

THE EFFECT OF FREIGHT FORWARDING ON PERFORMANCE OF DRY PORTS IN KENYA, A CASE OF INLAND CONTAINER DEPOT, NAIROBI

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ABSTRACT

The aim of the study was to analyze the effects of freight forwarding on the performance of dry ports in Kenya particularly Inland Container Depot Nairobi. Specifically, the study identified factors that contribute to the increased congestion at Inland Container Depot Nairobi. Assessed the effects of freight forwarding practices and assess some of the decongestion strategies that have been put in place by the management and to investigate factors hindering the implementation of the strategies. The key objective of this study were to analyze the effect of freight forwarding practices on performance of dry ports. The focus of the study was the inland container depot Nairobi. The specific objectives of the study were to analyze the: effect of shipment planning; effect of port facility planning; effect of security planning and effect of custom clearance planning all on the performance of Inland Container Depot Nairobi. The study was limited for academic purposes only and the scope of the study was to get firsthand information on effects of freight forwarding practices on performance of dry ports in Kenya. In the theoretical review of the study the researcher identified the following theories; agency theory where the principal delegates duties to the agent. Supply chain network theory which describes the relationship between the companies with the supply chain. Goldratts theory of constraints which explains the impact of supply chain decision on time and profitability and stakeholder theory which explains how a businesses like the dry ports works and how it could work. In gathering out the data the researcher used a descriptive design. This entailed the use of structured questionnaire, which entailed the aspect of asking questions in a prescribed form and order. The study used purposive sampling technique to establish respondents in the strata. The exact sample size was 55 and the population size 120. Data collected was analyzed using SPSS version 21.0 and presented in percentages, means, standard deviations, and frequencies. Quantitative data was analyzed using descriptive statistics and qualitative data was analyzed using content analysis. Qualitative data was analyzed by setting responses for respondents based on which response that has been repeated several times. Quantitative data was analyzed using descriptive statistics such as mean, standard deviation and measures of central tendency which were presented in form of tables

Keywords: *Performance of Dry Ports, Shipment Planning, Port Facility Planning, Security Planning, Custom Clearance.*

1.0 INTRODUCTION

Dry ports are used much more consciously than conventional inland terminals with the aim of improving the situation resulting from increased container flows and a focus on security and control by the use of information and communication systems (Laguardia, 2009). Scheduled and reliable high-capacity transportation to and from the sea port is essential and determines the dry port's performance (Leland, 2009). Furthermore, the authors define the benefits for different actors of the transport system, resulting from all three types of dry ports (Roso, 2008). Implementation of a close dry port in a seaport's immediate hinterland increases a seaport's terminal capacity that might result in increased productivity since bigger container ships will be able to call at the seaport (Parker, 2010). With dry ports implementation, seaport's congestion from numerous trucks is avoided as well as carbon (IV) oxide emission. The benefits from distant dry ports derive from the modal shift from road to rail, resulting in reduced congestion at the seaport gates and its surroundings as well reduced external environmental effects along the route (Turner, 2009). The distant dry port extends the gates of the seaport inland with shippers viewing the dry port as an interface to the seaport and shipping lines (Beresford & Dubey, 2010).

A midrange dry port is situated within a distance from the seaport generally covered by road transport and serves as a consolidation point for different rail services (Duncan, 2013). The high frequency achieved by consolidating flows, together with the relatively short distance facilitates the loading of containers for one container vessel in the dedicated trains. Hence the dry port can serve as a buffer relieving the seaports stacking areas (Kotler, 2014). The current solution when shippers often choose dry ports located closest to their production base, is not necessarily the optimal solution in terms of the minimization of transport cost, mainly due to government policies and dry ports inability to provide value-added services needed by the shippers (Leland, 2009). Although a concept of a dry port should bring numerous benefits to the actors of the transport system, there are still many impediments to the implementation of the same; the most common are land use, infrastructure, environmental and institutional impediments. Impediment of a dry port could create seamless seaport inland access, that is, smooth transport flow with one interface in the form of the dry port concept, instead of two, with one at the seaport and the other at the inland destination (Robson, 2012). However, creating effective seaport inland access requires coordination between all actors involved (Van, 2008).

Many African countries face many challenges including increasing tariffs, insufficient and inefficient man power, introduction of new and sophisticated vessels and equipment that hinders operation of various operation terminals. Considering increase in cargo volumes received at African port terminals, it is clear that such volume impede the efficiency of ports in Africa, thereby grinding down their competitiveness from the perspectives of output and return time of vessels and container utilization. There is need therefore within the framework of global trade integration and sustainability for international ports, especially those in Africa to comply with the required international security and maintenance protocol (Rambo, 2012). Constant port congestion has limited the efficiency of operations whereby with the advent of containerization, time spent by clearing agents in clearing goods from ports takes a lot of time (Eyakuze, 2008). In order to achieve a proper balance of development through port decongestion, it is important to plan and design proper strategies for port decongestion and development. Therefore, we wanted to investigate the ICD and container freight services decongestion strategies.

