

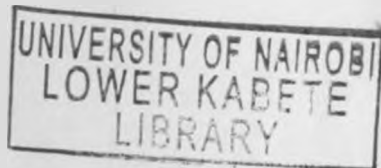
CAPACITY UTILIZATION AT THE PORT OF MOMBASA

PRESENTED BY

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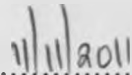
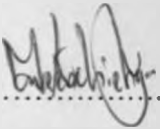
DECLARATION

STUDENT

I, the undersigned, declare this proposed project is my original work and that it has not been presented to any other university or institution for academic credit.

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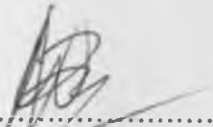
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This proposal has been submitted for examination with my approval as a university supervisor

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DR. X.N. IRAKI

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I would like to say thank you to my supervisor Dr. X.N. Iraki for his guidance and support; his advice was very valuable in leading me through the often-complex process of drafting and completing this paper. I am very grateful too for his faith and confidence in me.

Many friendships that have begun and will continue forever were created in classes, study sessions. To all of my classmates and lecturers I owe you big. A sincere appreciation to my siblings Florence, Celestine, Evans, Victor and Leonard and to my 'study friends' Tabitha, Miriam and Betty for their untiring love and commitment to this process of life-long learning. Without our study sessions and their friendships, I would not have completed the process.

DEDICATION

This study is dedicated to my family, who have loved me throughout a lifetime of learning. It is especially dedicated to my husband, Mr. Vincent Kanyang'onda: my best friend, who has been the wind beneath my wings, whose love and support kept me balanced and gave me the fortitude to continue; to my daughter Michelle Kanyang'onda, for her unconditional love and who made me feel that I was special and could do anything I put my mind to; to my Mum, Pamella Akinyi and Dad, Donald Niga who gave me life and always believed in me, gave me a strong lineage and determination: and finally to my colleagues who gave me humble time by covering up for me in the office during my busy schedule with class work. For this, I am truly grateful.

ABSTRACT

The study analyzed the various constraints to capacity utilization at the port of Mombasa: it identified the status of capacity utilization at the port of Mombasa and discussed in depth what needs to be done by the various stakeholders at the port of Mombasa in order to deal with these capacity constraints.

The study also acknowledged that the success of any port is largely influenced by the Port community in any country with a seaport. The Port community is comprised of different stakeholders who play individual roles but collectively supports port operations. These stakeholders include seaports, shipping agents, insurance companies, Customs department, banks, transporters, ship handlers and Clearing and Forwarding companies.

The study found that the port of Mombasa has capacity management issues which need to be addressed. These capacity issues included; the poor railway system, technological issues and documentation inefficiency in cargo clearance due to the existence of brokers. These constraints have made the cost of doing business at the port of Mombasa to be more expensive compared to other ports in the world like the port of Singapore.

The port management is already developing strategies to counter the capacity constraints experienced in the port's operations. 24 hr operation has been introduced at the port and privatization of the port has also been considered as a viable option.

TABLE OF CONTENT

ACKNOWLEDGEMENT	1
DEDICATION.....	2
TABLE OF CONTENT.....	4
LIST OF FIGURES	7
LIST OF TABLES.....	8
CHAPTER 1: INTRODUCTION.....	9
1.1 Background of the Study	9
1.1.1 The Maritime Industry	10
1.1.2 The Port of Mombasa.....	13
1.2 Statement of the Research Problem	15
1.3 Research Objectives.....	17
1.4 Value of the study	17
CHAPTER 2: LITERATURE REVIEW	19
2.1 Overview of Capacity Utilization.....	19
2.2 Measures of Capacity Utilization.....	20
2.3 Constraints of Capacity Utilization.....	21
2.4 Factors Affecting Capacity Utilization at the Port of Mombasa.....	22
2.4.1 Transport Network	22
2.4.2 Technological Advancements	25
2.5 Privatization of the port	28
2.7 Summary of the Literature Review.....	34
2.8 Conceptual framework.....	35
Fig: 2.1 Conceptual Framework	37
CHAPTER 3: RESEARCH METHODOLOGY	38
3.1 Research design	38
3.2 Target Population.....	38
Table 3.1 Target population.....	39
3.3 Sample design	39

Table 3.2 Sample population	40
3.4 Data Collection	40
3.5 Data analysis	41
CHAPTER 4: DATA ANALYSIS, RESULTS AND DISCUSSIONS.....	42
4.1 Introduction.....	42
4.2 Demographic Information of the Respondents	42
4.2.1 Gender of the Respondents	42
Fig 4.1 Distribution of Respondents Gender	43
4.2.2 Respondents Level of Education.....	43
Fig: 4.2 Respondents Level of Education	44
4.2.3 Experience of doing business at the Port of Mombasa	45
Table 4.1 Respondents Port Experience	45
4.2.4 Respondents Cadres	45
4.2.5 Number of Years Worked in their organizations	46
Table 4.3 Respondents Working Experience.....	47
4.3 Constraints of Capacity Utilization.....	47
4.3.1 Factors Affecting Service Delivery	48
Table 4.4 Factors Affecting Service Delivery	48
4.3.2 Factors Influencing Capacity Utilization.....	49
Table 4.5 Factors Influencing Capacity Utilization.....	50
4.3.3 Decongesting Operations at the Port of Mombasa	51
Table 4.6 Possible ways of decongesting the port operations	51
Fig 4.4 Working Conditions at the Port	54
Fig 4.5 Duration of Cargo Clearance at the Port	55
4.4.1 Logistic Services Provided To Customers	56
Table 4.7 Provision of Logistic Services	57
4.4.2 Strategies to Address Constraints of Port Operations.....	58
Table 4.8 Strategies to Better Service.....	59
5.1. Introduction.....	60
5.2 Discussion of Findings.....	60

5.2.1	Constraints of Capacity Utilization at Mombasa port.....	61
5.2.2	Status of Capacity Utilization at the Port	61
5.2.3	Solutions to the Current and Anticipated Capacity Utilization Problems.....	61
5.3	Conclusions.....	62
5.4	Recommendations.....	64
	REFERENCES	68
	APPENDIX: QUESTIONNAIRE	72

LIST OF FIGURES

Fig: 2.1 Conceptual Framework	37
Fig 4.1 Distribution of Respondents Gender	43
Fig: 4.2 Respondents Level of Education	44
Fig 4.3 Whether the Port Exceeds Its Capacity	53
Fig 4.4 Working Conditions at the Port	54
Fig 4.5 Duration of Cargo Clearance at the Port	55

LIST OF TABLES

Table 3.1 Target population.....	39
Table 3.2 Sample population	40
Table 4.1 Respondents Port Experience	45
Table 4.2 Respondents Cadres.....	46
Table 4.3 Respondents Working Experience.....	47
Table 4.4 Factors Affecting Service Delivery	48
Table 4.5 Factors Influencing Capacity Utilization.....	50
Table 4.6 Possible ways of decongesting the port operations	51
Table 4.7 Provision of Logistic Services	57
Table 4.8 Strategies to Better Service.....	59

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Capacity utilization is a concept in Economics and Managerial Accounting which refers to the extent to which an enterprise or a nation actually uses its installed productive capacity. It is the extent to which the Nation's Capital is being used in the production of goods. As production increases, capacity utilization rises (Berndt; & Morrison; 2002).

A firm's productive capacity is the total level of output or production that it could produce in a given time period. Capacity utilization therefore, is the percentage of the firm's total possible production capacity that is actually being used. A firm's level of capacity utilization determines how much fixed costs should be allocated per unit, so as a firm's capacity utilization increases, the fixed costs (and therefore also, total costs) per unit will decrease (Reichmann: 1986).

Historically, capacity analysis has been focused on planning and assessing the utilization of various machines and machine-paced processes within an organization (Schwarz; 2005). Capacity utilization measures serve as leading indicators at a macro-economic level, signaling the health of the economy. When capacity utilization numbers drop, recession becomes a concern. When they reach all-time highs, inflation worries are raised (Scapens; 2007). Given that these metrics play a key role in setting macroeconomic policy, one would assume that they must be fairly well defined and understood. But are they?

According to (Taylor: 2009), Underutilized capacity resources are a major concern in many organizations. When the organization's management is unaware that underutilized

capacity resources exist, lost profit opportunities or unnecessary investment can result (Ansari et. al; 1997). A typical example is the campaign for the construction of the Lamu port at the Kenyan coast. It is argued that the Lamu and Mombasa ports would play a complementary role in making Kenya move towards being a global maritime power (World Bank, 2008). It is true that the construction of Lamu Port may be an alternative to overcapacity at the port of Mombasa, but even before the Lamu port is constructed, have we really used all the capacity at the Mombasa port? Would better capacity utilization be cheaper?

Adding capacity is extremely difficult. Capacity builds require significant capital and time, and regardless, most organizations, like the port of Mombasa have little if no room left to augment space (Miller; 2006). Furthermore, port capacity is heavily influenced by many different stakeholders, most of which engage in limited collaborative planning with the ports (Winkelmann; 2003). So, capacity utilization improvements must occur primarily through enhancements to limited existing facilities and labor.

1.1.1 The Maritime Industry

The Maritime industry is a very crucial and critical industry as it directly influences and impacts the world's economy through carrying and transportation of the world trade. The management and optimization of this industry determines the pricing of services and the resultant cost of goods which directly impacts on countries' economies and which further regulates inflation (The Maritime Journal; 2008).

Seaports are of great economic and strategic importance to the nations which have them (and to the land locked countries neighboring them) because they are a critical

component of the maritime industry. A seaport regulates the impetus, efficiency, pricing, profitability and reliability of all other components of this industry (Feng & Notteboom; 2011)

Container ports on the other hand, offer unique nodes in the logistics chain through which to deliver service and cost advantages for marketing channels which embrace sea transportation (Thai and Grewal; 2005). Stakeholders who interact with ports as customers and users have historically selected the most efficient ports and services; therefore concentrating on a limited number of ports capable of delivering scale economics (Stapleton et al; 2004). Container shipping has been the fastest growing sector of the maritime industries in the last 20 years. Containerized cargo volumes have grown at average annual rate of 11.2% since 2000.

In 2004, an estimated 928 million tons of containerized cargo was transported by sea in international and domestic trade (Cullinane; 2004). Container traffic is now estimated to account for more than 70% of international seaborne trade by cargo value. With this rise in container cargo trade, trade imbalance has seriously risen between mainland China and some other regions especially in the United States and Europe (Wang; 2009). Containers are carrying cargo from one port to another all over the world. The movement of large numbers of containers with cargo between various ports causes some ports to have a surplus of empty containers while others a shortage of empty containers. (Shintani et al; 2009) researched on the subject of empty container management. The objective of this study was to maximize the ports' profits and minimize costly empty container traffic. However it does not address the major issues of how container management affects capacity utilization of ports

Singapore port is currently the world's busiest port in terms of total shipping tonnage; it is equipped with high-tech storage devices, automatic warehouse, wireless scanning equipment, automatic escrow system and other modern information technology equipment (Yap and Lam; 2010). These modern equipment and technology and high tech infrastructure has enabled Singapore improve on its capacity utilization over the years and therefore making it be regarded as one of the most efficient ports in the maritime world (Garrat; 2010).

