EFFECTS OF CONTAINER FREIGHT STATIONS ON PERFORMANCE OF MOMBASA PORT

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DECLARATION

This project is my original work and has not been presented for a Postgraduate diploma in any other academic or non-institution

……. 31/10/2018

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This project has been submitted for examination with my approval as the supervisor

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DEDICATION

I dedicate this research to my parent and family Winfred, Mwende Musyoka, Brian Musyoka and my friends who have stood by me supported me during my studies. May the Almighty God bless you.

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TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS/ ABBREVIATIONS

KRA: Kenya Revenue Authority

CFS(s): Container Freight Station(s)

KRA: Kenya Revenue Authority

KPA: Kenya Ports Authority

GNP: Gross National Product

UNCTAD: United Nations Conference on Trade and Development

TEU: Twenty-Foot Equivalent Container unit

ICD: Inland Container Depot

CAMIS: Cargo Management Information System

LCL: less container load cargo

FEU: Forty-foot equivalent unit

KIFWA: Kenya International Freight and Warehousing Association

MOU: Memorandum of Understanding (MOU)

KOT: Kipevu Oil Terminal ("KOT")

KWATOS: Kilindini waterfront Automated Terminal Operation Systems

WTO: World Trade Organization

WCO: World Customs Organization

EACCMA: East African Community Customs Management Act

DEFINITION OF TERMS

Container freight stations A facility that serves as an off-dock terminal licensed to handle cargo on behalf of port operator. Warehouse where goods are consolidated into or deconsolidated from containers for transport to their next destination (Upadhye, 2012).

Forty-foot equivalent unit The standard intermodal container is designated as twenty feet long and 8 feet (2.44 m) wide (Kenya Ports Authority, 2017).

Target population The concretely specified large group of many cases from which a researcher draws a sample and to which results from the sample are generalized (Neuman, 2014).

Customs Clearance the act of passing goods through customs so that they can enter or leave the country, a document given by customs to a shipper to show that customs duty has been paid and the goods can be shipped. Customs clearance work involves preparation and submission of documentations required to facilitate export or imports into the country, representing client during customs examination, assessment, payment of duty and co taking delivery of cargo from customs after clearance along with documents. (Camdel Limited, 2017)

CFS storage An interim storage at the Container Freight Stations, where Cargo is stored while awaiting Customs Clearance. Terminals include storage yards for temporary storage of the incoming containers (Commercial Freight services, 2017).

Handling Charge the charges assessed for services rendered within the container terminals (Commercial Freight services, 2017)**.**

ABSTRACT

The port of Mombasa has been faced with inefficiencies through its operation, with congestion being a major problem. The adoption of the CFSs to help curb these problems at Mombasa port was meant to improve the port performance by eliminating such inefficiencies, years down the line after the adoption of these CFSs such inefficiencies among others are still being felt at the port having some stakeholders criticizing the operation of CFSs. The research sought to investigate the effects of the container freight stations on performance of Mombasa port with the specific objectives focusing on investigating the effects of Container Freight Stations Storage on Performance of port of Mombasa, determining the effects of customs clearance speed at the Container Freight Stations on Performance of Port of Mombasa and establishing the effects of CFS Cost on Performance of Port of Mombasa. The questions that the research sought to answer; to what extent do the Container Freight Stations Storage affects the performance of Port of Mombasa? To what extent has the customs Container Freight Stations Clearance Speed affected the Performance of Port of Mombasa? To what extent has the CFS Cost affected the Performance of Port of Mombasa? A descriptive design was used for the study, using a stratified random sampling technique to obtain sample size of 198 respondents from a population of 470 respondents, where the respondents were sampled across all strata which included KRA operations and KPA staff, various operational CFS and Clearing & Forwarding agents operating within Mombasa whereby the response rate of the study was 68%. The study largely relied on primary data collected using a closed end structured questionnaire. Collected data was analyzed using the SPSS 25 and the relationship between the variables examined using the Correlation analysis and regression analysis. The linear regression model used to describe the relationship between the independent variables (Container Freight Stations' Storage, Customs Clearance Speed and Cost of Clearance) to the dependent variable (Port Performance). The study findings indicated that the independent variables explain 61.8% of the dependent variable. CFS storage was found to be affecting the Port Performance by 33.7%, Customs Speed of Clearance having 40.1% while CFS cost of Clearance 16.7%. the Regression analysis results are supported by the Correlation analysis which shown a strong relationship between the independent variables and the dependent variable for the variables CFS Storage, CFS Customs Clearance Speed and CFS Cost having coefficient of correlation r of 0.638, 0.700 and 0.530 respectively. The researcher therefore recommends on efficient utilization of the CFSs so as to improve the performance of the Port of Mombasa. Improvement on the CFS cost through revision and moderation of charges to importers, while reducing the Cost of Clearance, the customer satisfaction. The number of customs officers at the CFSs can be improved so as to improve the speed of customs Clearance further.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