In Kenya, an ICD was established in 1984 in order to decongest the sea port of Mombasa. ICD, Nairobi is owned and operated by KPA and linked by rail with Mombasa port provides shippers with dry port facilities in the commercial heart of the country. The spacious yard of 29 hectares is located in the industrial area off Mombasa Road and can accommodate a throughput of over 180000 TEUS per annum making it ideal for shippers of both export and imports and also empty containers. The objective of ICD Nairobi is to bring port services closer to customers in the hinterland through special railtainer services and goal is to have a truck turn around within 30 minutes and wagon turnaround of 2 hours 30 minutes. ICD Nairobi handles both containerized and loose cargo, strips and stuffs containers, consolidates or stores full/lose export cargo, weighs containers, finalizes cargo documentation, stores and handles empty containers and also leases yard slots to shipping lines and other interested parties for storage of empty containers (KPA, 2017). In Kenya, an Inland Container Depot was established in order to decongest the sea port of Mombasa. Inland Container Depot, Nairobi is owned and operated by Kenya Ports Authority and linked by rail with Mombasa port provides shippers with dry port facilities in the commercial heart of the country (Mutua, 2007). The spacious yard of 29 hectares is located in the industrial area off Mombasa Road and can accommodate a throughput of over 180000 TEUS per annum making it ideal for shippers of both export and imports and also empty containers (Dresner, 2011).

The Kisumu Inland Container Depot in Kibosis designed for a capacity of 15000 TEUS per annum has recently recorded a 150 percent increase in its traffic. Plans are underway to transform the Kisumu dry port to become a transshipment point between the port of Mombasa and other remote Kenyan counties along the Northern corridor as well as Uganda, South Sudan, Rwanda and Burundi (Mutua, 2007). The Kisumu Inland Container Depot may be complimented by the Eldoret Inland Container Depot, which was established to primarily target the land-locked countries of Uganda, Rwanda and Burundi (Jackson, 2015). Eldoret Inland Container Depot is not currently in use and the volume of traffic heading from Nairobi to the Rift Valley and neighboring countries to the north is low given lack of rail and road connections and instability in South Sudan. Given the state of Eldoret Inland Container Depot, Naivasha Inland Container Depot will likely take its place and benefit from being attached to the standard gauge railway spur from Nairobi. The Naivasha facility will reportedly provide storage of cargo especially those destined for Uganda, South Sudan, Northern Tanzania, Rwanda, Burundi and Congo (Mutua, 2007).

The objective of Inland Container Depot Nairobi is to bring port services closer to customers in the hinterland through special maintainer services and goal is to have a truck turn around within 30 minutes and wagon turnaround of 2 hours 30 minutes (Tom, 2009). Inland Container Depot Nairobi handles both containerized and loose cargo, strips and stuffs containers, consolidates or stores full/lose export cargo, weighs containers, finalizes cargo documentation, stores and handles empty containers and also leases yard slots to shipping lines and other interested parties for storage of empty containers (KPA, 2017). Inland container depot Nairobi is owned and operated by Kenya Ports Authority and linked by rail with Mombasa port. It provides shippers with dry port facilities in the commercial heart of the country and it was established in 1984 (KPA, 2017). The spacious yard of 29 hectares located in industrial area off Mombasa road on ICD Road can accommodate a throughput of over 180000 TEUS per annum making it ideal for shippers of both export and imports and also empty containers. Due to its geographical location, Nairobi Inland Container depot is best positioned to serve local traffic. It does however serve as a transit point for traffic to Kisumu.

1.1 Statement of the Problem

In order to bring port services closer to customers and reduce port congestion, Kenya Ports Authority has constructed inland container depots at Nairobi, Naivasha, Kisumu and Eldoret. These depots are linked to the Mombasa port container terminal by a rail connections and service. The Inland Container Depots allow the port of Mombasa to maintain its prime position as the go-to port for exports and imports in East Africa. The container capacity at Inland Container Depot Nairobi is overstretched posing danger to users. A statement signed by Kenya International Freight and Warehousing Association chairman said the current yard population stands at 9200 twenty foot equivalent units against a yard capacity of 3000. "It is clear to all of us that this not only poses a danger but may be a disaster in waiting given the fact the human beings are mingling with machinery and congested containers at the facility" said the statement (KIFWA, 2017). In the absence of congestion it will create more space for handling more cargo hence improve efficiency in their operations. It will also speed up flow of cargo from the port of Mombasa and land transportation networks hence creating a more central distribution point (Roso, 2008).

The inland container depot has now become a congestion hub as the government pushes cargo owners to use the standard gauge railway for cargo destined upcountry. Shippers, logistics firms and clearing agents say improving operations at the port will not succeed if the issues at the Inland Container Depot are not sorted out (Scotts, 2012). Unprecedented operations hitches at the Nairobi Inland Container Depot have been blamed for the pile up of cargo along the transportation chain, threatening Kenya's position as a regional transportation hub. Another problem of pile up of containers arise with Kenya Port Authority saying that there were some cleared containers that had not been collected despite exhausting their free storage period. It warned that uncollected cargo will be transferred to nominated warehouses outside the Inland Container Depot (Frazila & Sjafruddin, 2018). Kenya Port Authority have also been put on the spot over slow evacuation of cargo and the rising number of empty containers, which are affecting operations at the port of Mombasa. This comes at a time when hinterland shippers are increasingly turning to the port in the face of infrastructure improvements and acquisitions of new equipment, which are expected to facilitate even more trade within the region, in terms of cargo throughput and port efficiency. It is against this backdrop that the current study was built.

