Clients/ customers/ logistical companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Questionnaire</td>
<td>Mean percentage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-The government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Interview</td>
<td>Mean percentage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction
In this chapter the data collected was organized into a systematic format to enable analysis. Analysis refers to examining coded data critically and making inferences while presentation refers to ways of arranging data to make it clearly understood (Kombo and Tromp, 2006). The researcher analyzed the data in line with the four objectives of the study which included examining the factors which influenced road cargo transportation. These factors included institutional factors, legal factors and legal frameworks, human resource factors and the influence that different stakeholders had in transportation of cargo. Data was analyzed based on the responses received from the respondents. The research targeted 57 staff in the Nairobi office. Out of the 57 respondents, 8 respondents representing a 14% non-response rate; did not send back the questionnaires within the timeframe provided by the researcher and all follow-up action did not yield any response from these respondents. The results, summaries and conclusions are hence based on an 86% response rate of 49 respondents.

4.2 Respondents Particulars
The respondents who are based in the Nairobi office and who gave their responses totaled to 49. These 49 respondents were analyzed based on their categories, their gender, their age, level of education attained and by the number of years worked at the organization.

4.2.1 Respondents by Category
The 49 respondents were classified into five categories i.e. the management staff, procurement staff, Logistics staff, finance staff and Cargo handling staff. The researcher collected data relating to the category of the respondents in terms of the role they played in the organization. This was important to provide perspectives of different roles within the organization in relation to cargo handling.
Table 4.1
Respondents by category

<table>
<thead>
<tr>
<th>Category</th>
<th>Responses</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management staff</td>
<td>6</td>
<td>12.2</td>
</tr>
<tr>
<td>Procurement staff</td>
<td>7</td>
<td>14.3</td>
</tr>
<tr>
<td>Logistics Staff</td>
<td>10</td>
<td>20.4</td>
</tr>
<tr>
<td>Finance staff</td>
<td>5</td>
<td>10.3</td>
</tr>
<tr>
<td>Cargo handling staff</td>
<td>21</td>
<td>42.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.1 illustrates the responses received in relation to the category of the respondents. Bigger numbers were noted in the logistics, procurements and cargo handling departments. This is because the main activities and tasks revolved around purchases and logistics. There were fewer staff in the finance and management departments since the Nairobi office is just a support office, most of the operations and activities are carried out at the main office in Mombasa.

4.2.2 Respondents by Gender

The respondents were analyzed on the basis of either male or female. Information relating to the gender of the respondents was collected to provide a picture of how the different genders were represented in the organization.

Table 4.2
Respondents by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Responses</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>21</td>
<td>42.8</td>
</tr>
<tr>
<td>Female</td>
<td>28</td>
<td>57.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.2 represents the findings based on gender. The organization was found to have more female than male members of staff. This is because the Nairobi office is just a support office
thus more females than males, most of the male staffs who are the majority are based in Mombasa at the Mombasa main office.

4.2.3 Respondents by Age
Data was presented based on information relating to the age of the respondents. This information would provide a picture of the age groups that were represented in the organization.

Table 4.3
Responses by age

<table>
<thead>
<tr>
<th>Age</th>
<th>Responses</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-30 years</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>31-40 years</td>
<td>22</td>
<td>44.9</td>
</tr>
<tr>
<td>41-50 years</td>
<td>13</td>
<td>26.5</td>
</tr>
<tr>
<td>Over 50 years</td>
<td>2</td>
<td>4.1</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.3 represents the findings on age. It was noted that most of the respondents were less than 40 years old. It emerged that most of the staff lay between 18 and 50 years, with a majority being between 31 and 40 years. The Kenyan workforce is generally comprised of younger generations as more young people are now enrolling in schools and getting more education and careers.

4.2.4 Respondents by level of education attained
Information relating to the level of education attained by the respondents was also analyzed. This information would enable the researcher to determine if the organization was utilizing professional expertise through employing qualified or part-qualified staff.
Table 4.4

Responses by level of education attained

<table>
<thead>
<tr>
<th>Education level</th>
<th>Number</th>
<th>Education Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Secondary school</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>College level</td>
<td>16</td>
<td>32.7</td>
</tr>
<tr>
<td>University level</td>
<td>24</td>
<td>49.0</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>18.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 4.4 above represents the findings on the level of education attained by the respondents. It can be observed that the organization has employed qualified staff of various degrees. Most of the staff had an undergraduate degree qualification. 18.4% of the staff had post graduate qualifications. None of the staff at the Nairobi support office hadn’t reached secondary education. Being a support office where major decisions are made, the staff ought to be qualified and this was reflected by the findings.