In recent years, the Doraleh terminal has been built on a Greenfield site in Djibouti. The terminal has a capacity of 1.2 million TEU per year (Chase; 2009). This terminal; now the most modern in East Africa, has so far effectively handled the capacity issues in the port of Djibouti.

Some countries, cities and port authorities have made impressive investments in infrastructure, making their ports attractive to new generations of ships, and city port growth poles such as Abidjan (Côte d'Ivoire), Cape Town and Durban (South Africa). These ports have become especially important for African national and regional development and the maritime industry due to the fact that they have tried to handle the issues of efficiency and capacity utilization (World Bank, 2008). Even in developed countries like the United States, capacity utilization is a major problem. With marine container volumes increasing by 7% each year, most major ports in the U.S. are currently operating near full capacity (Leach; 2009). The U.S. Chamber of Commerce predicts that port volumes will at least double by 2020 with some ports experiencing triple (East Coast) and quadruple (West Coast) growth. The ultimate consequence could be severe as

insufficient port capacity utilization would drive up transportation costs, trigger shipping delays, and force higher inventory levels.

1.1.2 The Port of Mombasa

The Port of Mombasa is the largest in East Africa and a vital gateway for imports to Kenya and its neighboring countries. It is strategically located on the East African Ocean coastline between Durban and major ports in the Red Sea and Middle East (KPA; 2008). The Port of Mombasa serves the Kenyan national economy and also facilitates maritime trade for landlocked countries neighboring Kenya. The port's hinterland includes Kenya, Uganda, Northern Tanzania, Rwanda, Burundi, D.R. Congo, Southern Sudan and Ethiopia. Kenya Ports Authority (KPA) manages the port's operations (www.kpa.co.ke).

During the defunct East African Community (EAC), Kenya, Uganda and Tanzania used to collectively manage their national resources. However, after the collapse of the community in 1978, each country had to take full ownership of their respective national resources and manage them profitably. It is during this time that Kenya through her parliament formed numerous parastatals to manage the diverse resources within its borders. Kenya Ports Authority-KPA was one of these parastatals (Port Gazette: 2005).

Formerly known as the East Africa Harbors and Railways (during the former East Africa Community), the Kenya Ports Authority (KPA) is a state corporation that was established in 1978 through an ACT of Parliament (The KPA act Cap 378 of 1978) and is charged with the responsibility of profitably managing the Port of Mombasa and other scheduled seaports along the Kenyan Indian ocean coastline such as Mombasa, Mtwapa, Kilifi,

Malindi, Lamu and Vanga. KPA is a parastatal under the Ministry of Transport (KPA Handbook).

Kenya Ports Authority has eleven Board of Directors appointed by the Minister for Transport. The Board of Directors is responsible for policy formulation and the day to day management of Kenya Ports Authority through one of its members who is the Managing Director. The Board of Directors comprises of an automatic sitting of the Permanent Secretaries from Ministries of Transport and Finance, respectively, and the Managing Director Kenya Railways. The other members are appointed from the public (www.kpa.co.ke).

According to the KPA operations manual, the core business of KPA is stevedoring which means cargo handling. Other primary but supporting services to stevedoring include: Shore-handling: (Storage, Transfer, e.t.c.), Marine Services: (Pilotage, Navigational Aids, Berthing and Mooring, Tugage and Salvage), Handling of Cruise Ships: (Reception of Cruise passenger ships).

After Durban in South Africa (which is the Africa's busiest general cargo port) (Huston, 2006), Mombasa is the best connected port in the region, with 18 shipping lines calling and direct connectivity to over 80 ports. The construction of berth 19 has also been mobilized (The Standard, 5th July, 2011). With a rated annual capacity of 22 million tons, the port of Mombasa has a deep natural harbor with good shelter to vessels. This gives it the natural advantage where ships can enter and/or leave the port at any time without being dependant on high tide when compared to other tidal ports such as the port of Dar-es-salaam in Tanzania (KPA, 2009).

The Port of Mombasa has exceeded its design capacity throughput of 250,000, 20-foot equivalent container units (TEU), yet it is expected to handle growing imports and exports. It is already operating at maximum capacity for both general and containerized cargo, and will suffer progressive declines in operational effectiveness unless both capacity utilization and efficiency issues are urgently addressed (Barnett, 2009). The situation of poor capacity utilization and high demand has inevitably resulted in port congestion. This results in overstretched berths leading to pre-berthing delays and longer ship turnaround time.

1.2 Statement of the Research Problem

A review of relevant academic research: (McNair; 2006), (Lovelock; 2008), (Wirtz; 2010) and (Hoyle; 2011), regarding capacity utilization and associated stakeholders yields a broad diverse set of literature. While the quantity of work is encouraging, none actually offers the coordinated, cross-stakeholder approach required by port capacity issues. The research tends to apply only to individual elements of capacity drivers, and furthermore, little identifies or addresses the actual status of port capacity utilization. From the government and industry perspectives, a few prominent though isolated projects; (World Bank; 2010) and (KPA; 2011) highlight the causes and impacts of capacity issues but even these do not offer tactical resolution planning.

The gradual reduction in trade barriers in recent years within the East African Community-EAC has increased the importance of infrastructure in determining the competitive advantage of domestic industries. Port and road infrastructure is at the heart of regional integration. As a critical link in the logistical chain and the major channel for the importation of raw industrial goods for manufacturing in Kenya and its neighbors, the

operational effectiveness and efficiency of the Port of Mombasa has a direct influence on the competitiveness of Kenyan businesses and the wider cost of goods in the EAC (Baird; 2007). Overutilization of port capacity and the constraints on its capacity utilization are threatening the growth of Kenya and its neighbors in terms of the little berthing capacity available for the docking of ships, the turnaround time when it comes to cargo clearance and the poor connectivity of the port of Mombasa and its neighbors like Dar es salaam due to poor rail network. It is a problem which is set to get worse very quickly unless decisive action is taken now.

The storage and clearance charges of cargo at the Port of Mombasa are too high mainly because of the overstretched capacity of the port and the absence of a regulator to keep an eye on the movement and storage of cargo at the terminal (Talias;2007). The volume of transshipment goods handled by the port has declined in recent years. Today these goods represent a minimal aspect of port operations (less than 1% of the total goods handled in 2009) (KPA: 2009). The KPA is currently turning down transshipment business due to capacity constraints thus limiting Mombasa's potential role as a regional hub port.

KPA has introduced measures to reduce congestion at the port like the introduction of 24-hour operations and allowing port users to establish private container depots in the coastal town (Hoffmann; 2003). The changes taking place in the port sector therefore, present difficult challenges to port administrators, terminal operators and the port users. These changes also present opportunities for new ways of doing business and open the door to entry of new players throughout the range of port activities.

The above measures are administrative and have not addressed the operational issues which are at the heart of any port. This study focused on capacity utilization at the Port of Mombasa, an area other researchers have ignored. (Mwenda: 1987) studied ‘The Perceived Quality of Port Services;’ (Odhiambo; 1992) studied ‘The Capacity Management at the port of Mombasa’ while the (World Bank; 2004) did a study on ‘The Status of Ports in the Developing Countries with a special focus on the Port of Mombasa.’ Therefore, despite the significance and urgency of the problem, very little research exists relative to Port Capacity Utilization. This research project sought to fill this void by answering the following research questions: What are the constraints of capacity at the Port of Mombasa? What is the status of capacity utilization at the port of Mombasa? And what measures can KPA take in dealing with the current and anticipated capacity problems at the port of Mombasa?

1.3 Research Objectives

The Purpose of this study is to:

- i. Identify the capacity constraints at the port of Mombasa
- ii. Identify the status of capacity utilization at the port of Mombasa
- iii. To determine the solutions to the current and anticipated capacity utilization problems at the port of Mombasa.

1.4 Value of the study

This research paper would be beneficial to several stakeholders; among them:

Industry players

Both existing and potential investors can incorporate the findings from this paper in aiding them maximize the potential value of the relationships between them, their suppliers and the consumers. It will also help give a better understanding of how the various players within the Kenyan maritime industry and the logistics chain can build on their interactions amongst themselves. Thus, the findings would provide investors with valuable information to be used in making investment decisions.

Academia

Scholars with an interest on the subject of port capacity utilization may use the findings in this paper to form the basis of conducting further research on the subject. The study added to the body of knowledge in the Total Quality Management discipline.

Policy making arm of the government

The government may use the findings in this research paper to ascertain how its policy formulation networks can be used to encourage investors in the maritime industry and the transport corridors of the logistics chain. The Kenyan Capital Markets Authority can come up with policies to regularize port operations in order to protect the port users.

CHAPTER 2: LITERATURE REVIEW

2.1 Overview of Capacity Utilization

(Johnson; 1999) looks at capacity utilization as the relationship between the actual output that “is” produced with the installed equipment and the potential output which “could” be produced with it, if capacity was fully used.

In his research paper (Hoyle; 2009), noted that a firm’s level of capacity utilization determines how much fixed costs should be allocated per unit, so as a firm’s capacity utilization increases, the fixed costs (and therefore also, total costs) per unit will decrease. It therefore follows that a firm should be most efficient if it is running at 100% capacity utilization.

The general argument is that if market demand grows, capacity utilization will rise. If demand weakens, capacity utilization will slacken. When utilization rises above somewhere between 82% and 85%, price inflation will increase. Excess capacity means that insufficient demand exists to warrant expansion of output (Harrer; 2002). In general, business would feel most comfortable at something between 80% to 90% capacity utilization because fixed costs per unit are relatively low and there is some scope to meet new orders or carry out maintenance and training. A firm that has just invested in major new facilities in anticipation of major growth could take some time before reaching a good level of utilization (Garrat; 2004).

Capacity utilization, therefore, is the ideal measure to show the proportion of seaport productive capacity currently utilized from the available maximum port capacity. This is a good indicator to determine the future expansion of seaport facilities without creating

the problem of over-capacity (Burns; 1999). Often the excess demand for the seaport services may lead to expansion of seaport facilities without proper assessment of the utilization of the available capacity. Therefore, before expansion of the existing seaport facilities, it is preferable to carry-out a capacity utilization analysis (Redding, 2000).

2.2 Measures of Capacity Utilization

As Port Performance Index worldwide reveals, logistics is core in any port business. Fast and quality delivery of goods from the sea port to the final destination is the dream of every port user. Optimizing the entirety of logistics chain from the port operations to the distribution of the cargo to its final destination is the idea behind port efficient and effective capacity utilization (Chase; 2001). Port capacity utilization depends on fast, continuous, effectively controlled, and efficiently managed flow of cargo without any bottlenecks or barriers. Port-users are pre-occupied with cost, transit time considerations, reliability and predictability of transits (Barnett; 1984). An efficient port, more often than not has its capacity well managed and utilized.