1.2 Objectives of the Study

1.2.1 General Objective of the Study

The general objective of the study was to analyze the effect of freight forwarding practices on performance of dry ports; a case study of Inland Container Depot Nairobi, Kenya.

1.2.2 Specific Objectives of the Study

1. To examine the effect of shipment planning on performance of Inland Container Depot Nairobi.
2. To investigate the effect of port facility planning on the performance of Inland Container Depot Nairobi.
3. To determine the effect of security planning on the performance of Inland Container Depot Nairobi.
4. To establish the effect of custom clearance on the performance of Inland Container Depot Nairobi.

1.3 Significance of the Study

Dry port operates as a center of transshipment of sea cargo to inland destination. Dry ports also provide facilities for storage and consolidation of goods, maintenance for roads or rail cargo carriers and custom clearance services. The location of this facilities at a dry port relieves competition for storage and custom space. A dry inland port can speed the flow of cargo between ships and major land transportation networks, creating a more central distribution point. Inland ports can improve the movement of imports and exports, moving the time consuming sorting and processing of containers inland away from congested sea ports.

A dry port concept is based on a sea port directly connected by rail to inland intermodal terminals where shippers can leave or collect standardized units as if directly at the sea port. This study will help scholars present the dry port concept, identify and categories existing dry ports. The conclusion indicate that implementation of a dry port in the sea ports hinterland enables the sea port to increase its terminal capacity the modal shift from road to rail results in a reduced congestion at the sea port gates and its surroundings and consequently in improved inland access

Dry ports will provide new opportunities for international trade and can also effectively promote economic and social development in surrounding areas including employment and income generation. A dry port also provides services for the handling and temporary storage of containers, general and/or bulk cargos that enter or leave the dry part by any mode of transport. Development of a network of dry ports can greatly help to streamline the transport process. Dry ports, strategically located where network of different modes converge, also allow goods to be transferred efficiently between transport modes, thereby ensuring optimal usage of the network as a whole. The researcher selected the company because it's the major inland port that is mostly used and it's directly linked to the port (Kenya international freight and warehousing association)

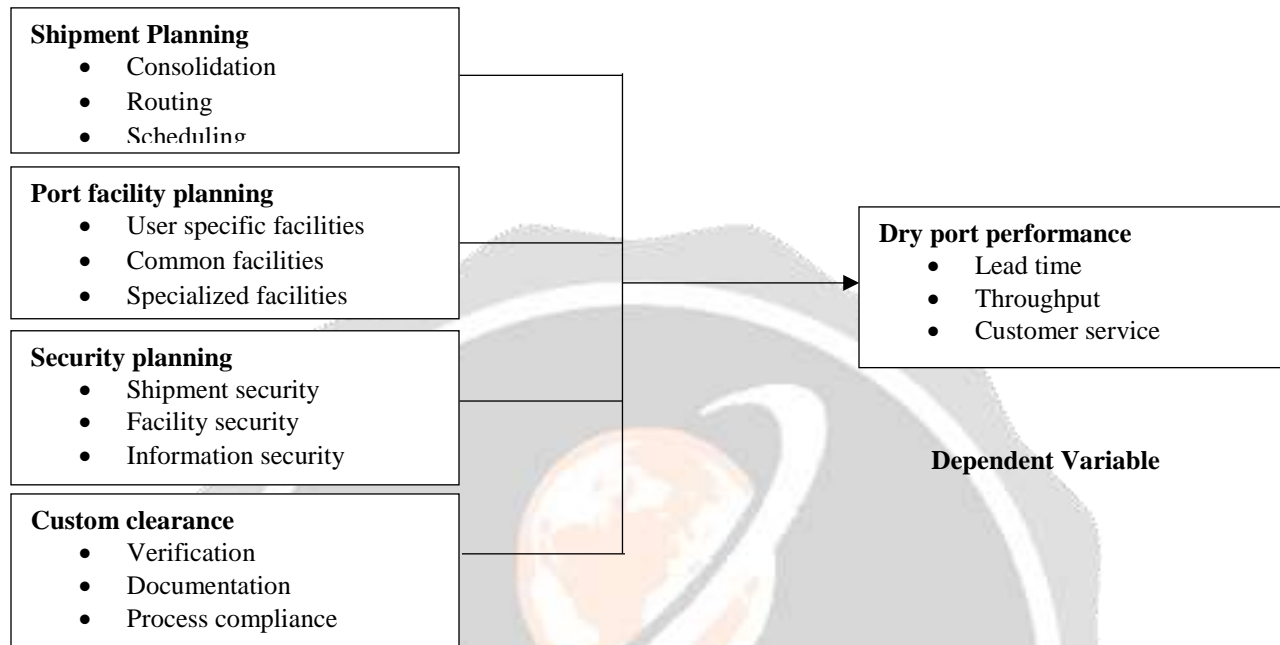
The study becomes useful in an indirect manner when a researcher develops a knowledge base that others can pick up and continue to develop thus generating benefits of their own. It also helps in understanding the research process, It helps researchers know how to work on problems, developing skills in the interpretation of results and the ability to be able to analyze data and integrate theory and practice . In addition to that it helps the researcher have skills in various techniques required in the field.