4.2.5 Respondents by Number of Years Worked

Information relating to the number of years respondents had worked in the organization was analyzed as well. This information was collected to provide an insight into the institutional memory of the respondents. A good institutional memory would enable the researcher to compare different periods in the organization and thus draw better conclusions.
Table 4.5
Responses by number of years worked

<table>
<thead>
<tr>
<th>Years worked</th>
<th>Number</th>
<th>Numbers worked (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 years</td>
<td>4</td>
<td>8.2</td>
</tr>
<tr>
<td>1-2 years</td>
<td>6</td>
<td>12.2</td>
</tr>
<tr>
<td>2-3 years</td>
<td>13</td>
<td>26.5</td>
</tr>
<tr>
<td>3-4 years</td>
<td>11</td>
<td>22.4</td>
</tr>
<tr>
<td>4-5 years</td>
<td>7</td>
<td>14.3</td>
</tr>
<tr>
<td>Over 5 years</td>
<td>8</td>
<td>16.3</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100</td>
</tr>
</tbody>
</table>

It was evident that 50% of the respondents had been with the organization for a period of between 2 - 4 years while 30% had been with the organization for over 4 years. These respondents were in a good position to provide a good picture of how the organization has been influenced by the various factors in transporting cargo over time. The policies and organizational structure was conducive and thus the staffs were motivated to stay in the organization for a longer period.

4.3 Responses based on the research study objectives

The data in the research study was analyzed in line with the four objectives of the research study which included examining the factors which influenced road cargo transportation. These factors included institutional factors, legal factors and legal frameworks, human resource factors and the influence that different stakeholders had in transportation of cargo.

4.3.1 Institutional factors

The respondents had diverse views on some of the ways in which institutional factors influenced cargo transportation. Though the respondents had different views, similar themes emerged from their responses. The respondents identified five key ways in which institutional factors had an influence on cargo transportation. On average, 86% of the respondents i.e. 42 respondents out of the 49 who responded felt that institutional factors had an influence on cargo transportation while 7 felt that institutional factors had no influence on cargo transportation.
From the research findings, it emerged that 86% of the respondents felt that institutional factors had an influence on cargo transportation. They explained that proper administration of laws and regulations would ensure that there would be fewer delays in cargo transit, utilization of existing infrastructure would ensure that goods would be transported within the shortest time possible; government support for organizations would greatly assist organizations involved in transportation, action rules on property rights and addressing the existing gaps in management practices greatly influenced cargo transportation by ensuring that all stakeholders know their roles and enhance proper working environment for all parties.

Table 4.6
Extent of influence of institutional factors on road cargo transportation

<table>
<thead>
<tr>
<th>Extent of effect</th>
<th>Frequency</th>
<th>Numbers worked (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very great extent</td>
<td>9</td>
<td>18.4</td>
</tr>
<tr>
<td>Great extent</td>
<td>21</td>
<td>42.8</td>
</tr>
<tr>
<td>Average extent</td>
<td>11</td>
<td>22.4</td>
</tr>
<tr>
<td>Low extent</td>
<td>6</td>
<td>12.2</td>
</tr>
<tr>
<td>Very low extent</td>
<td>2</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Table 4.6 presents the respondents views on the extent of institutional factors influence. Majority of the respondent felt that there was a great influence on cargo transportation with 95.8% suggesting that institutional factors played a great role in cargo transportation. Only 4.2% felt there was a low effect.

**Correlation coefficient (Spearman’s rank correlation coefficient, Rs)**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Extent of influence (%)</th>
<th>Rank in u</th>
<th>Rank in v</th>
<th>d=u-v</th>
<th>d²</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td>18.4</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>68</td>
<td>42.8</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>87</td>
<td>22.4</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>81</td>
<td>12.2</td>
<td>3</td>
<td>4</td>
<td>-1</td>
<td>1</td>
</tr>
<tr>
<td>94</td>
<td>4.2</td>
<td>1</td>
<td>5</td>
<td>-4</td>
<td>16</td>
</tr>
</tbody>
</table>

\[ Rs = 1 - \frac{6Ed^2}{N (n^2 - 1)} \]

\[ Rs = 0.95 \]

There is a very strong correlation between the institutional factors and effect of influence on cargo transportation. The factors greatly affected the transit of cargo.