Port service network design and its capacity utilization depends on the balance of power between carriers and shippers (Notteboom; 2011). From the carrier's perspective economies of scale are a critical element in order to reduce costs, which can be achieved by operating larger ships and having fewer ports of call. However, from the shipper's perspective total freight rates, loading and offloading time and service quality delivered by the human personnel, including frequency and flexibility are more critical elements.

The total logistics costs are estimated to reach up 20 per cent of total production costs in developing countries. Transport usually accounts for a quarter of total logistics costs,

Storage for a fifth and inventories for a sixth. In other words, low transport costs along with information technology development have made it possible for companies to globalize their manufacturing, outsourcing and logistics systems, and logistics costs already occupy a major portion of total product cost (Fossey; 2009).

2.3 Constraints of Capacity Utilization

Capacity constraints lead to a port being inefficient (Brooks; 2004). Port capacity is constrained by numerous factors both internal and external port control. Internally, a port facility has fixed capacity driven primarily by berth space, handling equipment and terminal space. Internal port capacity is further heavily impacted by terminal operators and long shore labor (usually unionized) that perform the actual dockside operations. Externally, railroads and truck carriers serving the ports are constrained by limited port access, equipment and labor on regional and national levels. Ocean carriers also affect port capacity by driving the location and timing of container flows as well as affecting port facility requirements with vessel sizes (Reichman: 1986).

Some of the direct capacity constraints at the port of Mombasa include; lack of efficient rail transport due to old and poorly managed railway. The port of Mombasa is not deep enough to accommodate today's large ships, the port lacks container holding ground area and therefore, there is no room for expansion within the port. The port operations are not fully computerized and therefore, the clearance process takes longer than necessary. The poor road network within East and Central Africa slows down movement of goods from the port of Mombasa to the various destinations causing congestion at the port.

The government, on the other hand impacts port capacity through security, environmental and other regulations as well as access to expansion capital (Minner; 2001). Local communities have capacity influences through public pressure regarding environmental and livability concerns. Finally, the parties responsible for the container flows, including shippers and ocean transportation intermediaries (freight forwarders, customs brokers and non-vessel owning common carriers) will affect port capacity not only through volume but with operational and documentation efficiency as well (Fuller; 1989). In all, nearly a dozen stakeholders may impact container shipments. Although they are linked by a common goal of supporting container flows, these stakeholders tend to plan and operate relatively independently of one another (Mundy; 1995).

2.4 Factors Affecting Capacity Utilization at the Port of Mombasa

2.4.1 Transport Network

As major nodes in national and international maritime transport systems, ports play an important role in the development of modern Africa. Although often characterized in the past as gateway settlements from standpoint of a colonizing power intent on resource exploitation, coastal port cities also provide windows on a wider world for the societies and economies of coastal and interior Africa (Talley: 2000). The continued growth in world trade and the globalization of production and markets has created intense rivalry amongst ports and countries. This intense rivalry is causing governments to enhance efficiency of their ports by improving on the extent of capacity utilization. However, this enhanced efficiency must be integrated with the total transportation system to improve supply chain performance and to provide a comparative advantage against other supply chain systems (Rivera; 2001).

The Port of Mombasa has seen an increase in container traffic and break bulk cargo volumes (Klammer: 2007). Transportation costs and links to the hinterland and efficiencies to these systems have a major impact in supporting economic growth and the international competitiveness on the Mombasa Port. The port of Mombasa serves as an intermodal facility or transfer station for goods from rail and road to ship and vice versa or from larger vessels onto smaller vessels that provide a feeder service. The port requires to be an efficient and well managed operations entity (Chou: 2006).

The port of Mombasa was designed to be a primarily rail-served port, linked by a rail network. In recent years, however, the railways have increasingly been losing business to more flexible road transport operators (Trace, 2002). One of the main obstacles to rapid and efficient trade between Kenya and Uganda, on the one hand, and the rest of the world on the other, has been the difficulty of transporting containers into and out of East Africa along the railway which runs westwards from Mombasa to Nairobi and on to Kampala. Only 10% of freight is actually carried from Mombasa into Uganda via the railway because of rail unreliability. The Kenya government thought that it had solved one half of the equation by awarding a 25 year concession to Sheltam-led Rift Valley Railways to operate and improve services on the line but so far, this has not been the case (Cariou; 2011)

Trucking rates in the East African region remains disproportionately high. It is much more expensive to transfer a container from Mombasa to Kampala than it is to move the same container from Japan to Mombasa by ocean freight (Wang; 2006). In addition, KRA imposes a double-licensing arrangement on trucks which requires that those authorized to carry only transit goods, cannot return to their country of origin with import

cargo. i.e. they have to return empty. This adds further to the cost of doing business in countries beyond Kenya's border (Monroe; 1993) and does not do justice to the capacity utilization at the port either.

Seaports are interfaces between several modes of transport, and thus they are centers for combined transport. An efficient seaport requires infrastructure, superstructure and equipment, adequate connections to the transport modes, a motivated management, and sufficiently qualified employees. Furthermore, seaborne traffic depends on seaports for all its operations, since ports act as interfaces between maritime and inland modes of transport (railways, road and inland navigation) (Winkelmanns; 2003). Therefore, in order to have an efficient maritime transport system, seaport must be operating with principles of cost minimization and maximization of operation and service quality along with the rapid increase in transport of goods, developments in integrated logistics systems. The containerization and intermodal transport systems has increased the competition between ports. Ports with developed road or rail transportation system like Durban are supposed to have comparative advantage among the regional competitors (Marasco; 2005). These developments in the seaborne transportation raise the need for ports to invest in larger cranes, berth, storage yards, improved information technology systems, and additional dredging in order to be competitive among others faced with the change of the freight flows in the region. Thus, ports have become more capital intensive than labor intensive along with the technological developments. Large amounts of investments in ports could provide cost savings in the operations like economies of containerization or intermodal systems. Yet, such infrastructure investments costs in large values, which cannot be

afforded by many governments especially those who suffer budget deficits as is the case in several developing countries like Kenya (Johnson; 1992).

2.4.2 Technological Advancements

In an apparent move to put a stranglehold on middlemen and fight corruption at the port, the Kenya government in 2002, approved the total automation of the port. The National Single Window System at the Kenya Ports Authority, the computerized system that will transform the port into a paperless operation, is the latest in a series of moves to reduce corruption at KPA and improve efficiency and hence, ensure optimal capacity utilization at the port (Smith; 2010).

The Nation Single Window System allows the stakeholders doing business around the port to exchange information and perform business transactions in a unified, secure and structured way. It ensures that all parties involved receive timely and accurate information on each transaction and, moreover, that the transaction is performed correctly (Robinson; 2010). This system drastically increases the speed and transparency of the port while maximizing the physical infrastructure. It helps manage the efficiency of the port as a whole while at the same time ensuring optimal capacity utilization of the port of Mombasa. These measures are geared towards creating more capacity to enhance efficiency and propel the port towards attaining and sustaining world class standards (KPA; 2011).

The Kilindini Waterfront Automated Terminal Operations Systems (KWATOS) went live on 1st July 2008. The system has streamlined planning and management of information system for the waterfront and cargo operations. KWATOS has automated

operations at Container Terminal, Conventional cargo, Marine Services and Inland Container Depots. Some of the benefits include: Reduced Human intervention due to system controls that are based on authorization, Reduced cargo documentation processing duration from an average of 3hours to 1.5hours, Reduced cargo dwell time from an average of 8days to 5days, Reduced port clearance time from 5.5days to 3 days, Enhanced planning process both in the yard and on board ship, Easy access of statistical data for planning and decision making, Enhanced audit trails, hence minimized cargo pilferage at the port and Increased revenue generation (The Standard, 5th July, 2011).

The third and final phase of the National Single Window System is under implementation funded by the World Bank, the system is a flexible automated information sharing resource that will eventually link the port community users via electronic means to allow secure exchange of authorized data between partners (www.kpa.co.ke).

Kenya Revenue Authority (KRA) has also taken measures that include computerizing the movement of cargo around the port and requiring clearing and forwarding agencies to get passwords to log into the KRA SIMBA system to import and clear goods. Past reforms have tended to attract resistance from some groups but KRA insists that these measures aim at stopping groups that have previously benefitted from a chaotic system at the port by evading tax collection and will allow the submission and receipting of all trade and related documents (Beja, 2011).

2.4.3 Cargo Clearance

Cargo clearance and transfer procedures have continued to be slow and open to opportunities for corruption. This has been due to lack of real time information on cargo which has been a major constraint on supply chain performance (World Bank; 2010). The

Kenya Revenue Authority (KRA) on the other hand, is also facing two major challenges with clearance: introducing effective risk management; as currently nearly all import containers are subject to time consuming physical inspection, and improving efficiency and transparency in its operation (Ankara, 2006).

Clearance and transfer of cargo involves a complex mix of government processes, logistics and transport infrastructure. Since 2005 and the introduction of KRA's SIMBA IT system, on-line processing of vessel manifests by shipping agencies and customs declarations by clearing and forwarding (C&F) agencies, has improved the speed of revenues assessment. However, the SIMBA system does not provide automatic notification to other border control agencies, i.e. that cargoes have been declared, and it does not communicate in real-time the status of cargo awaiting clearance. Thus, owners are not able to see where the weak/slow links are in the full clearance chain, the end result is therefore unnecessary congestion at the port (Rodrick; 2007).

Whilst KPA can claim some success in reducing dockside congestion-the average current dwell time is around 5-7 days depending on where the goods are destined- it does not compare favorably with international standards which are typically 1-3 days (KPA, 2010). Mombasa port has been struggling with congestion for some time due to a limited space on the dockside to store containers and other goods. The situation is compounded by slow customs clearance procedures which means that existing yard capacity is not used efficiently (Hill; 2007). However, KRA SIMBA and KPA KWATO systems are connected and thus there is expected to be reduction in delays in cargo release, eliminated physical contact and minimal corruption.

The port of Mombasa is expected to play a key role in the envisaged transformation of Kenya to a prosperous middle income country. KPA has therefore, updated its Master plan to provide a long term development programme aimed at designing its business plan in line with the government wheeled Vision 2030 (Ministry of State for Planning, National Development and Vision 2030; 2008).

2.5 Privatization of the port

Privatization is the shifting of economic function from public sector to private sector, mostly referring to the transfer of the ownership from state to private sector, which involves the increased reliance on private actors and market forces to take over the functions that have been previously regarded as properly functioning within the government sphere (Gunaydin, 2006).

The paradox of privatization lies in the fact that the government itself has to abolish part of itself when privatizing (Tite; 1995). However, privatization does not imply that giving an end to the role of the government, on the contrary, privatization provides the state to reformulate its functions for the ports without involving in commercial activities and focusing more on strategic and core responsibilities related to the ports; like regulations, security, safety, order, education, training and taxation (Hoffmann, 2002).

Privatization can be viewed as a reflection of the internationalization of the economies. International trade brings division of labor among countries which could result in vertical or horizontal interlocking among such economies (Cerny; 2004). At least three paramount objectives underpin most major port privatization efforts: Improvement of the management capability of the port entities, such improvement often being narrowly

defined as increased efficiency and upgraded operational productivity: reduction of the financial demands on the public sector, in particular on central government, by employing private sector resources to replace those of the public sector by generating increased revenue for the government, or both: enhancement of the service quality offered to users and a reduction of the price they have to pay for port services (Heidelberg; 1997). Privatization would in actual terms improve the port's capacity utilization.