The company itself benefits more from the study. This is because the findings provides the different strategies that can be implemented in order to eliminate the level of congestion at Inland container depot. It also benefits from the study through formulation of by laws that can guide the port management on decongestion of the port. The company also gets to understand how they can improve on their performance this will call for improved efficiency in the maritime sector as a whole hence contributing to economic development of the company.

1.4 Scope of the Study

The scope of the study was to get first-hand information on effects of freight forwarding practices on performance of dry ports. The study was carried out with the view of the inland container depot in Embakasi, Nairobi. The dependent variable of the study was performances of inland container depot while the independent variable freight forwarding practices of dry ports which include shipment planning, port facility planning, and security planning and custom clearance. The reasons for choosing Inland Container Depot Nairobi are: It is the mostly used Inland container depot in Kenya; the only inland container depot that is connected by rail to the port of Mombasa and located in a strategic location where it is easily accessible for our research (Inland Container Depots, 2017).

1.5 Conceptual Framework



Independent Variables

Figure 1.1. Conceptual Framework

2.0 RESEARCH METHODOLOGY

2.1 Research design

A research design is a set of methods and procedures used in collecting and analyzing measures of the variables specified in the research problem research (Creswell, 2014). The importance of a good research is needed because it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort time and money (Saunders, 2009). The study was conducted through descriptive research design. Descriptive research design is a scientific method which involves observation and describing the behavior of a subject without influencing it in any way (Martyn, 2008). It produces accurate representations of persons, events or situations while providing an accurate description of what is existing (Robson, 2009). The descriptive design provides deeper insight and better understanding on description of the reasons for increased congestions in dry ports and effects that resulted from the congestion.

2.2 Target population

Population refers to a complete set of elements either persons or objects that possess some common characteristics defined by the sampling criteria established by the researcher (Lavrakas, 2009). The population of this study was the port users since they were expected to provide with reliable and valid information concerning the matter under study while taking in to consideration that the selected respondents will be easily accessed by the research section.

According to (Ruane, 2010), target population refers to the individuals, events or objectives that have common observable characteristics and meet certain criteria for inclusion in a given universe. In conducting a study, sometimes it's expensive to gather data by considering entire population. Therefore smaller chunks of unit sample are chosen to represent the relevant attributes of the whole units (Leedy, 2005). The targeted population in this study

was 120 members including operation manager, shipping agents who receive and dispatch goods, customs clearing officers and port facility security officers.

| Sections | Total Target Population |
|-------------------------------|-------------------------|
| Operation manager | 1 |
| Shipping agents | 70 |
| Custom clearing officers | 30 |
| Port facility security office | 19 |
| Total | 120 |

2.3 Sampling Frame

A sampling frame is the source material or device from which a sample is drawn. It is a list of all those within a population who can be sampled and may include individuals, households or institutions (Wiley, 2011). Sampling frames should have the following qualities: all units have a logical numerical identifier; all units can be found and every element of the population is present only ones in the frame (Turner & Anthony, 2012). The sampling frame for this study was the list frame. It consisted of observational unit and usually used for single stage sampling or complete enumeration. It often covers only the large units which are few in number but have substantial share in the population total (Leslie, 2011).

| Sections | Sampling Frame |
|-------------------------------|----------------|
| Operation manager | 1 |
| Shipping agents | 70 |
| Custom clearing officers | 30 |
| Port facility security office | 19 |
| Total | 120 |

2.4 Sample and Sampling Technique

2.4.1 Sample Size

The sample size (n) of the study was adjusted using the Yamane formula, (1967). In this formula, sample size can be calculated at 10%, 7%, 3% and 5% precision (e) levels. Confidence level used is 95% with degree of variability (p) equivalent to 50% (0.5).

$$n = \frac{N}{1 + Ne^2} \quad n = \text{Sample Size}$$

N= Target Population (120)

e = Margin error of 10%

In the proposed study, the sample size will be calculated at precision level of 10% (e = 0.1).

Sample size of the study is

$$n = \frac{120}{1 + (120 \times 0.1^2)}$$

$$n = \frac{120}{2.20}$$

$$n = 55$$

Therefore, the sample size will be 55 employees at the port as broken down below;

| Category | Target population | Sample size |
|---------------------------------|-------------------|-------------|
| Operation manager | 1 | 1 |
| Shipping agents | 70 | 22 |
| Custom clearing officers | 30 | 20 |
| Port facility security officers | 19 | 12 |
| Total | 120 | 55 |

2.4.2 Sampling Technique

A sample is a smaller group of elements drawn through a definite procedure from an accessible population (Lavrakas, 2009). The sample should be representative of the population to ensure that the researchers can generalize the findings from the research sample to the population as a whole. A sampling technique is the name or other identification of the specific process by which entities of the sample have been selected. This study used purposive sampling technique. The main respondents were sampled on the basis of their sections. This sampling technique is appropriate when there is need for the researcher to identify a section of the population which is best informed of the subject matter under study.