**4.3.2 Legal framework and legal factors**

The respondents presented their views on whether Legal frameworks and factors had any influence on the delivery and management of cargo. All the respondents felt that the existing legal frameworks had an influence on the cargo transportation. It was observed that 100% of the respondents felt that legal frameworks had indeed had an influence on the transit and delivery of cargo.
Figure 5: How Legal frameworks and factors influence cargo transportation

Figure 5 illustrates the respondents’ views on different ways in which legal frameworks influenced the delivery and transit of cargo. It was observed that 100% of the respondents felt that legal frameworks had indeed had an influence on the transit and delivery of cargo. Factors such as road transport policies and regulations, road structures and infrastructure, safety and environmental concerns as well as licensing of vehicles and drivers were key determinants. Vehicle licensing dictated how vehicles were manned and this in effect determined how much would be transported at a specific time.

Table 4.7
Extent of Influence of legal frameworks on road cargo transportation

<table>
<thead>
<tr>
<th>Extent of influence</th>
<th>Frequency</th>
<th>Numbers worked (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very great extent</td>
<td>15</td>
<td>30.6</td>
</tr>
<tr>
<td>Great extent</td>
<td>17</td>
<td>34.7</td>
</tr>
<tr>
<td>Average extent</td>
<td>14</td>
<td>28.6</td>
</tr>
<tr>
<td>Low extent</td>
<td>3</td>
<td>6.1</td>
</tr>
<tr>
<td>Very low extent</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 4.7 presents the respondents’ views on the extent to which legal frameworks influenced cargo transportation. All the respondents felt that the legal frameworks had the greatest effect on the delivery and transit of cargo.

**Correlation coefficient (Spearman’s rank correlation coefficient, Rs)**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Extent of influence (%)</th>
<th>Rank in u</th>
<th>Rank in v</th>
<th>d=u-v</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>30.6</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>68</td>
<td>34.7</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>80</td>
<td>28.6</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100</td>
<td>6.1</td>
<td>1</td>
<td>4</td>
<td>-3</td>
<td>9</td>
</tr>
</tbody>
</table>

\[
Rs = 1 - \frac{6Ed2}{N(n^2 - 1)}
\]

\[
Rs = 0.89
\]

There is a very strong correlation between the legal factors and effect of influence. The legal factors were very important in the transit of cargo. They need to be adhered to by all the parties involved in cargo transit.

### 4.3.3 Human resource factors

The respondents had divergent views on whether human resources factors had any influence on cargo transportation. The data analyzed showed that 94% of the respondents felt that human resource factors had significant influence on road cargo transportation. They argued that human resource factors are the backbone of all processes involved during the transit of any cargo.
Figure 6: Influence of human resource factors on road cargo transportation

Figure 6 presents the respondents’ views on how human resources factors influenced cargo transportation. They pointed out that road accidents result to greater financial losses and loss of human life. The data analyzed showed that 94% of the respondents felt that human resource factors had significant influence on road cargo transportation. The road transport system is worrisome because the prevailing road traffic anarchy causes crashes that impact both household income and the national economy. They argued that Roads and Transit accidents often strips families of their breadwinner, leading to increased poverty. Healthcare or funeral costs are common causes of impoverishment among affected families. Road crashes also exact a tremendous financial loss for Kenya. The cost elevation is due to the lost opportunity cost of injured persons, disabled persons, and family care, as well as loss of income, costs of health services, and damage caused to property. Road crashes consume massive financial and human resources that the country can ill-afford to lose. However, 6% of the respondents did not think that human resources factors had had any influence on road cargo transportation. They argued that delays and problems experienced in cargo transit were as a result of other factors other than human resources factors.
Table 4.8
Extent of Influence of Human resource Factors on cargo transportation

<table>
<thead>
<tr>
<th>Extent of effect</th>
<th>Frequency</th>
<th>Numbers worked (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very great extent</td>
<td>8</td>
<td>17.4</td>
</tr>
<tr>
<td>Great extent</td>
<td>12</td>
<td>26.1</td>
</tr>
<tr>
<td>Average extent</td>
<td>17</td>
<td>37.0</td>
</tr>
<tr>
<td>Low extent</td>
<td>6</td>
<td>13.0</td>
</tr>
<tr>
<td>Very low extent</td>
<td>3</td>
<td>6.5</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.8 illustrates the respondents’ views on the extent to which the human resources factors influenced cargo transportation. Majority however felt that human resource factors had a significant influence on road cargo transportation.