Additionally, other objectives are targeted by privatization schemes, such as: redistributing wealth or other social objectives (e.g. curbing the power of trade unions); attracting new or additional trade and business for the country and the port; sharing commercial, economic, technological or management risks between the public and the private sector; stimulating private entrepreneurs and investment in the economy; transferring technology in the form of advanced equipment deployment or the introduction of state-of-the-art management system (Cambridge; 1999). The objectives often reflect the perceived inherent advantages to be derived from port privatization schemes. What is not always apparent is which party or parties are expected to be the main beneficiaries. The beneficiary parties include: Port authority, Terminal Operator, Port Customers, The World and the national economy and National Government (Keynes; 2000).

Major privatization programs have been carried out by countries with a long capital tradition like the United States, mostly for achieving the goal of 'efficiency' in the country (Deveci; 2003). Regarding the experiences of privatization in some developing countries like Tanzania, privatization has been spurred by widespread dissatisfaction with

the performance of public enterprises and the need for the government expenditure. The experiences show that unless it is accompanied by liberalization measure, privatization of state enterprises is unlikely to result in significant gains in the economic efficiency (Guislain, 1997).

Clearly, privatization schemes have not only potential advantages, but also some potentially serious deficiencies and threats. The most notable of these are: There is the increased risk that the statutory public service functions, with which a public port administration is generally entrusted, may be neglected, since private operators/investors would favor profit maximization and cost-cutting. Thus, they may be inclined to abandon facilities and services which although economically, socially or environmentally of essential value, are less or not rewarding for the private operator or generate additional expenditures without providing significant revenue (which leads to the privatization of profits and the socialization of losses) (Olson; 1999).

The proposed privatization of Mombasa port has become a political debate over the last few years. Privatization is certain to improve efficiency but at what cost in terms of jobs? A long struggle over the fate of East Africa's biggest port is likely to be a central feature of the Kenyan political scene over the 2012 general election. The government has made it clear that it intends to transfer control of Mombasa port to a private sector operator in order to reduce the need for subsidies and improve efficiency. Both the practice of 'privatization' and the pace at which it is to be implemented have aroused strong feelings in the country, both from the trade union movement and within parliament. With the rail concession process barely at an end, the government could face an even bigger struggle over port reform (Miller; 2002).

Africa as a whole has been slower than most of the rest of the world in moving away from state ownership of traditional utility industries. Yet the control of ports is being transferred to private sector interests in one country after another. Within Kenya, many argue that the government's interest in the process is due to port inefficiency and the need to finance port expansion. This is true but it is only part of the explanation. The real trigger for the government's decision to push ahead with the concession process at high speed is the success of Dares Salaam (Hoyle; 2009).

The ports of Dares Salaam and Mombasa have traditionally competed to provide port services for importers and exporters across eastern Africa. This has had the benefit of boosting port usage and also the use of key railways in each country. Demand for space at both grew during the 1970s, 1980s and 1990s but Mombasa was always considered to be the more successful of the two. Yet since Hutchinson Port Holdings (HPH) secured a 10-year contract to manage Dares Salaam Container Terminal in April 2000, the Tanzanian port has closed the gap with its Kenyan rival (Talley; 2008). While Mombasa still handles more cargo per year: approximately 695,600 TEUs per annum, Dares Salaam is substantially more efficient. Since Hong Kong-based HPH took up its concession, crane productivity has increased from 8 to 22 containers an hour, a massive improvement. Total annual turnover has also increased, from 123,000 20-foot equivalent (TEU) units in 2000, to 259,000 TEUs in 2004, some 9,000 TEU above the official design capacity (Pearson; 2006).

This rapid improvement seems to have jogged the Kenyan government into action on two counts; First, Mombasa must become more efficient when it comes to its service delivery and capacity utilization if it is to remain the dominant regional port; and secondly, the

Dares Salaam experience has demonstrated the benefits of private sector management. Port performance can be improved much more quickly, through the purchase of new cargo handling equipment and the introduction of more efficient methods of loading, unloading and storing cargo and of dealing with cargo documentation (Fossey; 2009).

2.6 Addressing the issue of Capacity Utilization

A critical area of focus for the Kenya government is a seamless logistics system characterized by an efficient flow of freight that promotes the Kenyan economy's competitiveness. Government analysis points to the fact that poor performance of the transport system is imposing significant costs on business activity and therefore considers it important that blockages within ports and rail systems be dealt with urgently (Taylor, 2010).

The recent economic data and private sector surveys indicate that the global competitiveness of productive sectors of the Kenyan economy is hamstrung by inadequate and inappropriate infrastructure and logistical support which raises logistic costs. Increasing the efficiency of transport hubs and corridors is therefore seen as an important strategy to bring down the cost of doing business and therefore improving on capacity utilization (Stone; 2009).

Recently most ports have introduced incentives to transshipment such as longer free storage periods, lower terminal handling charges and the reduction of port tariffs for shipping lines handling more than certain freight volume, which could contribute significantly to reducing the cost of shipping companies and/or shippers (Trace: 2009). These total services may need more sophisticated services around ports with well

developed and related logistics clusters. In addition, there has been a strong trend towards mega size containerhips. The service pattern of these mega size containerhips may depend on the cargo volume available. If there is enough volume to fill the space, well developed ports and good land transport facilities with reasonable cost, and a direct call system may be a better service pattern in terms of capacity utilization (Weise, 2010).

Logistics costs in developed countries are significantly lower than those in developing economies; such as Kenya. Kenya's high logistics and transport costs are seen as a major reason for the relative decline in the manufacturing industry's contribution to gross domestic product (Neil; 2007). The increase in the number and size of the vessels and their specialization in the transportation of the goods affect the port infrastructure and operations. Thus, ports have more roles than loading and unloading of the vessels, such as providing logistics and other services (Norman; 1991). Apart from the cost competitiveness of port operations, many ports lose their dominance and growth potential because of costly and unreliable transportation services and inadequate links with distribution systems. Current Kenyan economy policy is placing increasing emphasis on export-led economic growth with an increase in value-added manufactured goods. This will continue to affect the technology required by transport operators. International transport trends are having an influence on the manner in which Kenya operates its transport sector. Hence the transport sector is currently being shaped in order to compare favorably with international standards (Wilson; 2006).

The government of Kenya, in recognizing the vital role of Mombasa port in the country's economy, the problems with congestion due to growth in maritime traffic, the need for large capital investments, the port's capacity utilization and the long lead-time to provide

infrastructure ahead of demand has committed itself in developing the transport sector to ease the above problems (Baird; 2007). The transport system in Kenya would therefore be highly reliable and rapid to contribute to economic development. Mombasa is overwhelmingly the dominant port, urban and industrial complex on the Kenya Coast. Improvements in operational and efficient capacity utilization, management restructuring and revitalization of the port in the competitive context of the East African Port System as a whole are critically important current policy objectives (Hoyle: 2009).

2.7 Summary of the Literature Review

Traditionally, capacity management dynamics have been relegated to the domain of logistics and operations management. It is apparent, however, that service capacity management is far more complex. This complexity is underlined in a service organization's inability to inventory its service as opposed to goods manufacturers, that are able to do so when excess capacity arises (Porter; 1985).

Typically, the objective for many organizations is to develop a capacity profile to such an extent that it matches its demand profile and yet retains its economic viability. In a perfect situation, an organization is able to cut capacity during low season and increase capacity during peak season. However, despite an optimum choice of capacity management system to the extent that there may be a close fit to the demand profile, demand forecasting is a skill rather than an exact science (Dilworth: 2002).

According to (Chang; 2004) capacity management has tended to move from a pure cost-driven exercise to a more customer-oriented differentiation exercise. For example, the optimal port network design is not only a function of carrier-specific operational factors,

but more and more of shippers' needs (for transit time and other service elements) and of shippers' willingness to pay for a better service. Hence, the more cost efficient the network becomes from a carrier's perspective, the less convenient that network could be for the shippers' needs in terms of frequency and flexibility.

Overall, then, capacity utilization of ports also cannot be explained simply in terms of the customer's needs, such as transit time and better services. The hub and port capacity utilization are also related to the regional or local characteristics of the final destination, such as the existence of major ports in the vicinity of the final destination, land transport networks and land transport cost from nearby major ports around the destination to the final delivery place, the existence of another hub port with lower total logistics costs close to the final destination and the amount of cargo volume available (Pearson; 2006). In addition, freight forwarders will arrange the most economic transport routes that will satisfy the shippers' needs after considering whole transport networks. Some shippers may prefer a lower transport cost with relatively long transport times, while some other shippers may be in favour of quick transport times with relatively higher payment.

2.8 Conceptual framework

A conceptual framework is used in research to outline possible courses of action or to present a preferred approach to an idea or thought (McGrath; 2009). The intention of this framework is to establish a preliminary concept of the linkages between capacity utilization of the ports with the independent variables mentioned. This research is based primarily on the assumption that highly effective and efficient processes leads to

sustainable capacity utilization of the ports and thus revenue growth and profitability (Heskett et al; 1997).