2.5 Data collection instrument

Data collection instruments refer to the device used to collect data, such as paper questionnaire or computer assisted interviewing system (Canals, 2017). They are also defined as methodologies used to identify information sources and collect information during an evaluation (U.S Census Bureau, 2010). Questionnaires was used to collect data in this study putting into consideration its advantages. A questionnaire is a list of research questions asked to respondents and designed to extract specific information (Grein, 2009). A set of questions were arranged in which the respondents were required to fill in answers. The questionnaires were be made up of both closed ended questions and open ended questions. Use of questionnaires was based on the fact that it makes data comparable and amenable to analysis and minimizes bias in formulating and asking question.

2.6 Data collection procedure

Data collection procedure is the process of gathering and measuring information on variables of interest in an established systematic function that enables one to answer stated research questions, test hypothesis and evaluate outcomes (Whitney, Lind, & Wahl, 2010). This study used primary data collection procedure that was collected through questionnaires for critical analysis.

The researcher sought a written document from their institution, JKUAT, as proof of intent to collect data for research purposes only. The letter was used to seek authorization from the ICD, Nairobi Managing Director to collect data in the institution. Once authorization was granted, the questionnaires were issued to the members of staff. Since the members of staff involved had a busy schedule, the questionnaire was administered through a 'drop and pick' later method. The researcher expedited filling of the questionnaires and providing clarifications to respondents, where needed.

2.7 Pilot test

A pilot study is a small-scale preliminary study which aims to investigate whether crucial components of a main study will be feasible (Thabane L, 2010). They may be used in attempt to predict an appropriate sample size for the full-scale project or to improve upon various aspects of the study design (Cocks & Torgerson, 2013). Pilot studies are conducted to evaluate the feasibility of some crucial components of the full-scale study. A pilot study must provide information about whether a full-scale study is feasible and list any recommended amendments to the design of the future study (Lancaster, 2004). Creswell (2003) and Cooper & Schilder (2011) agree that the respondents used in pilot test should constitute 10 percent of the sample used in data collection. Therefore, in this study, 6 respondents were used for pilot testing who were not be involved in the final study.

2.8 Data Processing and Analysis

Data processing is a set of methods that are used to input, retrieve, verify, store, organize, analyze or interpret a set of data. Data analysis is the process of evaluating data using analytical and logical reasoning to examine each component of the data provided. (Wooldridge, 2013). Statistical data processing is a procedure of performing various statistical operations. It seeks to quantify the data from descriptive data and apply some form of statistical analysis through use of statistical tools (Hutter, 2013). Data analysis was done using Statistical Package for Social Science version 21. Quantitative data was analyzed using descriptive statistics and qualitative data analyzed using content analysis. Descriptive statistics consist of mean and standard deviation. Qualitative data was analyzed by setting responses for respondents based on which response that has been repeated several times. Quantitative data was analyzed using descriptive statistics such as mean, standard deviation and frequencies which were presented in form of tables. .

3.0 RESULTS AND DISCUSSION

3.1 Response Rate

A total of 55 questionnaires were hand delivered to Inland Container Depot, Nairobi and distributed across the departments. Out of the 55 questionnaires, 46 were correctly answered and returned to the researcher. This represents a response rate of 83.64%. This percentage was considered sufficient for this study. The 16.6% who never returned the questionnaires cited busy work schedules and attendance number restrictions for social distancing as the main reasons for lacking time to fill them.

Table 3.1 Response Rate

| | Frequency | percentage |
|---------------------------------------|------------------|-------------------|
| Returned Questionnaires (well filled) | 46 | 83.64 |
| Unfilled Questionnaires | 9 | 16.36 |
| Total | 55 | 100 |

3.2. Demographic Information

3.2.1 Education Level

The education level findings indicated that majority of the employees had a bachelor's degree; 45.65% (21). This was followed by the diploma holders who stood at 32.61% (15). The certificate, Master's and PhD holders were at 8.70% (4), 10.87% (5) and 2.17% (1) respectively. The findings indicate that the respondents were in a position to understand well the requirement of the study.

Table 3.2. Level of Education

| Education Level | Frequency | Percent |
|------------------------|------------------|----------------|
| Certificate | 4 | 8.70 |
| Diploma | 15 | 32.61 |
| Bachelor's Degree | 21 | 45.65 |
| Master's Degree | 5 | 10.87 |
| PhD Level | 1 | 2.17 |
| Total | 46 | 100.0 |

3.2.2 Job Level

The study sought to determine the job level of the respondents and it was found that 41.30% (19) were from the lower operational level. 39.13% (18) were from the middle management level while 19.57% (9) were from the top management level. The information indicates that the data was collected across the levels of management thus is all inclusive and can give a conclusive finding.