International trading among nations opens up the country to access commodities from other countries, whether the nation is classified as a developing or developed country; boosts development and reduces poverty while enhancing competitiveness as well as access to new markets and encouragement of innovation (European Commission, 2013). The countries with strong trading practices internationally have experienced tremendous growth economically including poverty eradication in the developing Nations. Many countries in the world are connected to the outside world markets mostly through ports, therefore there is a close relationship between the economies of these countries with their ports efficiency in operation (Song, Cullinane, & Roe, 2001).

The international trading benefits have been and are being felt and enjoyed in various countries across the globe and also the countries in the African continent, East African countries. A large portion approximated to 80% of the internationally traded goods are transported through sea transport, therefore these ports play a great role in global trading among countries (United Nations Conference on Trade and Development, 2014). International trading has been boosted by the formation WTO and WCO; these trading bodies assist the trading nations in building up their economy. Through the WTO and WCO trading activities globally have been facilitated among the developing and developed nations globally, for instance, through the adoption of trading instruments such as the Revised Kyoto Convention and the SAFE framework of standards to facilitate a more efficient trade internationally. The Mombasa port is Kenya's main gateway; it plays a pivotal role not only in Kenya but also in the East African community and neighboring countries.

1.1.1 Overview of the port of Mombasa

The Port of Mombasa in Kenya is strategically placed to serve various countries in Eastern and Central Africa, with majority of Kenyan imports being handled at the port. Uganda, South Sudan, Southern Ethiopia, Eastern Congo, Northern Tanzania, Rwanda and Burundi are among the countries that use the port of Mombasa. Compared to other ports of East Africa, Mombasa

Port is considered to being the largest and busiest port in East Africa, having a strategic importance to benefit Kenya and other east Africa countries (Kenya Ports Authority, 2014).

There has been infrastructural development at the port to modernize the port, with these ongoing infrastructural development, currently the port has two container terminals; the Kipevu terminal and Mombasa terminal. These two terminals can hold an approximation of 1.65 million twenty-foot equivalent units (Kenya Ports Authority, 2017). The long-term projects at the port for expansion of the port towards the Port Reitz area and at Dongo Kundu including the construction of container berth and road network to address gate traffic at port (Japan International Cooperation Agency, 2015). There have been efforts to modernize the port of Mombasa, through modernizing handling equipment. Modernization efforts have also been put in place to ensure infrastructure at the port is well catered, there are infrastructural development projects to connect the port to the hinterlands using the modern Standard Gauge Railway (SGR) and being served by road network (Mombasa Port Community Charter, 2015). Port expansion through construction of new berths and inclusion of private investors to address congestion. Compared to other busy ports in Africa, Mombasa port handles way less throughput than ports like Durban in South Africa. According to a report by Mombasa Port Community Charter (2015), it ranks the port of Mombasa as the deepest port within East Africa considering the fact that it can accommodate Panama container ships which are made to have a capacity of approximately “8,000” TEUs.

Mombasa port is still faced with congestion problem even after the efforts to improve efficiency of the port through infrastructural development, congestion has been attributed to pile up of cargo at the port and delays in clearance and inefficiencies associated to clearance. Management challenges and human resource such as employees downing their tools causing some interruption at the operations of the port are still being felt occasionally at the port (Sanga, 2015).