**Correlation coefficient (Spearman’s rank correlation coefficient, Rs)**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Extent of influence (%)</th>
<th>Rank in u</th>
<th>Rank in v</th>
<th>d=u-v</th>
<th>d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>17.4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>70</td>
<td>26.1</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>83</td>
<td>37.0</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>100</td>
<td>13.0</td>
<td>1</td>
<td>4</td>
<td>-3</td>
<td>9</td>
</tr>
<tr>
<td>91</td>
<td>6.5</td>
<td>2</td>
<td>5</td>
<td>-3</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100</td>
<td>33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rs=1- 6Ed2

N (n2-1)

Rs= 0.94

There is a very strong correlation between the human resource factors and effect of influence on cargo transportation. The factors greatly affected the transit of cargo.
4.3.4 Different stakeholders

The respondents presented their views on whether they felt that any involvement of the different stakeholders lead to the efficient adoption and implementation of roads laws and regulations. The respondents agreed that the different stakeholders had a significant influence on cargo transportation.

Figure 7: Influence of the different stakeholders on cargo transportation

Figure 7 illustrates how the different stakeholders were involved in the transportation and efficient delivery of cargo. More than 80% of the staff noted that the Government as an institution played the greatest role. The data analyzed showed that 100% of the respondents felt that the involvement of the different stakeholders had significant influence on the delivery and transit of cargo. This included involvement of training institutions to train road users, proper guidelines and regulation of the diverse driving schools within the country, active participation and representation of transport associations, proper policies and guidelines on investors and investment interests and functioning government institutions.
Table 4.9
Extent of influence of the different stakeholders on cargo transportation

<table>
<thead>
<tr>
<th>Extent of Influence</th>
<th>Frequency</th>
<th>Numbers worked (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very great extent</td>
<td>16</td>
<td>32.7</td>
</tr>
<tr>
<td>Great extent</td>
<td>18</td>
<td>36.8</td>
</tr>
<tr>
<td>Average extent</td>
<td>15</td>
<td>30.5</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.9 presents the respondents’ views on the extent to which the different stakeholders influenced cargo transportation. All the respondents acknowledged that the different stakeholders have a significant influence on cargo transportation.
CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter will link the findings to the research questions and draw conclusions. It will provide a summary of the whole study with particular reference to the research problem by providing a summary of the main findings, discussions, conclusions and recommendations.

5.2 Summary of Findings

From the findings, 86% of the respondents felt that institutional factors lead to an increase in the cost of transit and delivery of cargo. The role and importance of institutions have an effect in cargo transportation through a variety of different perspectives. These perspectives or dimensions include sustainability, technology and technological change, production processes and transaction costs. Movements towards sustainable transport are influenced by institutional conditions. When property rights of land below the surface are not well defined, investments in underground transport infrastructure have a higher risk premium. International agreements on taxation may hamper the introduction of fiscal instruments resulting in undesirable fiscal treatment of transport modes. Transport policies affect the welfare or profit of households and firms that in turn will try to influence these policies. This leads to the development, over time, of political processes with both formal and informal rules constraining the room that governments have to maneuver. However, 14% of the respondents pointed out that there was no significant increase in costs of cargo transit as a result of institutional factors effect.

Cargo transportation is dependent on how well the legal frameworks are existent and functioning. The data collected showed that 100% of the respondents agreed that legal frameworks had a major influence on the transit and delivery of cargo. The introduction of traffic laws meant that for all parties in the road transport supply chain – the consignor, consignee, packer, loader and scheduler, drivers, owner-drivers and operators as well as directors, partners and managers – were able to be held responsible for their actions (or
inactions) relating to breaches of the road transport, fatigue, speed, mass, dimension and load restraint laws. The respondents noted a few improvements that could be made to enhance the effective implementation and follow ups of the legal systems.