Table 3.3 Job Level

| Frequency | Percent |
|------------------|----------------|
|------------------|----------------|

| | | |
|-------------------|-----------|------------|
| Lower management | 19 | 41.30 |
| Middle management | 18 | 39.13 |
| Top management | 9 | 19.57 |
| Total | 46 | 100 |

3.2.3 Years of Working

Job experience data showed that 50% (23) respondents had worked for the organization for a period of 6-10 years. 23.91% (11) had an experience of Up to 4 years. 19.57% (9) and 6.52% (3) had an experience of 11-15 and 16-20 years respectively. The information indicates that the respondents had adequate experience of the organization's operations thus were well positioned to give factual data on the subjects under inquiry.

Table 3.4 Work Experience

| | Frequency | Percent |
|---------------|-----------|--------------|
| Up to 5 Years | 11 | 23.91 |
| 6 – 10 Years | 23 | 50.00 |
| 11-15 Years | 9 | 19.57 |
| 16 -20 Years | 3 | 6.52 |
| Total | 46 | 100.0 |

3.3 Influence of Vehicle Tracking on Performance

The study aimed at determining the effect of vehicle tracking on organization performance at the new KCC Kenya.

Table 3.1 Influence of Vehicle Tracking on Performance

| Statement | Mean | Std. Deviation |
|--|--------|----------------|
| The firm has very small aperture terminal | 4.3333 | .50000 |
| The firm has installed a tracking system | 4.0000 | 0.00000 |
| The firm uses electronic data interchange | 3.6667 | .50000 |
| The firm uses Enterprise resource planning | 4.0000 | 0.00000 |
| The firm conducts Distribution requirement planning | 3.6667 | .50000 |
| The firm has adopted usage of radio frequency identification | 3.8889 | .33333 |
| The firm has adopted web based tracking | 3.8889 | .33333 |
| The firm uses voice recognition technology | 3.8889 | .33333 |
| The firm has adopted geographical information system | 3.8889 | .33333 |
| automated guided vehicle system | 3.8889 | .33333 |
| The firm has automated inventory tracking system | 3.8889 | 0.00000 |
| The firm has geographical positioning system | 3.8889 | .33333 |

As seen from the table 3.1, among the respondents who participated in the study the findings established that the firm has very small aperture terminal as depicted by a mean of 4.3333. The study also confirmed that the firm had installed a tracking system, uses Enterprise resource planning and has automated inventory tracking system as represented by a mean of 4.0. The study also indicated that the firm had adopted usage of radio frequency identification, adopted web based tracking, and uses voice recognition technology, adopted geographical information system, automated vehicle tracking system and a geographical positioning system as indicated by a mean of 3.8889 of the respondents. The study further showed that the firm uses electronic data interchange and conducts Distribution requirement planning as represented by a mean of 3.6667 of the respondents. Hsieh, Yu, Chen & Hu, (2006) note that Vehicle tracking is a way to improve company efficiency and in effect, increase profitability, especially in the business of large vehicle fleets. The tracking system is the enabling technology, and is the key to release the value trapped in asset management.

3.4 Influence of Multiple Carriers on Performance

The study sought to determine the effect of vehicle tracking on organization performance at the new KCC Kenya.

Table 3.2: Influence of Multiple Carriers on Performance

| Statement | Mean | Std. Deviation |
|--|--------|----------------|
| Our company uses Multiple carriers to reduce costs and achieve solid return on investment from investment in a multi-carrier approach and supporting technology. | 4.0000 | 0.00000 |
| Our company uses Multiple carriers to benefit from process standardization and leverage of a unified technology platform to drive shipping decisions, provide track and trace capabilities across the enterprise, and use shipping data to improve carrier negotiations and improve shipping strategies. | 4.0000 | 0.00000 |
| Our company uses Multiple carriers to avoid paying significantly higher rates for non-standard shipping units. | 3.8889 | .33333 |
| Our company uses Multiple carriers to benefit from rapidly growing ecommerce business as vast majority of web-based orders were shipped parcel hence cutting cost | 4.0000 | 0.00000 |

Among the respondents who participated in the study the findings in Table 3.2 established that company uses multiple carriers to reduce costs and achieve solid return on investment from investment in a multi-carrier approach and supporting technology, the firm company uses Multiple carriers to benefit from process standardization and leverage of a unified technology platform to drive shipping decisions, provide track and trace capabilities across the enterprise, and use shipping data to improve carrier negotiation and improve shipping strategies and that the company uses Multiple carriers to benefit from rapidly growing ecommerce business as vast majority of web-based orders were shipped parcel hence cutting cost as depicted by a mean of 4.0. Further the study found out that the firm uses multiple carriers to avoid paying significantly higher rates for non-standard shipping units as represented by a mean of 3.8889 of the respondents. The impact of economies of scope (also known as network effects) and economies of scale on carrier choice are factors that are often ignored in carrier selection. Economies of scope are readily apparent relative to the use of transportation equipment after it is emptied (Mentzer, 1986). Economies of scale, on the other hand, are a concern relative to shipment size. There is a strong incentive to ship in full truckloads to minimize the cost associated with the considerable capital expenditure for equipment.