1.1.2 Container freight stations

In Kenya, in the port of Mombasa over the past decade, there has been a persistent congestion problem and as a short-term solution to address this problem, the port operators adopted the CFS model, which are privately owned and been considered as an extension of the port, port management uses their services to facilitate CFSs workflow integration with the KPA systems so as to attain uniformity and efficiency in port operations (Korir, 2013). The East African Community Customs Management Act (EACCMA, 2004) provides the procedures for

application for the registration and the operation of the container freight stations and Transit sheds. Section 12 of EACCMA, 2004 provides for the appointment of customs areas, transit sheds and internal container depots, the guidelines are provided by Regulation 57 of the East African Community Customs Management Regulations (EACCMR, 2010). The Kenyan gazette Notice NO. 8791 of November, 2015 prescribes the conditions and procedures to be followed during registration to operate an internal container depot, the laid down minimum requirements for the application for the licensing of the transit sheds and internal container depot in accordance with section 12 of EACCMA, 2004 and regulation 57 of EACCMR, 2010. The CFSs have been considered to be an extension of a port where import and export containers are stuffed and de stuffed (Korir, 2013).

These container freight stations are owned by the private sector following the encouragement of the private sector to invest in these facilities as a short-term measure to address congestion problem in the port of Mombasa. The container freight stations operations in Kenya are regulated by the Kenya Revenue Authority, which foresees the registration of new CFSs and assesses their performances in varied respects, including in respect of compliance with tax requirements. Where breach has been committed by the operators of these facilities suspension of licenses for customs bonded warehouses as well as suspension of licenses for the non-conforming CFSs is a possibility.

Through the adoption of these CFSs, the space creation is achieved to decongest the port, but this is not the only benefit achieved through their adoption, other benefits attributed including the demurrage and pilferage level are economized, as well as faster customs clearance is achieved (Mbembe, 2012). The CFSs being considered as the extension of the port, cargo after being discharged from the vessel is transferred to the CFSs through road and rail. The importer nominates the CFSs or sometimes the port operator decides the CFSs where the cargo, the transfer of cargo to the CFSs from the port is done through KWATOS system as the CFS receives the cargo online and comparing online with the Cargo receipt forms from the port. Records of the received cargo at the CFS is maintained by the CFS and the Customs Enforcement officers at the CFS.

1.1.3 Port performance

Port performance has been determined in speed and efficiency in port operations, quality of customer service and volumes of cargo handled. There are performance indicators at the port, including; "ship turn-round", vessel tonnage, cargo dwell time among others. Customer satisfaction at the port as influenced by these performance indicators determines the importers' preference to use the port therefore increasing trading volume as well as competitiveness of the port among other neighboring ports. The analysis of port's internal logistics and the relating hinterland infrastructure has also been used to determine the port performance (Sarwar, 2013).

The productivity of a port is concerned with how the port management or country utilizes the available labor, equipment and land available (Song, Cullinane, & Roe, 2001). The hinterland infrastructure and connectivity play a major role in shippers and importers' decision as they choose a convenient gateway which has effective and efficient logistical characteristics (Kotut & Mugambi, 2014). Port performance indicators as divided into "dimensions" including governance, sustainability, socio-economic and market and logistical performance this is according to Thomas (2012). Further indicators have been discussed by other researchers and scholars Merk & Dang (2012) stating that the performance indicators of a port should include; maritime traffic, call size of ships and numbers, maritime and intermodal connectivity and customer service quality.

Mombasa port has been registering an increase in cargo volumes, the year 2016 the port registered an upward increase of volume by 2.4% from the previous year 2015, the year 2015 its volumes had 1,076,118 TEUs increase from 1,012,002 TEUs of 2016 being a 6.3% increase in throughput (Kenya Ports Authority, 2016). Port efficiency has also been used by researchers and scholars as a determinant of port performance, a study on efficiency of world ports in container and bulk cargo. Efficiency has been defined by Longman English dictionary as the quality of doing something without any waste of money, resources or time. A monthly port community charter report of January 2017 identifies key port performance indicators as; Containerized Cargo Dwell time, One Stop Centre Time, after customs release and Document Processing Centre Time (Mombasa Port community Charter, 2017).