The human resource factors had a tremendous increase in costs for cargo on transit. The data collected showed that 94% of the respondents felt that human resource factors had significant influence on road cargo transportation. The road transport system is worrisome because the prevailing road traffic anarchy causes crashes that impact both household income and the national economy. They argued that Roads and Transit accidents often strip families of their breadwinner, leading to increased poverty. Healthcare or funeral costs are common causes of impoverishment among affected families. Road crashes also exact a tremendous financial loss for Kenya. The cost elevation is due to the lost opportunity cost of injured persons, disabled persons, and family care, as well as loss of income, costs of health services, and damage caused to property. Road crashes consume massive financial and human resources that the country can ill-afford to lose. However, 6% of the respondents did not think that human resources factors had any influence on road cargo transportation. They argued that delays and problems experienced in cargo transit were as a result of other factors other than human resources factors.

The involvement of the stakeholder and public community is crucial to achieve a proper and coordinated transit of goods. Several stakeholders are involved such as local national or regional government, service providers, associations or road haulers. Transport services constitute a key component of Kenya’s service sector in both their contribution to the country’s employment and income generation and their role in external trade, especially at the regional level. A large proportion of the stakeholders attribute the poor state of training of transport operators to the government’s failure to establish strong and viable training institutions at all levels of demand.
5.3 Discussion of Findings

The various factors that affect cargo transportation result to greater expenditure on cargo transit. 86% of the respondents felt that institutional factors lead to an increase in the cost of transit and delivery of cargo while 14% of the respondents pointed out that there was no significant increase in costs of cargo transit as a result of institutional factors effect. There is a very strong correlation of 0.95 between the institutional factors and effect of influence on cargo transportation. The factors greatly affected the transit of cargo. 100% of the respondents felt that legal frameworks had indeed had an influence on the transit and delivery of cargo. Factors such as road transport policies and regulations, road structures and infrastructure, safety and environmental concerns as well as licensing of vehicles and drivers were key determinants. Vehicle licensing dictated how vehicles were manned and this in effect determined how much would be transported at a specific time. There is a very strong correlation of 0.89 between the legal factors and effect of influence. The legal factors were very important in the transit of cargo. They need to be adhered to by all the parties involved in cargo transit. 94% of the respondents felt that human resource factors had significant influence on road cargo transportation. The road transport system is worrisome because the prevailing road traffic anarchy causes crashes that impact both household income and the national economy. They argued that Roads and Transit accidents often strips families of their breadwinner, leading to increased poverty. Healthcare or funeral costs are common causes of impoverishment among affected families. Road crashes also exact a tremendous financial loss for Kenya. The cost elevation is due to the lost opportunity cost of injured persons, disabled persons, and family care, as well as loss of income, costs of health services, and damage caused to property. Road crashes consume massive financial and human resources that the country can ill-afford to lose There is a very strong correlation of 0.89 between the human resource factors and effect of influence on cargo transportation. The factors greatly affected the transit of cargo. 100% of the respondents felt that the involvement of the different stakeholders had significant influence on the delivery and transit of cargo. This included involvement of training institutions to train road users, proper guidelines and regulation of the diverse driving schools within the country, active participation and representation of transport associations, proper policies and guidelines on investors and investment interests and functioning government institutions.
5.4 Conclusions
The different factors of institutional, legal, human resources and involvement of the different stakeholders lead to an increase in cargo transportation as well as in transit costs. The role and importance of institutions are manifested through a variety of different perspectives. These perspectives or dimensions include sustainability, technology and technological change, production processes and transaction costs. Movements towards sustainable transport are influenced by institutional conditions. When property rights of land below the surface are not well defined, investments in underground transport infrastructure have a higher risk premium. International agreements on taxation may hamper the introduction of fiscal instruments resulting in undesirable fiscal treatment of transport modes. Transport policies affect the welfare or profit of households and firms that in turn will try to influence these policies. This leads to the development, over time, of political processes with both formal and informal rules constraining the room that governments have to maneuver. The introduction of traffic laws meant that for all parties in the road transport supply chain – the consignor, consignee, packer, loader and scheduler, drivers, owner-drivers and operators as well as directors, partners and managers – were able to be held responsible for their actions (or inactions) relating to breaches of the road transport, fatigue, speed, mass, dimension and load restraint laws. The involvement of the stakeholder and public community is crucial to achieve a proper and coordinated transit of goods. Several stakeholders are involved such as local national or regional government, service providers, associations or road haulers. Transport services constitute a key component of Kenya’s service sector in both their contribution to the country’s employment and income generation and their role in external trade, especially at the regional level. A large proportion of the stakeholders attribute the poor state of training of transport operators to the government’s failure to establish strong and viable training institutions at all levels of demand.