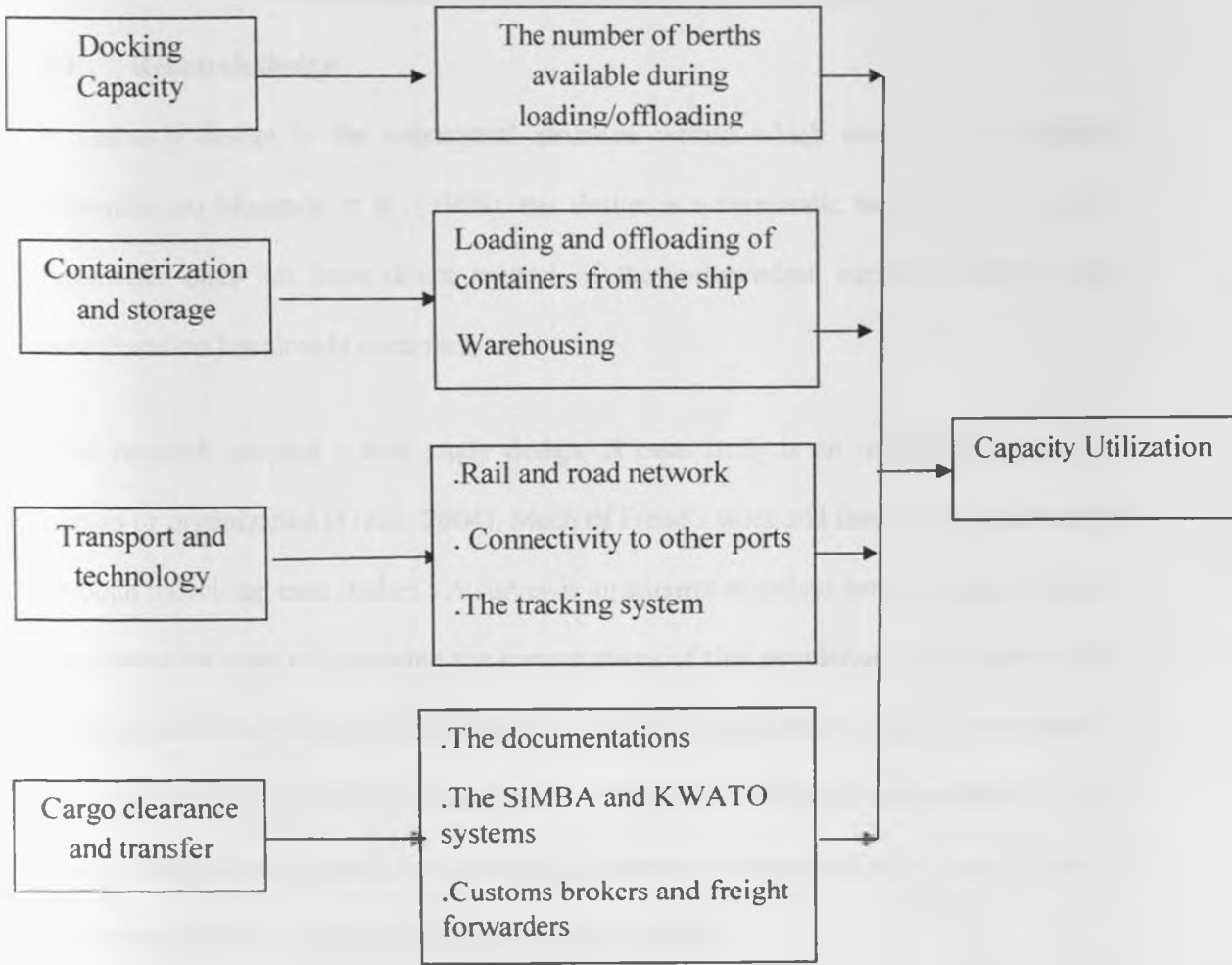


Fig: 2.1 Conceptual Framework

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research design

A research design is the conceptual structure within which research is conducted. According to Mugenda et al., (1999), this design is a systematic inquiry into which the researcher does not have direct control of the independent variables because their manifestation has already occurred.

This research adopted a case study design. A case study is an in-depth study of one person or organization (Freud: 2004). Much of Freud's work and theories were developed through individual case studies. A survey is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables (Mugenda and Mugenda, 2003). In a case study, nearly every aspect of the subject's life and history is analyzed to seek patterns and causes for behavior. The hope is that learning gained from studying one case can be generalized to many others. A case study embraces depth rather than breadth of a study.

This study involved in- depth understanding of the port of Mombasa capacity utilization, how it can be optimized to enable the port of Mombasa gain competitive advantage over other ports in the region at the same time achieve international standards in service delivery.

3.2 Target Population

The population of this study was 400 and consisted of terminal operators who were KPA employees that perform the actual dockside operations, the Shippers, the bulk cargo

handlers, transporters and the freight forwarders who affect the port capacity utilization through volume and with operational and documentation efficiency.

Table 3.1 Target population

Category	Population
Terminal Operators	300
Bulk Cargo Handlers	5
Transporters	50
Shippers	26
Freight Forwarders	19
Total	400

3.3 Sample design

A more representative study requires that the whole population or as big as possible be studied. However, due to lack of time and resources, the researcher sampled 10% of the population. The main factor considered in determining the sample size is the need to keep it manageable (Warwick and Lininger, 1975). This enables the researcher to derive from it detailed data at an affordable cost in terms of time, finances and human resource (Mugenda et al, 1999). Mugenda et al, (1999) further suggest that for discipline studies, 10% of the accessible population is enough for a study sample. Stratified sampling was used.

Table 3.2 Sample population

Category	Population	Percentage	Sample
Terminal Operators	300	10%	30
Bulk Cargo Handlers	5	10%	1
Transporters	50	10%	5
Shippers	26	10%	2
Freight Forwarders	19	10%	1
Total	400	10%	40

3.4 Data Collection

Primary data was collected by use of a structured and semi-structured questionnaire with both closed and open-ended questions. The questionnaire was administered personally.

The researcher used a structured questionnaire to collect data for this research. The questionnaire (Appendix I) contained both closed and open-ended items; closed ended questions were formulated because they are easy to administer and easier to analyze while open ended questions were used because they permit a greater depth of response and expression. The questionnaires are used to get data from those categories with numerous respondents. It has the advantages of being cheap, the questions can be made as easy as possible, easier to administer, can be left with the respondents to respond at their own free time and results in data is suitable for analysis as designed by the researcher. Structured questions were mainly used in the instrument but open-ended questions were also used where widely varied views on an issue were expected. The questionnaire was divided into sections whereby the first section consisted of statements

seeking information on the respondents' background. This is necessary in describing the respondents (Borg and Gall, 1997). The other sections sought to solicit data on particular variables of the study.

3.5 Data analysis

The data collected from this study was edited for accuracy, uniformity, consistency, completeness and arranged to enable coding and tabulation before final analysis, (Cooper and Emory, 1998). Further the data was analyzed using Statistical package for Social and statistical Scientist (SPSS) Version.16 and presented with summarized percentages. The presentations were in the form of tables, pie charts and bar graphs accompanied with explanations.

CHAPTER 4: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

The main focus of this chapter was to critically analyze, interpret and present the results of the research study. Data obtained was analyzed to evaluate capacity utilization at the port of Mombasa. Descriptive statistics such as frequencies and percentages were used to analyze responses to various items in the questionnaire. The target population for the study was 40 respondents, and the researcher administered 40 questionnaires for the field study. The research survey resulted in a response rate of 88% where by 35 out of the 40 respondents in the target population responded to the questionnaires administered to them.

4.2 Demographic Information of the Respondents

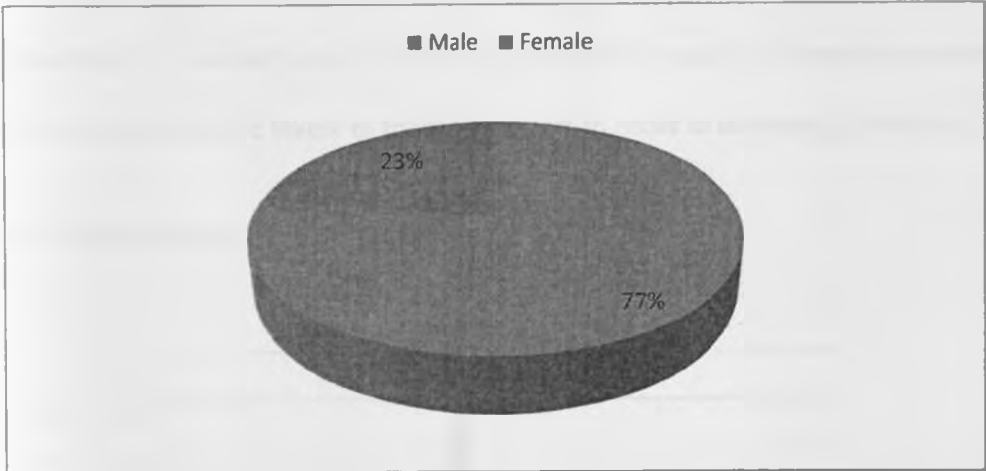
To form the basis under which the research can rightly judge the responses, it was important for the study to establish their background information. In addition, the study employed a case study approach in research that sought to investigate the study variables without manipulating any of them in an attempt to understand, describe and explain well the perceptions and views on capacity utilization at the port of Mombasa. These effects are embedded in the general background of the respondent.

4.2.1 Gender of the Respondents

With development and modernization, gender equality has turned out to be an important consideration in almost all spheres of life, including organization operations and management (Burlingham, 2009). As a result it was necessary for the study to establish the gender balance in the organization. This was guided by the logic that males and

females perceive and interpret things differently even though they may be exposed to the same kind of environment. According to the findings majority 31(78%) of the respondents were male while 4(23%) were female. This implies that majority of the people who transact business at the port are male especially because of the physical nature of these jobs. On the other hand, the research still recognizes the contributions made by women in the maritime industry. These women are achieving success and breaking barriers every day, demonstrating that the port is a place of opportunity and stability. The research also exhibits the maritime industry’s diversity, illustrating how port workers’ various personalities and career paths all make the port a dynamic workplace.

Fig 4.1 Distribution of Respondents Gender

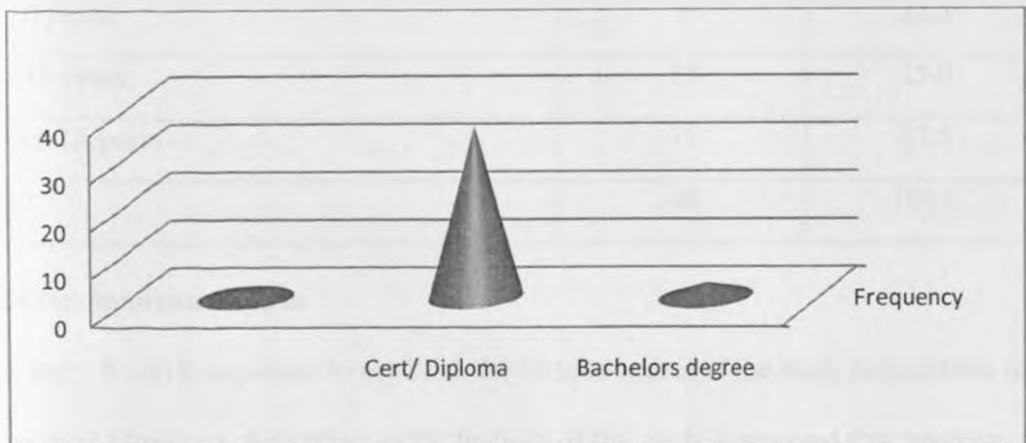


4.2.2 Respondents Level of Education

Education is and has always been considered the most important factor in the conceptualization, understanding, and in implementing ideas. The level of formal education was therefore an important aspect of the study in that given the components

of affirmative action policy in organizations, education qualifications might be ignored. As a result, it was important for the study to find out the level of education attained by each respondent. It emerged that majority 32(91%) of the respondents were certificate and diploma holders while 3(9%) were holders of bachelors degree. The study asserts that the staff at the port of Mombasa are knowledgeable when it comes to the basic skills required to perform their duties. It can also be concluded that the port relies on technical institutions which offer the basic Diploma and Certificate Courses on Maritime Education for its human resource. However, learning by itself does not guarantee increased performance. We can be certain that where learning is needed and not provided, increased performance will not be achieved. For example, if a new piece of port equipment is purchased and operators are not provided with the necessary learning experiences to operate the new port equipment efficiently, it is unlikely that the new equipment will result in increased productivity. KPA should therefore invest in training its staff in order to increase productivity.