1.2 Statement of the problem

Container Freight Stations were adopted in Kenya's Mombasa Port to address the inefficiencies at the port, mostly the problem of congestion which was persistent, and their likely improvement on the efficiency at the port, the ability to accomplish something at a set time with least waste of time and effort, competence in performance. Their anticipated performance improvement at the port would be through; the provision of ample storage yards for cargo while undertaking customs operation and inspection at these facilities were foreseen for their adoption. The cheaper handling costs at these CFSs as well as reduced demurrage charges due to improved efficiency of port operation are the benefits which should have been seen upon their introduction. Port performance has been considered by some scholars as being partly affected by the revised handling procedures and strategies applied by the operator to include the private to participate (Mangan & Cunningham, 2010).

The CFSs have been in use in different countries across the globe, in the year 2016 the KRA had suspended the registration of the CFSs terming it as a way of removing unscrupulous operators, thereby revisiting their operations to prevent malpractices as well as fraudulent trading. A decade since their introduction at the port of Mombasa, same inefficiencies are still being faced. Although the ongoing reforms and infrastructure improvements at the port of Mombasa have yielded significant improvement in efficiency as cargo dwell time to 5 days, although this significant result is not adequate especially where the target is 3 days (Shippers Council of East Africa, 2015).

The CFSs being introduced as a short-term measure to address the congestion problem at the port, years down the line, the congestion problem is still felt, making exporters and importers experience increased costs especially to those who operate on fixed schedules of delivery. Capacity problem is still a challenge at the port of Mombasa which slows down trading within the region (Mombasa Port community Charter, 2017). Having provided the storage yards and other facilities does not guarantee their effectiveness, for instance; capacity utilization; some facilities might have a larger yard capacity but has never been fully utilized while others having a smaller capacity with fewer handling machines only to transfer inefficiency from the port to these facilities.

With the current infrastructural development at the port of Mombasa, which has resulted to the expansion of the port, the linkage to the hinterland using the Standard Gauge Railway, the operation of the Container Freight Stations in Mombasa port needs to be addressed whether it is still important for their operations and the identification of how these CFSs have affected the performance of Mombasa Port. The research will establish the effects of these CFSs in Mombasa Port performance and suggest recommendations to improve their utilization and effectiveness at the port.

1.3 Research Objectives

1.3.1 General objectives

The general objective of the research was to investigate the effects of Container Freight Stations on performance of port of Mombasa.

1.3.2 Specific objectives

i. To investigate the effects of Container Freight Stations Storage on Performance of port of Mombasa.
ii. To determine the effects of Container Freight Stations Clearance speed on Performance of Port of Mombasa.
iii. To establish the effects of CFS cost on Performance of Port of Mombasa.

1.4 Research questions

The study sought to answer the following questions;

i. To what extent do the Container Freight Stations Storage affect the performance of Port of Mombasa?
ii. To what extent has the customs Container Freight Stations Clearance Speed affected the Performance of Port of Mombasa?
iii. To what extent has the CFS Cost affected the Performance of Port of Mombasa?

1.5 Justification

The findings of this research will give a clear picture on the effects of the Container Freight Stations the port performance. This research will assist the Government agencies involved in the operation of the Mombasa port, these Government agencies including the Kenya Revenue Authority, Kenya Ports Authority and Kenya Bureau of Standards (KEBS) among other government agencies. In adopting the best management practices and infrastructural decisions on the improvement of the Mombasa port. Other stakeholders will benefit from this study results, including the owners of these CFSs and operators of these CFSs as well as the Scholars to benefit from the research findings.

1.6 Scope

The study focused on the analyzing the effects of CFSs on the performance of Mombasa port. The study area was within Mombasa and the CFSs operating around. This study targeted the KPA staff and KRA Customs operations, the clearing and forwarding agents and CFS management.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter gives a review of the existing literature on port operations, the review is meant to exemplify the key concepts of the topic of discussion. It provides the basis of critical review and a clear understanding of the problem. The main sections included therein are; the theoretical review, empirical review, the conceptual framework, critique of existing literature relevant to the study, summary and research gaps.