3.5 Influence of information sharing on Performance

Table 3.3 Influence of information sharing on Performance

| Statement | Mean | Std. Deviation |
|--|--------|----------------|
| There Smooth information flow to all logistics functions at our firm | 4.0000 | 0.00000 |
| Our firm does Practice internal information sharing | 3.8889 | .33333 |
| Our firm has Invested on information communication systems | 4.0000 | .50000 |
| Our firm has achieved accurate demand forecasting | 3.7778 | .44096 |
| Our firm has achieved timely respond to customer references | 3.5556 | .52705 |
| Our firm has achieved smooth flow of materials and products | 3.8889 | .33333 |
| Our firm uses electronic order processing | 3.8889 | .33333 |
| Our firm uses electronic customer feedback | 3.7778 | .44096 |

Among the respondents who participated in the study the findings in Table 3.3 established that the firm has a smooth information flow to all logistics functions at the firm and it has invested on information communication systems as depicted by a mean of 4.0. The firm also practice internal information sharing, has achieved smooth flow of materials and products and uses electronic order processing as represented by a mean of 3.8889. The further revealed that the firm has achieved accurate demand forecasting, and uses electronic customer feedback as indicated by a mean of 3.7778. Further, the study revealed that the firm has achieved timely respond to customer references as represented by a mean of 3.5556. Stevenson and Spring, (2007) concurred that, the flow of accurate and real time information in logistics was considered very important to the flow of materials. This information explosion had enabled logistics to become an important weapon in the firm's arsenal to add value to the bottom line (Closs et al., 2005). Information sharing was a key to success of logistics performance (Whipple et al., 2002).

3.6 Influence of Route Planning on Performance

Table 3.4 Influence of Route Planning on Performance

| Statement | Mean | Std. Deviation |
|---|--------|----------------|
| Our company takes maps out every single stop to ensure milk is collected in all collection centers | 4.0000 | 0.00000 |
| Our company calculates the amount of time it takes to visit each stop on the route to ensure efficient use of collection vehicles | 4.1111 | .33333 |
| Current vehicle scheduling practices have improved transportation of materials and produce | 4.0000 | 0.00000 |
| Our company has a system in place for managing its fleet | 3.6667 | .50000 |
| Our company uses rout planning to figure out which routes will allow us get to all our collection centers in the shortest amount of time possible | 3.8889 | .33333 |
| Our companies uses Google Maps for traffic updates to helpful in rout planning and avoid any transport risk. | 3.8889 | .33333 |
| Our companies make quick route adjustments if necessary | 3.8889 | .33333 |

Among the respondents who participated in the study the findings in Table 3.4 established that the company calculates the amount of time it takes to visit each stop on the route to ensure efficient use of collection vehicles as illustrated by a mean score of 4.111. The study also found out that the firm maps out every single stop to ensure milk is collected in all collection centers and has a current vehicle scheduling practices that improved transportation of materials and produce as depicted by a mean score of 4.0. The study also revealed that the firm uses rout planning to figure out which routes will allow get to all our collection centers in the shortest amount of time possible, uses Google Maps for traffic updates to helpful in rout planning and avoid any transport risk and makes quick route adjustments if necessary as indicated by a mean score of 3.8889. The study further indicated that the firm has a system in place for managing its fleet as depicted by a mean score of 3.6667. This concurs with Knolmayer et al, (2002) who conclude that Route planning systems bring many advantages to customers (improved service, increased reliability, reducing delivery times, quick response to special requests), management (increased transparency, independence on planner's intuition, simpler training of new employees, reliable data for decisions) or schedulers (reduction of routine tasks, less errors).

3.7 Firm Performance

Table 3.5 Firms Performance

| Statement | Mean | Std. Deviation |
|--|--------|----------------|
| Increase profits | 4.0000 | 0.00000 |
| Increase market share | 4.0000 | 0.00000 |
| Increase in price of dividends | 3.8889 | .33333 |
| Lower raw material cost | 3.8889 | .33333 |
| Reduce environmental expenses | 3.8889 | .33333 |
| Improve the reuse, recycling and remanufacturing opportunities | 3.7778 | .44096 |
| Decrease of consumption for hazardous and toxic materials | 4.0000 | 0.00000 |
| Decrease the frequency for environmental accidents | 4.1111 | .33333 |
| Reduce environmental burdens | 3.8889 | .33333 |
| Improve customer loyalty | 3.8889 | .33333 |

Among the respondents who participated in the study the findings in Table 3.5. The study established that Logistic Risk Management Practices decreases the frequency for environmental accidents as depicted by a mean score of

4.111. The study showed that Logistic Risk Management Practices increases profits, increases market share and decreases of consumption for hazardous and toxic materials as indicated by a mean of 4.0. The study also indicated that Logistic Risk Management Practices leads to increase in price of dividends, lower raw material cost, reduced environmental expenses, reduced environmental burdens and improved customer loyalty as depicted by a mean of 3.8889. The study further indicated that Logistic Risk Management Practices leads to improved reuse, recycling and remanufacturing opportunities as indicated by a mean score of 3.7778. According to Kopczak and Johnson (2003) a firm's Productivity is commonly defined as a ratio between the output volume and the volume of inputs. In other words, it measures how efficiently production inputs, such as labour and capital, are being used in an economy to produce a given level of output.