Fig: 4.2 Respondents Level of Education



4.2.3 Experience of doing business at the Port of Mombasa

It was important for the study to establish the experience of the respondents in doing business at the port of Mombasa in number of years. It is perceived that experience is a key component in organizational stability and performance. From the findings it was established that most 15(38%) had transacted with the port of Mombasa in their various capacities in the different organizations for a period of over 15 years with 10(25%) and 6(15%) having done business at the port of Mombasa for a period of 5 – 10 years and less than 5 years respectively. The respondents work experience allowed theory and practice to be closely linked. Therefore, majority of the respondents having done business at the port for over 15 years proved that they are experts in their various fields and that whatever information they provided for the study could be deemed reliable and trustworthy.

Table 4.1 Respondents Port Experience

	Frequency	Percent
Less than 5 years	6	15.0
5 - 10 years	9	22.5
11 - 15 years	10	25.0
Above 15 years	15	37.5
Total	40	100.0

4.2.4 Respondents Cadres

The study found it important to establish the various cadres of the study respondents of the port of Mombasa. According to the findings of the study it emerged that majority of the respondents 23(58%) were terminal operators with 10(25%) being transporters while

4(10%) were freight forwarders. 1(3%) of the respondents were found to be shippers and another 1(3%) were bulk cargo handlers.

Table 4.2 Respondents cadres

	Frequency	Percentage
	1	2.5
Transporter	10	25.0
Terminal operator	23	57.5
Freight forwarder	4	10.0
Shipper	1	2.5
Bulk cargo handler	1	2.5
Total	40	100.0

From the respondents data indicated in the study it can be concluded that the study was representative of all the major stake holders in the port operations. This in turn ensured a clear and unbiased overview of the state of capacity utilization as experienced by the different cadres involved in port operations.

4.2.5 Number of Years Worked in their organizations

The research further sought to know the number of years the respondents had worked in their respective posts in their various organizations. From the findings it emerged that most 14(35%) had a working experience of more than 15 years in the same post with 12(30%) having worked in the same position for 5 – 10 years.

Table 4.3 Respondents Working Experience

	Frequency	Percent
Less than 5 years	6	15.0
5 - 10 years	12	30.0
11 - 15 years	8	20.0
Above 15 years	14	35.0
Total	40	100.0

Table 4.3 ensured that the researcher got information which is reliable since most of the respondents have worked in their respective positions for over 15 years and therefore they are knowledgeable in their respective fields.

4.3 Constraints of Capacity Utilization

One of the major objectives of the study was to establish and highlight the constraints the port of Mombasa experiences in its quest to becoming the shipping hub in East Africa. To achieve this, the research sought to know from the respondents whether the port of Mombasa experiences any constraints. According to the majority 31(78%) of the respondents believes the port experiences constraints to its operations compared to 7(18%) who were of the opinion that the port was free of any constraints. According to (Taylor; 2009), Underutilized capacity resources are a major concern in many organizations. When the organization's management is unaware that underutilized capacity resources exist, lost profit opportunities or unnecessary investment can result (Ansari et. al; 1997). These results therefore. show that the port actually experiences constraints and the port stakeholders are aware of this.

4.3.1 Factors Affecting Service Delivery

Having established that the port had constraints in attaining its goals, the research further sought to determine some of the factors that affected service delivery at the port and to what extent. From the findings it emerged that 12(30%) of the respondents found that technology had low effect in the delivery of services at the port with 14(35%) agreeing that technology very highly affected port service delivery. It was also noted that the high cost of doing business at the port had effects to service delivery with 25(63%) of the respondents rating the effects to be of high extents compared to 11(28%) who found the effects of high cost of doing business to be of low extents.

Table 4.4 Factors Affecting Service Delivery

Factors affecting service delivery	Extent of effect									
	Very low extent		Low extent		Moderate extent		High extent		Very high extent	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Technology	6	15.0	6	15.0	13	32.5	5	12.5	9	22.5
Infrastructure	2	5.0	14	35.0	11	27.5	11	27.5	2	5.0
High Cost of doing business at the port	7	17.5	4	10.0	3	7.5	12	30.0	13	32.5
Government regulations	4	10.0	7	17.5	4	10.0	15	37.5	9	22.5
Inadequate Information Systems	8	20.0	3	7.5	10	25.0	11	27.5	7	17.5

Inadequate information systems, High cost of doing business, government regulations and Technological factors at the port are the three major factors perceived by the respondents to be affecting the service delivery at the port. From the study results it can be said that the efficient delivery of services at the port of Mombasa is not only affected by internal factors but also by external factors.

4.3.2 Factors Influencing Capacity Utilization

Having established the factors that affected service delivery the research sought to know from the respondents some of the factors that influenced capacity utilization at the port of Mombasa, and to what extent. It emerged from the findings that 23(58%) of the respondents found the docking capacity as a great influence of capacity utilization at the port while 10(25%) citing its influence to capacity utilization as of low extents. On the other hand 25(63%) of the respondents thought the process of loading and offloading had the highest influence in the capacity utilization of the Mombasa port whereas 5(13%) found its influence to service delivery as minimal.

Table 4.5 Factors Influencing Capacity Utilization

Factors influencing capacity utilization	Extent of effect									
	very low extent		Low extent		Moderate extent		High extent		Very high extent	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Docking Capacity	6	15.0	4	10.0	6	15.0	10	25.0	13	32.5
Loading/offloading	2	5.0	3	7.5	9	22.5	14	35.0	11	27.5
Storage & Warehousing	13	32.5	5	12.5	8	20.0	6	15.0	5	12.5
Cargo clearance	4	10.0	5	12.5	11	27.5	8	20.0	12	30.0
Transport network	8	20.0	1	2.5	10	25.0	14	35.0	5	12.5
Technology	7	17.5	6	15.0	10	25.0	11	27.5	5	12.5
Human Resource	8	20.0	3	7.5	16	40.0	5	12.5	7	17.5

According to 12(30%) of the respondents human resource had influence of high extents to port capacity utilization with 11(28%) finding its influence to be of low extents while most 16(40%) found its influence to be moderate.

From the findings, it is therefore clear that docking capacity (number of berths), cargo clearance and terminal handling (loading and offloading of cargo) are the main activities that have the highest impact on capacity utilization at the port of Mombasa. Therefore, these are where change must be effected to improve on the port of Mombasa's competitiveness.

4.3.3 Decongesting Operations at the Port of Mombasa

The research found it important to establish the respondent's opinion on the possible ways of decongesting the operations of the port thus enhancing effective service delivery. Asked to show what they thought on some of the factors that should be put in place to decongest the port, majority 33(83%) of the respondents were in agreement that improvement of the rail system would go a long way in decongesting the port whereas a 5(13%) were in disagreement. Another significant majority of the respondents 30(75%) acknowledged the willingness to share information amongst the port stakeholders as a mode of decongesting the port compared to 8(20%) who were in disagreement.

Table 4.6 Possible ways of decongesting the port operations

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Improvement on the rail			5	12.5	2	5.0	9	22.5	24	60.0
Improvement on the road network	4	10.0	3	7.5	1	2.5	7	17.5	25	62.5
Construction of another port	2	5.0	4	10.0	3	7.5	14	35.0	17	42.5
Privatization	15	37.5	6	15.0	1	2.5	10	25.0	8	20.0
Lenient Government Controls	4	10.0	14	35.0	2	5.0	11	27.5	8	20.0
Willingness to share information amongst the port stakeholders	1	2.5	7	17.5	2	5.0	18	45.0	12	30.0

According to 31(78%) of the respondents construction of an alternative port was seen as a way of reducing congestion in the port and ensuring quality service delivery. Table 4.6 further illustrates other modes thought as viable for port decongestion as suggested by the study respondents.

From the findings, the port of Mombasa needs to improve on its rail and road network in order to address the problem of congestion at the port. Construction of an alternative port is also seen as a viable solution. Even from the success of the privatization of the port of Dar es Salaam, the port stakeholders have no confidence in the privatization of the port of Mombasa mainly due to the fear of corruption cases, political interference and also the fear of job losses. Therefore, to them privatization of the port is not the way to go in order to decongest the port.

4.4 The Status of Capacity Utilization at Mombasa port

As one of the major objective of the study, it was of paramount importance that the research established the status of capacity utilization as implemented and practiced in the port of Mombasa. In order to attain this objective the research sought to know whether the port exceeded its designed capacity. From the findings majority 24(60%) of the respondents said that the port of Mombasa has not exceeded its designed capacity, compared to 16(40%) who were in agreement that the port exceeded its capacity. The port of Mombasa still has the capacity to handle the bulk of cargo passing through it on a daily basis, though not as efficiently as other successful ports like Singapore but it still meets the needs of the region.

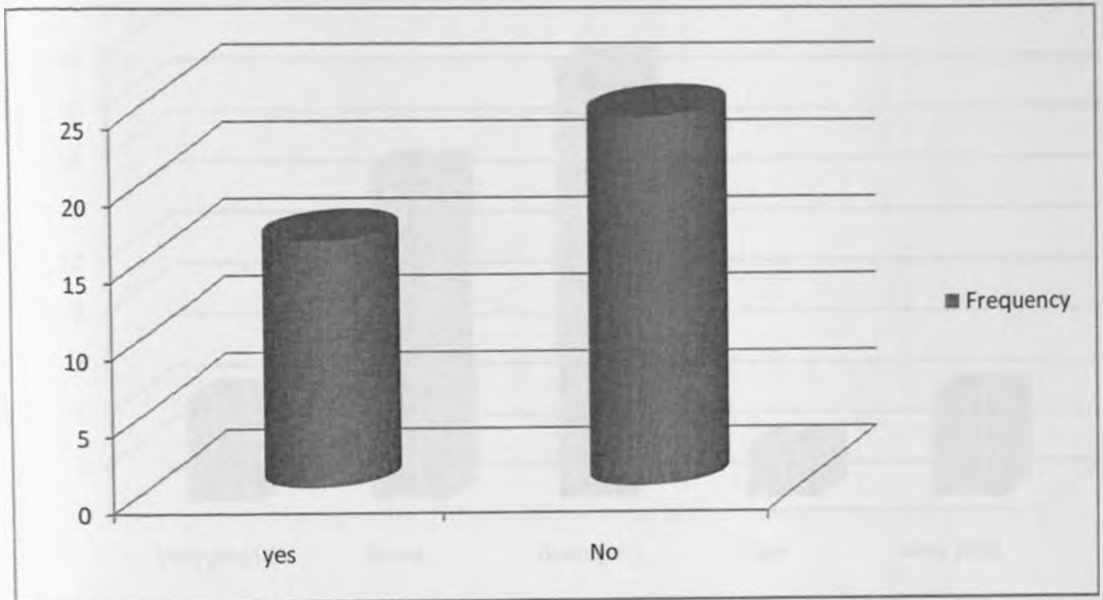
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Fig 4.3 Whether the Port Exceeds Its Capacity



Asked to indicate what they thought the working condition at the port was, most 17(43%) found the conditions average with 13(33%) and 3(10%) thought the conditions were good and very good respectively. On the other hand 2(5%) found the working conditions of the Mombasa port to be poor. From these findings, it seems the employees of the port are satisfied with their employer. Therefore, the level of motivation amongst them is expected to be at the peak and thus productivity of the port operations should therefore be high if the constraints mentioned above are addressed. but this is not really the case.