2.2 Theoretical review

2.2.1 Theory of constraints

The theory of constraints (TOC) introduced by Eliyu M. Goldratt in 1984 is defined as a methodology for identifying the most important constraining factors, which hinders the firm in achieving its goals. The proponents of the theory of constraints states that there is at-least one factor that limits a firm towards achieving its goals. These constraints are further identifiable by using the focusing process, they can be controlled by the variation of operational costs, and these constraints could be internal constraints such as equipment, workforce and management policies. The theory of constraints operates on assumption that organizations can be measured and controlled by variations of operational expenses, throughput and inventory as key measures. The operation of the Mombasa port and its container freight stations serving it can be termed as being limited in achieving its operational efficiency by some factors such as the machinery in use, the level of technology and infrastructure in use by the container freight stations. The port operator is faced by difficulties through the daily running of the port, some of the challenges including financial challenges due to budgetary constraints, seasonal container traffic causing congestion at the port, importers abandoning their cargo at the yard causing congestion, infrastructure and handling machines breakdown, human resource problems among others. The theory of constraints has been used in field of finance and accounting in throughput accounting, Project management, marketing and sales and supply chain and logistics (Steyn, 2000).

Likewise, these individual CFSs are also faced by their own specific challenges which limits them from achieving their goals and objectives, with some of these CFS having fewer clients and

containers to fully utilize their resources while others having more than they can handle. Cargo handling equipment and proximity and accessibility to the port might also play a role in limiting the management from attaining its goals and targets.

2.2.2 Traffic flow theory

The traffic flow theory takes into consideration the infrastructure available, available pedestrians and vehicles to understand the transportation network with an aim of restructuring and modifying it to improve its efficiency while addressing the congestion problem facing a particular setting. The theory has mostly been used in fields of Mathematics and Civil Engineering to develop transport structures to attain minimal traffic congestion. The traffic flow theory takes into consideration three variables namely; speed, vehicles density and traffic flow (vehicles passing a specified place per unit time). The traffic flow is similar to the queuing models which both observes and predicts traffic.

Frank Knight is considered to be the father of traffic Flow theory in the year 1920 when he sought to explore the traffic equilibrium model, which in 1952 was then renamed to Wardrop's first and second principles of equilibrium. The port of Mombasa has been faced by congestion problem over a period of time, infrastructural designs and management of facilities affects a way in which the congestion problem is addressed, most of designs used focusses on gate traffic. The distance between the port and the CFSs sometimes is often caught up in congestion thereby affecting the speed of delivery by tracks from the port to the facilities. Majority of the CFS usually uses road transport to transfer both containers and units to these facilities therefore the traffic flow theory is useful in planning and addressing the container movement traffic. These models are useful in fields of traffic engineering, computing, industrial engineering, service industries such as offices, shops, hospitals as well as project management (Oyatoye, Adebiyi, Chinweze, & Bolanle, 2011). Various researches have been conducted to develop a simulation models to be used to address gate traffic and give recommendations for infrastructure, so that it can be used as a decision support tool for terminal planners and operational managers (El-Naggar, 2011).

2.2.3 Systems theory

The systems theory views the connections between interrelated individual pieces in given setting rather than these individual pieces existing in themselves, is the main idea behind Systems theory which revolves around relationships. Macy Conferences, Norbert Wiener, Talcott Parsons and Ludwig Von Bertalanffy (1946-1954) are considered to have developed the general systems theory which was later adopted in the fields of Mathematics, psychology, biology, game theory and social network analysis. The systems theory adopts principles which are the basic elements of a system theory. The systems theory is a management approach that views management as comprised of sub-systems forming a whole. The operation and functioning of these individual units comprising a system is the one that determines the performance of the whole system.

There are a number of CFSs around Mombasa port, their operations and functioning of these individual facilities to the port are considered as a system. Whereby the components support the whole system which is defined by the same components, approach is to look upon management as a system or as "an organized whole" made up of sub systems integrated into a unity or orderly totality. The port operator adopting CFSs as port extension to assist in addressing the congestion problem at the port, these CFS operations can be demonstrated through the systems model; where there are over 20 registered CFSs serving the port of Mombasa, their operations although independent has a common purpose to improve efficiency at the port, their eventual performance is not determined by just individual CFS success but as whole, that they are considered to be effective if all of them perform and improves the port performance.