4.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

4.1. Summary and Findings

The study found that the firm has very small aperture terminal, the firm had installed a tracking system, uses Enterprise resource planning and has automated inventory tracking system. Additionally the study found that the firm had adopted usage of radio frequency identification, adopted web based tracking, and uses voice recognition technology. The results indicated that the firm uses multiple carriers to reduce costs and achieve solid return on investment from investment in a multi-carrier approach and supporting technology, the firm company uses Multiple carriers to benefit from process standardization and leverage of a unified technology platform to drive shipping decisions, provide track and trace capabilities across the enterprise and uses shipping data to improve carrier negotiation and improve shipping strategies and that the company uses Multiple carriers to benefit from rapidly growing ecommerce business as vast majority of web-based orders will be shipped parcel hence cutting cost. The New-KCC Kenya has a smooth information flow to all logistics functions at the firm, has invested on information communication systems, practice internal information sharing and has achieved smooth flow of materials and products. The study further found that the firm uses electronic order processing, has achieved accurate demand forecasting and uses electronic customer feedback. The study found out that the company calculates the amount of time it takes to visit each stop on the route to ensure efficient use of collection vehicles, the firm maps out every single stop to ensure milk is collected in all collection centers and has a current vehicle scheduling practices that improved transportation of materials and produce. The study found that the firm had reported decreased the frequency for environmental accidents, increases profits, increased market share and decreases of consumption for hazardous and toxic materials as a result of the implementation of logistic risk Management practices.

4.2 Conclusions

The study concluded that the firm has employed vehicle tracking practices like use very small aperture terminal, installation of a tracking system, use of enterprise resource planning and automated inventory tracking system. Additionally the firm also uses radio frequency identification, web based tracking, and voice recognition technology. The study concluded that the firm uses multiple carriers to reduce costs and achieve solid return on investment from investment in a multi-carrier approach and supporting technology, the firm company uses Multiple carriers to benefit from process standardization and leverage of a unified technology platform to drive shipping decisions, provide track and trace capabilities across the enterprise and uses shipping data to improve carrier negotiation and improve shipping strategies and that the company uses Multiple carriers to benefit from rapidly growing ecommerce business as vast majority of web-based orders will be shipped parcel hence cutting cost. The study concluded that the New-KCC Kenya has a smooth information flow to all logistics functions at the firm, has invested on information communication systems, practice internal information sharing and has achieved smooth flow of materials and products. The study further concluded that the firm uses electronic order processing, has achieved accurate demand forecasting and uses electronic customer feedback. The study concluded that the company calculates the amount of time it takes to visit each stop on the route to ensure efficient use of collection vehicles, the firm maps out every single stop to ensure milk is collected in all collection centers and has a current vehicle scheduling practices that improved transportation of materials and produce. The study concluded that the firm had reported a decrease in the frequency for environmental accidents, increases profits, increased market share and a decrease of consumption for hazardous and toxic materials as a result of the implementation of logistic risk Management practices.

4.3 Recommendations

Based on the finding of this study, the research recommends for more use of electronic data interchange (EDI). In supply chain management, trading partners need to constantly communicate with each other; the communications

are usually recorded within their systems for further processing. For example, when a supplier receives an order from a customer, he/she replies with the confirmation and/or modifications. This interaction needs to get into the customers' systems so that the production planning can be accurate, and promises to these customers can be made. Receiving these changes by phone or email, and then having an operator key in the data is a not a viable option. Unfortunately, this method is very time consuming and is highly prone to human error. Beyond that, any lapses in communication anywhere within this process could lead to wrong future planning. This is where EDI is important. If a company implements EDI for communication with its trading partners (such as its suppliers, logistics providers, warehouse operators, customers, etc.), the supply chain gets integrated electronically to all the users in the system. The New-KCC Kenya should therefore enhance the use of electronic data interchange. Based on the finding of this study, the research recommends that the firm improves on choosing a multiple carrier option that helps reduce cost. Choosing the right pricing model, carrier and carrier service is unique to each order, depending on variables like delivery address, cubic dimensions, weight and delivery speed required. Based on the finding of this study, the research recommends for the firm to improvement in responding to customer references. Recognizing and responding to your customers' comments, opinions, and needs has both immediate and long-term impacts on your organization. Showing customers the courtesy of an instant and sincere reply is a step forward in resolving issues immediately, and promptly mitigating any potential damage. Always respond quickly with an earnest attempt to resolve any customer issues. Based on the finding of this study, the research recommends that the firm need to intensify the use of a system to manage fleet effectively. The firm with the goal of minimizing the lead time between receipt of an order and delivery of goods, reducing the opportunity cost that accompanies fluctuations of supply and demand and maximizing the profit associated with the sale of goods. The firm should make a point to conduct logistics functions in-house in order to gain a competitive advantage. In general, however, there is a growing trend toward use of modern fleet management as a way to save time and reduce costs.

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