Fig 4.4 Working Conditions at the Port



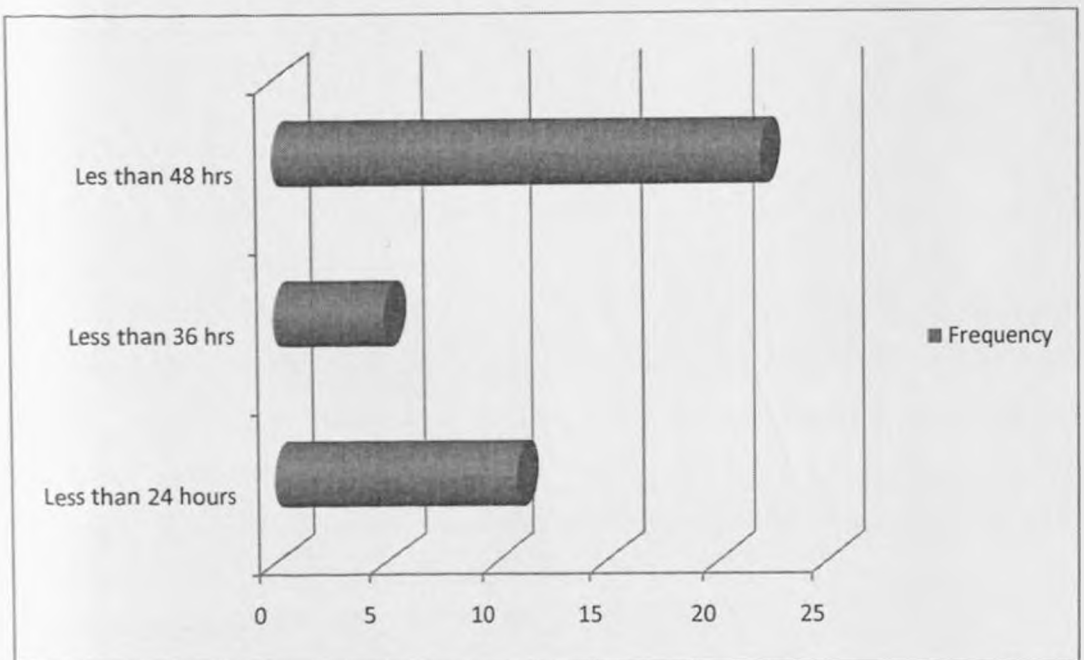
The study respondents were required to show how they rated the cost of doing business at Mombasa port, from the findings 19(48%) thought that the cost of doing business in the Mombasa port was affordable with 11(28%) finding it expensive while 10(25%) were of the opinion that it was reasonable. Compared to Singapore in order to establish a benchmark for the port of Mombasa, where Singapore takes 1day at a cost of USD 31 to clear imports and exports, while customs clearance and technical controls at the port of Mombasa takes an average of 4days at USD 100 per day. The more the number of days required the greater the costs of imports and exports, and therefore these high costs increase congestion at the port due to lack of affordability and recession.

The port having adopted technology in its operations the research went ahead to establish how the respondents rated the technological changes at the port for the last 5 years. According to the results most 16 (40%) of the respondents, found the technological changes to be average with 14(35%), 2(5%) and 1(3%) finding technological changes to

be good, very poor and poor respectively. The stakeholders of the port of Mombasa are therefore seen to be embracing technology in order to improve on the port operations while at the same time addressing the issue of capacity at the port. These technological changes over the years have led to an increase in speed and transparency of the port operations which is the dream of every port.

The study further sought to establish the effectiveness of the port in service delivery in terms of the average time it takes to clear goods from the port of Mombasa. As per the results 22(55%) said the cargo clearance was done within 48 hours with 11(28%) saying the clearance was done in less than 24 hour while 5(13%) were of the opinion that goods were cleared in less 36 hours. This shows that the port still lags behind on efficiency on cargo clearance when benchmarked with such successful ports like Singapore. It does not compare favorably with international standards which is typically less than 36hours.

Fig 4.5 Duration of Cargo Clearance at the Port



Asked whether the port of Mombasa was accessible in terms of its transport network, majority²⁷ (68%) of the respondents were in agreement that the port's transport system was accessible against 11(28%). With the improvement on the Kenyan roads, the transport network to/from the port of Mombasa has also improved. Most of the goods are being transported via the road due to the bad condition of the rail.

4.4.1 Logistic Services Provided To Customers

For the port to achieve its major objective of effective cargo handling and clearance, provision of logistic services to its customers is of paramount importance. In this study the researcher sought to know whether the port of Mombasa, as a hub of quality customer service, offered logistic services to its customers. From the findings some of the major logistic provisions offered at the port of Mombasa are advanced information technology, Location (proximity to major world routes) and Quality services with efficiencies and

Table 4.7 Provision of Logistic Services

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Location (proximity to major world routes)			5	12.5	2	5.0	22	55.0	7	17.5
Quick turnaround time			8	20.0	1	2.5	22	55.0	6	15.0
Quality services with efficiencies and productivity			5	12.5	1	2.5	24	60.0	5	12.5
Reasonable costs	2	5.0	8	20.0	6	15.0	18	45.0	4	10.0
Accommodate super larger ships – deep water, advanced equipment	12	30.0	9	22.5			10	25.0	7	17.5
Networks covering neighboring feeder ports	3	7.5	8	20.0	2	5.0	17	42.5	6	15.0
No burdensome paper works	3	7.5	12	30.0	3	7.5	15	37.5	3	7.5
Advanced information technology	2	5.0	5	12.5	1	2.5	25	62.5	5	12.5
Intermodal infrastructures	2	5.0	10	25.0	4	10.0	15	37.5	6	15.0

Other logistical provisions offered by the port are highlighted on table 4.6 with some including: Quick turnaround time, Accommodation of super larger ships – deep water, advanced equipment and establishment of networks covering neighboring feeder ports respectively. From the study, logistically, the port of Mombasa has a lot to offer to its customers. The port, however, still finds itself with the need to rapidly adapt to the requirements of its clients, extending and improving its offers of services and at the same time promoting quality.

4.4.2 Strategies to Address Constraints of Port Operations

Having known the constraints of port operations as established in the research findings, it was important to explore some of the strategies that would be sought after in dealing with port operation constraints. The respondents were asked whether the port of Mombasa considered developing strategies to address the constraints experienced in its operations. according to the results of the study a significant majority 35(88%) of the respondents were in agreement that the port had consideration of developing strategies while 4(10%) never found the port to have any considerations.

The study further looked at some of the avenues to better operations at the port while addressing capacity utilization constraints at the port. Asked to indicate how they perceived some of these factors in the betterment of the ports operations. As per the findings 17(43%) of the respondents were in agreement that privatization of the port would better services at the port compared to 19(48%) who felt that privatization of the port would not better the quality of services at the Port. A significant majority 32(80%) of the respondents found employment of highly qualified and motivated staff at the port as the best strategy of improving services at the port against 7(18%) who were in disagreement. From the study, it is apparent that the success of the port of Mombasa is highly dependent on the qualifications and skills of its employees. A survey by (Mercer Human Resource, 2008), largely attributes the success of the port of Singapore to a labor force that is highly educated, competent and skilled. This study therefore. emphasizes that this is the direction that the port of Mombasa should take.

Table 4.8 Strategies to Better Service

	Strongly Disagree		Disagree		Undecided		Agree		Strongly Agree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Privatization of the port	17	42.5	2	5.0	3	7.5	14	35.0	3	7.5
Digitalization of port operations	3	7.5	5	12.5	2	5.0	16	40.0	11	27.5
Eliminating human power and installation of machine power	15	37.5	7	17.5	5	12.5	12	30.0		
Reduction of cargo clearance and storage costs	7	17.5	8	20.0	3	7.5	14	35.0	5	12.5
Elimination of cargo brokers	5	12.5	7	17.5	1	2.5	10	25.0	15	37.5
Increase of the number of berths			5	12.5			9	22.5	24	60.0
Employing highly qualified and motivated staff	5	12.5	2	5.0			10	25.0	22	55.0

On whether eliminating human power and installation of machine power, elimination of cargo brokers and increasing of the number of berths would be strategies of improving the ports service efficiency, 22(55%), 12(30%) and 5(13%) were against this factors improving service efficiency compared to 12(30%), 25(63%) and 33(85%) respectively who were in agreement. Brokers encourage corruption and make the cost of doing business to be very high. This study therefore, reveals that eliminating these brokers while at the same time increasing the number of berths available is the way forward to addressing the operational and capacity issues at the port.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The cumulative data was analyzed using quantitative analysis and presented in the form of tables graph and pie charts. The study sought to analyze capacity utilization at the port of Mombasa, with specific reference to: What are the constraints of capacity at the Port of Mombasa? What is the status of capacity utilization at the port of Mombasa? And what measures can KPA take in dealing with the current and anticipated capacity problems at the port of Mombasa? And thus come up with solutions and strategies on how to curb the constraint for better service delivery in the port.

5.2 Discussion of Findings

This section discusses the findings of the study in comparison to what other scholars say as noted under literature review. It is broken into: demographic information of the respondents, the capacity constraints at the port of Mombasa, the status of capacity utilization at the port of Mombasa and the solutions to the current and anticipated capacity utilization problems at the port of Mombasa. The analyzed results are compared against the objectives of the research to assess how far these objectives have been achieved. This evaluation is thus divided into two major parts. First an assessment of outcomes against the objectives is given in Section 5.2, then, a conclusion of the research project in Section 5.3, followed by recommendation of the study and suggestion for further studies in section 5.4.

5.2.1 Constraints of Capacity Utilization at Mombasa port

According to (Brooks; 2004), capacity constraints lead to a port being inefficient. Port capacity is constrained by numerous factors both internal and external port control, according to the study findings the port of Mombasa experiences constraints in technology and the high cost of doing business as their major undoing in realizing its goal of quality service delivery. The research findings concur with the studies by Brooks, (2004) in that constraint in capacity utilization results to inefficiency.

5.2.2 Status of Capacity Utilization at the Port

It was important to establish the status of capacity utilization in order to be able to access its operations effectively. Port capacity utilization depends on fast, continuous, effectively controlled, and efficiently managed flow of cargo without any bottlenecks or barriers, which in turn leads to fast and quality delivery of goods from the sea port to the final destination (Miller, 2007). In addressing the status of capacity utilization at the port of Mombasa the study sought to know whether the port has exceeded its designed capacity, according to the study only 40% of the port capacity has been achieved with 60% of the ports capacity yet to be realized. Therefore, this means that with the proper management of the current available capacity of the port of Mombasa, this port would be able to realize its full capacity potential.