2.3 Conceptual framework

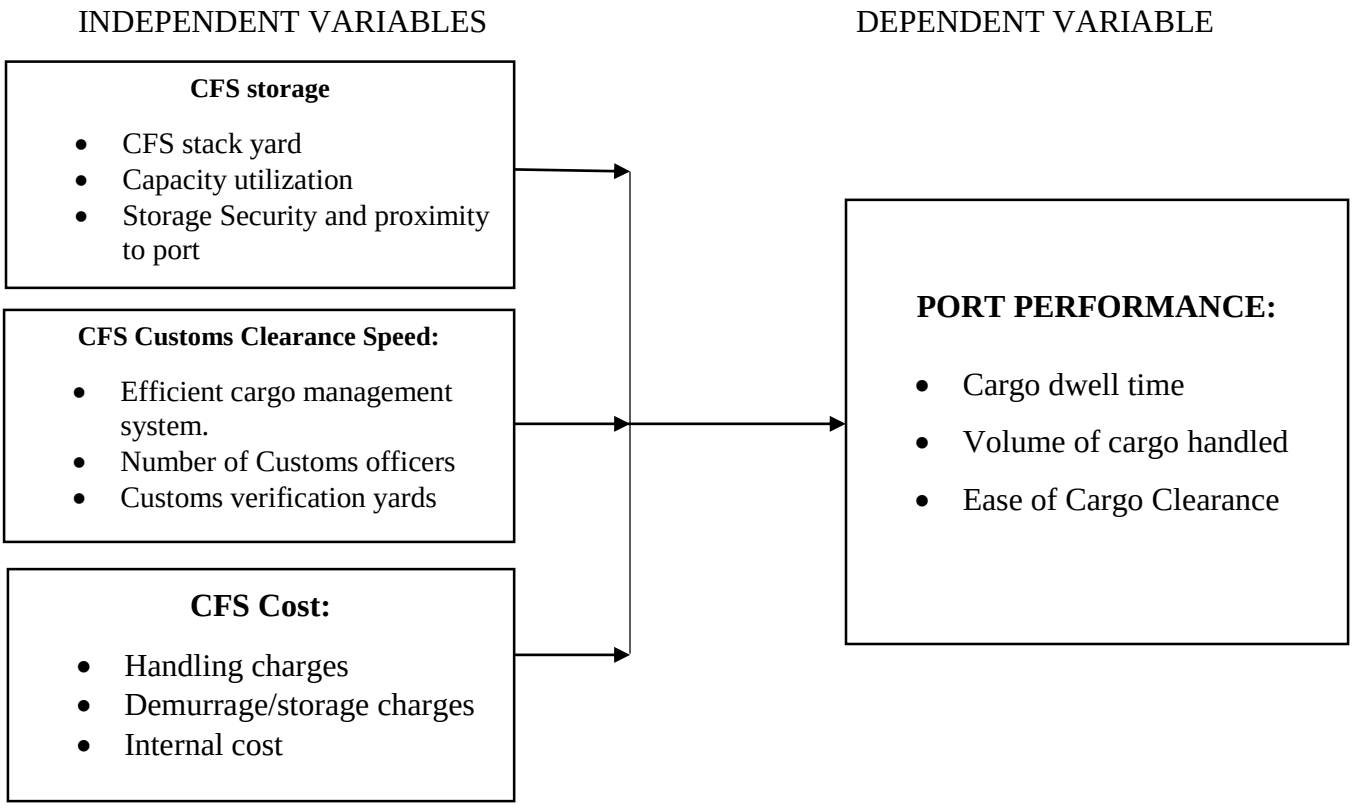

Figure 2:1 Conceptual Framework

2.4 Review of variables

2.4.1 Container Freight Stations Storage

The CFS Storage provided from the additional space capacity obtained from these CFSs at the Mombasa port. The CFSs Storage is influenced by the Stack-yard Capacity at the CFSs, Capacity Utilization at these facilities by the port operator (Kenya Ports Authority) and Storage. The CFSs have Container Stacking yards which are useful in the storage and placement of the containers in blocks, to store the containers, enabling the port operator to utilize the capacity at these facilities in storage of containers once discharged from the ship waiting for clearance. The storage space provided at these facilities helps decongest the port while enabling other cargo from other vessels to be discharged hence improving efficiency. This is achieved through the provision of ample storage capacity for stacking containers while awaiting customs verification and clearance by customs officers.