5.5 Recommendations
It is necessary to enhance efforts to stimulate the emergence of efficient operators. One of the strategies to achieve this aim was the separation of infrastructure ownership and operations. It is important to recognize that institutions have a positive role to play in the construction and maintenance of the transport system. This is in reference to all transport decision making about institutional design or for that matter redesign. The aim of the laws is to make positive
changes to the actions of those involved in the heavy vehicle transport industry and to ensure all parties who influence on-road behaviour are held accountable for breaches of road transport laws. Proper application of these laws should be enforced. This will assist to improve compliance outcomes for road safety, infrastructure and the environment; minimise the adverse impacts of road transport on the community and minimise unfair competitive advantage within the heavy vehicle industry.

Internal rules and norms relate to an organization’s culture and have an impact on working relationships and administration. The organization should consider introducing healthier activities and lifestyles to promote a team culture and foster good relations. It is also important to hold seminars, trainings and workshops on organizational processes and procedures as well as the contribution of each department to the whole organization with a view to improving relations and increasing motivation within the organization. There is a great need for the various stakeholders to be involved in cargo transportation. The level of participation will depend on the resources and time devoted to the project, as it takes time and money to involve the stakeholders in the process. Also, not all stakeholders will be able or ready to participate in the policy analysis process and their participation might not even always be desired by other parties. The participation of the stakeholders is however necessary if the quality of the decisions is to be productive. Consultation of the stakeholders or participation is then necessary. It is also important to improve the flow of communication within the organization so as to improve operational efficiency.

5.6 Suggestions for Further Studies
There is need for further research on the problems experienced by organizations as they deal with the transit and delivery of cargo. This information will enable other organizations plan for and mitigate similar problems. There is also need to investigate the practices adopted by organizations in a view to determining their effectiveness in the process. This will facilitate improvement of processes and hence and improvement in the operational efficiency and effectiveness of organizations.
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APPENDICES

APPENDIX 1: LETTER OF INTRODUCTION

Grace Muthoni Kamuruchi
PO BOX 50183-00200
NAIROBI

Dear Respondent,

SUBJECT: QUESTIONNAIRES FOR DATA COLLECTION

I am a Post Graduate Student at the University of Nairobi pursuing a Masters of Arts degree in project planning and management. As part of my coursework, I am required to carry out and submit a research project report on factors influencing the transportation of cargo by road in Kenya, a case of Marsk SeaLand. To achieve this objective, I kindly request you to fill this questionnaire for me and let me assure you that all the information that you give will be treated with all the privacy and will only be for the intended use.

Thank you in advance for your time and cooperation.

Yours faithfully,

Grace Muthoni Kamuruchi

L50/69330/2011
APPENDIX 11: QUESTIONNAIRE

Please respond to the questions as clearly as possible. Tick in the boxes where appropriate and where spaces are provided, fill in your answers.

SECTION A: GENERAL QUESTIONS

1. Gender:
   Male ( )
   Female ( )

2. Age
   18 years -30 years ( )
   31 years – 40 years ( )
   41 years – 50 years ( )
   Above 50 years ( )

3. Highest Level of education attained
   Primary School ( )
   Secondary School ( )
   College ( )
   University Level ( )
   Other ( )

4. How long have you worked in the road cargo transportation industry?
   0-1 years ( )
   1-2 years ( )
   2-3 years ( )
   3-4 years ( )
   4-5 years ( )
   Over 5 years ( )

5. Category
   Management ( )
   Institutional ( )
   Logistics ( )
   Cargo handling ( )
   Transportation ( )
SECTION B: INSTITUTIONAL FACTORS

1. How long have you been in Transport business industry? Months or years. Please specify ……………………………………………………………………………………………

2. If you have been in this business for several years in this industry, what are some of Key Challenges that you have encountered? Please enumerate them.1…………… 2………………3………………4…………….etc

3. How have you been overcoming the challenges enumerated in question 2.above? Pease explain……………………………………………………………………

4. The followings are some of the Key issues that you must encounter while doing your business from time to time. What impact do they have in your day to day business of cargo transportation? Kindly tick appropriately