5.2.3 Solutions to the Current and Anticipated Capacity Utilization Problems

In order to achieve sustainable effective customer service delivery, the port of Mombasa needs to come up with strategies to be able to solve capacity utilization problems. From the study employing highly qualified and motivated staff, digitalization of port

operations, improvement on the rail and road network and the construction of an alternative port were some of the areas highlighted to have the greatest potential of solving capacity utilization problems in the port. Some of the direct capacity constraints at the port of Mombasa included; lack of efficient rail transport due to old and poorly managed railway which is a major aspect in ensuring port efficiency. As indicated by (Stone; 2009) so as to be efficient in its operations, ports have to increase the efficiency of transport hubs and corridors seen as an important strategy to bring down the cost of doing business and therefore improving on capacity utilization.

In 2009, the Kenya Shippers Council also identified the above constraints as the major challenges facing cargo movement at the port of Mombasa. The council then recommended privatization of the port's operations as a solution to these challenges citing major ports like Singapore and Rotterdam where privatization has been a success. It is therefore apparent, however, from this study, that most stakeholders of the port of Mombasa are not knowledgeable on the benefits of privatization of the port's operations and this was why they were against the privatization of the port. The government of Kenya and the port management should therefore educate the various port stakeholders on why privatization of the port of Mombasa's operations is necessary.

5.3 Conclusions.

The study has highlighted the key factors impacting on the capacity utilization of the port of Mombasa. The port's performance has not improved between 2006 and 2007, if anything the port of Mombasa has been outclassed by other countries like Tanzania and Dubai whose performance has improved. To judge from the latest Doing Business report the government of Kenya has at least paid attention to the World Bank report in the past

as there is some evidence to suggest some remedial action is being undertaken to reduce the time taken to conduct trade and avoid costly delays and therefore reducing congestion at the port. The port operators have also made several initiatives in response to growing concerns over increased congestion and delays of cargo clearance. These include introduction of KRA's Simba 2005 Customs system, implementation of 24/7 port operations, harmonization of the Port Authority's electronic clearance KWATOS system, the licensing of Clearing and Forwarding agents to handle clearance of containers and motor vehicles outside the port, and modernization of Port handling equipment

From the study it can be concluded that in order to achieve effective capacity utilization, free of constraints and well equipped for quality service delivery the port of Mombasa needs to restructure its operation as well as coming up with new strategies to better its operations. This study established that embracing new technology, improving the rail and road networks linking up with the port of Mombasa and East Africa as a whole and improved security among many other strategies will be detrimental in the smooth running of the operations of the port of Mombasa.

For example the bottlenecks that arise from level of detail needed on documents for both import and export can be addressed by the above factors and the government of Kenya should also focus a lot of its effort in educating the relevant public on simplified procedures for import and export.

The study thus did conclude that the government, top port management and authority bodies in charge of port operations need to work towards embracing modern port management systems. Improvement of the infrastructure, embracing of new technology, reduction of paper work and elimination of brokers in cargo clearance are some of the

issues to be addressed when developing strategies to govern the operations of the port. The study did confirm strongly just like scholars from the literature review; (Feng & Notteboom; 2011), (Winkelmann; 2003) and (Miller; 2006) the need for an efficient service delivery at the port.

5.4 Recommendations

Following the study findings it is clear that capacity management dynamics have been relegated to the domain of logistics and operations management. It is apparent, however, that service capacity management is far more complex and for organizations and the port of Mombasa in particular it's paramount to develop a capacity profile that matches its demand profile and yet retains its economic viability. To achieve maximum understanding practice and capacity utilization policies in the most appropriate way taking into account the global competitiveness, the following recommendations are advanced:

- i. The Mombasa port needs improvements in its operations and efficient capacity utilization.
- ii. Management, restructuring and revitalization of the port in its competitiveness need to be implemented.
- iii. Digitalization of cargo clearance and other port operations
- iv. Elimination of cargo brokers in customs
- v. Employment of highly qualified and skilled staff at the port

However, further interventions to hasten this process. They include:

- Having Cargo Freights regulated by a third party outside the KRA and KPA. This power is now with the Kenya Maritime Authority as stipulated in the Merchant Shipping Act.
- Periodic review of the capacity of Cargo Freights with clear performance indicators.
- Review of the Rift Valley Railway (RVR) concession agreement to open up sector to other players.
- Sufficient capacity of equipment at the Rail Mounted Gantry (RMG) to reduce downtimes regularly experienced at the loading area.
- Incentives for investing in road transportation which accounts for 95% of the total cargo off-take at the port
- Operationalize trucking of Transport Licensing Board (TLB) cargo to internal container Depots (ICDs) due to non-performance of Rift Valley Railways.

Other recommendations for reducing the turnaround time for cargo clearance and thus address the issue of capacity utilization at the port of Mombasa include:

Number of Documents: Critically examine the number of documents for export and import and attempt to reduce them to the most critical. A benchmark with other economies is to be undertaken to learn from their experiences. Egypt is a useful example to compare with as the country has achieved a very good overall rating and outperformed successful countries like South Africa in all the key factors. Benchmarking has the benefit of identifying the areas where the port of Mombasa can improve in trading across

its borders which will promote trade and economic development and growth and ultimately improve in its capacity utilization..

Electronic filing of cargo documents: With the increased pressure arising from an increased volume of goods that are being moved internationally, there is need to take advantage of new technologies that reduce trade costs. Electronic filing of cargo documents has reduced delays in many ports internationally such as the ports of Durban and Singapore. Ghana is utilizing new technology that links the customs department with several commercial banks so that customs officers can confirm the payment of duties without the need for additional paperwork, allowing traders to file cargo declarations before shipments arrive and to pay tariff and port fees electronically. This was also implemented in Pakistan and resulted in the reduction in the days it took to import a consignment from conclusion of sale to arrival of goods at the warehouse –from 39 days in 2004 to 19 days currently. Clearances have sped up by 12 days in Tanzania, 2 days in Colombia and one day in Syria. Kenya has the same system known as SIMBA system and it's this system that enabled the clearing days at the port of Mombasa to reduce to 4 days from the previous 9 days. An improved version of this system is therefore needed because of the increase in cargo volumes.

Regional trade agreements: have brought with them simpler customs and transit procedures as well harmonization across several countries. Between January 2005 and April 2006 the time needed to comply with export related requirements fell by nearly 1.5 days worldwide. The largest drop, by 3 days on average, came from Eastern Europe and Central Asia. This is despite the increase in inspections and additional paperwork

required by new security regulations. Trading across Europe is becoming seamless. Many of the top ten economies on the ease of trading are European. Trade could be made a lot easier in East Africa if trade agreements in the region are fully implemented. Although agreements for one stop customs clearance were entered into by East African Customs Union, it is vital for East Africa to expedite implementation and infrastructure to standardize customs procedures and documents within the East African region.

Risk management techniques and after clearance audits: These allow countries to target customs inspections for higher risk cargo. In Tanzania more than 90% of cargo is now risk assessed before it arrives at the port of Dar es Salaam. After clearance audits introduced in Egypt, Jordan and Romania have allowed customs to quickly release cargo to importers with the container contents being verified after they reach the warehouse. The port of Mombasa should, therefore, take the lead role in risk management and audit function.

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APPENDIX: QUESTIONNAIRE

This research work is intended to explore the general overview of capacity utilization at the port of Mombasa. Please provide answers to the following questions against the most suitable alternative or by giving narrative responses in the spaces provided. (Responses will be treated with utmost confidentiality).

SECTION 1: Background Information

Sex of the respondents

Male Female

Highest level of Education and training attained?

Certificate/Diploma Bachelors Degree Masters Degree

Any other please indicate _____

For how long have you been involved in business at the Mombasa port?

Less than 5 years 5-10 years 11-15 years

Above 15 yrs

Which of the following cadres do you belong to?

Transporter Terminal Operators Freight Forwarders

Shippers Bulk Cargo Handlers

Number of years worked in the position

Less than 5 years 5-10 years 11-15 years

Above 15 yrs

SECTION II: Constraints of Capacity Utilization at Mombasa port

Does capacity utilization in the port of Mombasa experience any constraints?

Yes [] No []

To what extent do the following factors affect your delivery of services to customers at the port? (Please tick appropriately)

Key: 1- Very Low Extents, 2 – Low Extents, 3 – Moderate Extents, 4 – High Extents,

5 – Very High Extents

Description	1	2	3	4	5
Technology					
Infrastructure					
High Cost of doing business at the port					
Government regulations					
Inadequate Information Systems					

The following factors influence capacity utilization at the port of Mombasa, in your own opinion what is the extent of their influence? (Please tick appropriately)

Key: 1- Very Low Extents, 2 – Low Extents, 3 – Moderate Extents, 4 – High Extents,

5 – Very High Extents

Description	1	2	3	4	5
Docking Capacity					
Loading/offloading					

Storage & Warehousing					
Cargo clearance					
Transport network					
Technology					
Human Resource					

The following are possible ways of decongesting operations at the port of Mombasa.
 what is your take on the ability of these factors?

Key: SD – Strongly Disagree, D – Disagree. U – Undecided. A – Agree,
 SA – Strongly Agree

Description	SD	D	U	A	SA
Improvement on the rail					
Improvement on the road network					
Construction of another port					
Privatization					
Lenient Government Controls					
Willingness to share information amongst the port stakeholders					

SECTION: III: The Status of Capacity Utilization at Mombasa port

Do you think the port of Mombasa has exceeded its designed capacity?

Yes [] No []

What do you think of the working conditions at the port of Mombasa?

Very Good [] Good [] Average []

Poor [] Very Poor []

How do you rate the cost of doing business at Mombasa Port?

Reasonable [] Affordable [] Expensive []

How would you rate the technological changes at the port of Mombasa for the past 5 years?

Very Good [] Good [] Average []

Poor [] Very Poor []

On average, how long does it always take to clear goods from the port of Mombasa?

Less than 24 hrs [] Less than 36hrs [] Less than 48hrs []

How has the introduction of 24hours port operations affected the capacity utilization at the port?

.....

Is the port of Mombasa easily accessible in terms of the transport network?

Yes [] No []

In achieving quality customer service as a hub centre, does the port of Mombasa, provide the following logistic services to its customers?

Key: SD – Strongly Disagree, D – Disagree, U – Undecided, A – Agree,

SA – Strongly Agree

FACTORS	SD	D	U	A	SA
Location (proximity to major world routes)					
Quick turnaround time					
Quality services with efficiencies and productivity					
Reasonable costs					
Accommodate super larger ships – deep water, advanced equipment					
Networks covering neighboring feeder ports					
No burdensome paper works					
Advanced information technology					
Intermodal infrastructures					

In your opinion, does the port of Mombasa consider developing strategies to counter the constraints experienced in the operations of the port?

Yes [] No []

Below are some of the avenues to better operations at the port. Do you think they are viable in addressing capacity issues at the port?

Key: SD – Strongly Disagree, D – Disagree, U – Undecided, A – Agree,

SA – Strongly Agree

Avenues of Better Services in the Mombasa Port	SD	D	U	A	SA
Privatization of the port					
Digitalization of port operations					
Eliminating human power and installation of machine power					
Reduction of cargo clearance and storage costs					
Elimination of cargo brokers					
Increase of the number of berths					
Employing highly qualified and motivated staff					

Thank you for taking the time to complete the questionnaire