The efficient utilization of the storage capacity provided by these facilities by the port operator plays a major role in the influence of the CFS storage to the decongestion or the overall performance of Mombasa port. The CFSs were introduced in Kenya as a short-term measure to address congestion problem at Mombasa port. Efficiency of an individual CFS can be attributed to; use of modern technology, a positive working culture of employees and a 24hr working, the provision of stacking yards for containers and the proximity to the port. Mombasa Port have had insufficient yard space, the port operator then adopted to use the CFS model, these CFS facilities operated by private owners and being located around the port were to provide additional yard and house other governmental agencies required to enable cargo clearance, the CFSs operations which are similar to the port terminal to enhance operations such as custom clearance. The presence of the Other Governmental Agencies assists in reducing the time and movement of clearing agents, also through the coordinated verification by customs officers with those other Governmental Agencies situated at the CFS.

Their proximity to the port as directed by the regulating body also plays a major role in addressing the congestion problem as well as improving the speed of clearance since these facilities are located close to the port within a given radius and being served by rich road network as well as the rail connectivity. The CFSs are located near the port and are required to be served with proper infrastructure such as railway lines and roads to enhance the transportation of the cargo directly from the carrier vessel at the port to the CFSs for clearance at the CFS. The CFSs proximity to the port also plays a major role in determination of the speed of transporting the discharged cargo from the vessel directly to the CFSs (Korir, 2013).

These facilities are obligated to provide secure environment and provide proper accounting of the cargo that is sent to them from the port upon discharge from the carrier vessels. Proper mechanisms and systems are put in place so that cargo accounting and citing is made within minimal time possible, these CFSs have in them information systems that manage the stock as well as the linkage of the same information system in use by the port, this assists in receiving and reconciliation of cargo sent to these CFSs for accounting (Hassan, 2013).

2.4.2 Customs Clearance Speed

The speed of customs clearance is enhanced through the provision of ample customs verification spaces provided by the CFS verification yards whereby more than one containers can be verified at once by different customs officers. Other operations carried out at the CFSs to improve in enhance faster clearance of cargo involves; Cargo delivery and storage, stripping of containers, customs clearing, consolidation.

The CFS being an extension of the port, plays a major role in provision of the Customs verification yard and warehousing, therefore giving the customs clearing agents and customs officers a yard to comfortably and effectively conduct physical inspection of the containers or cargo. The location of these facilities near the Mombasa port enables easiness in accessibility by both road and rail, which necessitates the speedy transportation of cargo from port to these CFSs. Although the clearance delays are not always attributed to the customs and port in general, there are other causes which factor in to these delays; education and training of clearing agents, challenges in pricing, lack of automation of systems, poor mechanization system downtimes as well as human resources are among the key contributors to the delays in cargo clearance at the port of Mombasa (Wanyama, 2017).

These CFSs are authorized to handle bulk commodities, containers, loose cargo, containers as well as units of motor vehicle. These CFSs within them houses all relevant Government Agencies responsible for the clearance and inspection during inspection and cargo clearance. These governmental Agencies present at the CFSs includes; Customs, Port Health, Kenya Bureau of Standards and port security police. The presence of these other governmental agencies which are involved in the clearance of cargo assists in providing services at the CFS therefore improving the speed of clearance. Presence of these relevant authorities at individual CFSs enhances the faster and efficient clearance of cargo (Interpel Investments, 2017).