<table>
<thead>
<tr>
<th></th>
<th>Very great impact (5)</th>
<th>Great impact (4)</th>
<th>Moderate impact (3)</th>
<th>Low impact (2)</th>
<th>Very Low impact (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional Factors</td>
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<tr>
<td>Legal framework</td>
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<tr>
<td>Human resources factors</td>
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<td>Stakeholders in the industry</td>
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<tr>
<td>• Competitors</td>
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</table>

5. In your own opinion, how do you ensure that you remain relevant in this industry despite the many Challenges? .................................................................................................................
SECTION C: LEGAL FRAMEWORK

1. Does Legal framework in transport sector influence your business?

☐ Strongly Agree
☐ Agree
☐ Not Agree
☐ Disagree
☐ Strongly disagree

2. If you strongly agree in 1 above, Explain ……………………………………………
................................................................................................................

3. If you strongly disagree in 1 above, kindly explain………………………………..
................................................................................................................

4. Using a Likert 1-5 scale, with 1 being ‘to no extent at all’, 2 being ‘to a small extent’ 3
   being ‘to some extent’, 4 being ‘to a high extent’ and 5 being ‘to a very high extent’, to what
   extent are the following legal framework factors influence the transportation of cargo by
   road? Please tick (✓) all as appropriate

<table>
<thead>
<tr>
<th></th>
<th>Very Large extent (5)</th>
<th>Large extent (4)</th>
<th>Moderate Extent (3)</th>
<th>Small extent (2)</th>
<th>No extent at all (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restrictions on use of Roads</td>
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<tr>
<td>Penal provisions.</td>
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<tr>
<td>Weight limits for axles (of</td>
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<tr>
<td>different configurations),</td>
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<tr>
<td>Overall vehicle and load</td>
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<tr>
<td>weight limits,</td>
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</tbody>
</table>
5. Other than the above legal factors, what other legal factors can you add that influence the transportation of Cargo by road either positively or negatively? Please explain...

SECTION D: HUMAN RESOURCES FACTORS

1. Various human resource factors are known to influence the transportation of cargo by road. Do you agree with this statement? Please explain...

2. If yes in 1 above how, Kindly in your opinion what are some of this factors?

3. Do the various human resource factors influence the efficiency of your transportation business?

4. The following attributes of human resource play a key role in influencing the transportation of cargo by road. With your vast experience in this industry, please tick as per your opinion the extent to which they influence the business.
<table>
<thead>
<tr>
<th>Service differentiation</th>
<th>Very Large extent (5)</th>
<th>Large extent (4)</th>
<th>Moderate Extent (3)</th>
<th>Small extent (2)</th>
<th>No extent at all (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers differentiation e.g.</td>
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<tr>
<td>drivers with different skills.</td>
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<tr>
<td>Terminal illness</td>
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<tr>
<td>Level of education</td>
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<tr>
<td>Service delivery innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.g. innovation of both</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>processes and products to be</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>ahead of competitors</td>
<td></td>
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</tbody>
</table>

5. In your own opinion, please indicate how you would improve the transportation of cargo by road between Mombasa and Nairobi.
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--------------------------------------------------------------------------------

SECTION E: STAKEHOLDERS

1. Are you a member of the trade union that takes care of the transport industry? Please explain........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

2. If yes in 1 above, how has it helped you in your transportation business?
........................................................................................................................................
........................................................................................................................................

3. Using a Likert 1-5 scale, with 1 being ‘to no extent at all’, 2 being ‘to a small extent’ 3 being ‘to some extent’, 4 being ‘to a high extent’ and 5 being ‘to a very high extent’, to what
extent are the following factors related to stakeholders influence the transportation of cargo by road in Kenya especially between Mlolongo and Nairobi CBD. Please tick (✔) all as appropriate

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing road safety for the benefit of all stakeholders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improving transport sector management skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizing training workshops for transport operators in areas of interest to their members, such as road safety, fleet management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizing driver training sessions both independently as well as in collaboration with other interested partners</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improving operations of members to facilitate the reduction of operational costs.</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

5. In your own opinion please explain how Stakeholders in the transport industry influences the transportation of Cargo by road in Kenya,…………………

…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………
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