Through the sixth corporate plan, Kenya Revenue Authority identifies the Customer service among other Key Performance Indicators, the global ranking of taxation in the Ease of doing Business, Logistics performance, clearance time for customs processes, and the tax payment options. Handling machines in use at these CFSs determines the speed in handling of the cargo, these handling machines choice depends on their versatility and maneuverability and cost speed in operation (Philpott, 2010). A lethargic working culture of individual CFS also contributes to

the efficiency of these facilities as some CFSs will have the capacity to work a 24hours a day therefore enabling efficient performance overall of the port.

2.4.3 Container Freight Stations Cost

The cost of trade ranges from 2% to 15% of the value of the cargo traded and an estimate of around 77% of burden accrued from international trade regulations can be directly attributed to Customs (Hesketh, 2010). Cargo handling at the CFS is relatively easier and cheaper compared to the handling charges at the port, most of the handling machines in use at the CFSs are simple and not as complicated as gantry cranes in use at the port. Cargo handling and delivery at the CFS can be used to determine the rate of handled cargo or containers at individual CFSs and comparing it with the targets. Cargo handling and delivery will also include the total volumes handled by these CFSs annually. At the port, cargo handling equipment are more advanced compared to the CFSs, the port of Mombasa for instance uses variety of equipment such as; ship to shore cranes, mobile cranes, terminal tractors forklifts. This equipment in use at the container freight stations to move or handle the containers in stacking such as fork lifts. Other infrastructural components that really affect the cost of handling and eventual cost of importation includes; connectivity to a reliable rail line, access to road network, these elements will play role in determining the efficient cargo movement from the port to these CFSs and connectivity to the Hinterland. According to inland container terminal analysis report, the success factors of any inland container terminal involves; good mainline rail connections, proximity to motorway and the port, availability of land for expansion and distance from residential areas. The performance indicators will include; Container volumes handled at individual CFSs and summation of all Loose cargo handled at the CFS, Cargo Dwell time- time taken to clear goods from discharge, Comparison of the handling equipment at the CFSs with the ones at the Port in terms of speed and capacity. Yard gantry cranes and Container handling equipment in use at the CFSs. The systems in use for container stacking, layouts are depended on the equipment available at a CFS.

Quality customer service is achieved through a fine relationship between the importers or the various stakeholders in the business. A quality customer service is assessed on wellness of delivered service to meet the customers' expectations, this assessment assists in determining the areas of improvement in the service delivery of a firm. Good quality service can be attributed to cost reductions, therefore increased quality improves other private investors' interest to invest in

the port (PwC & Panteia, 2013). The CFSs also seeks to provide a cost-effective handling while enhancing the importers in the supply chain to effectively trade internationally (Yeo, 2015). The terminal efficiency and effectiveness is associated with the its profitability and execution, the efficiency of these port terminals is reflected in rates charged to importers and exporters, cargo dwell time and the number of vessels calling into the terminal at a given period. The volumes of the cargo being handled at the port as well as the importers' preference to use the port as determined by the rates charged and time spend at the port. A long time spent by the ship at the berth, the cost is reflected at charges of freight, this reduces the efficiency and increases the cost of imports hence cost of doing the business burdens the importers which in the far end reducing the importers' preferences towards using the port. Making importation and exportation easier and increased foreign trade are among the roles of the CFS (Upadhye, 2012), this is achievable through better customs collection, provision of ample space for customs verifications, linkage transport to airports and other gateways to the hinterlands, relatively affordable Container storage and handling, better and affordable container/cargo management is also achievable through provision of modernized technology and the methodology of the operation of the CFSs' information technology (Hassan, 2013).

2.5 Empirical review

A number of studies have been carried out by researchers and scholars relating to Port operations, logistical and Inter-connectivity with hinterlands, port efficiency as well as port decongestion among other fields. Among the studies conducted includes the research seeking to analyze the effects of port and container terminals towards the terminal characteristics, while examining the terminal efficiency and activity (Caldeirinha & Felício, 2014). Port performance is arguably influenced by both external and internal influences, the external influences including the politics, economy of a country and social situation. Elferjani (2015) studied the Libyan port to come conclude that contries security, corruption and political patronage undermines the performance of the port, Negative political environment affects port performance negatively, same with poor economic governance.

Gekara & Chhetri (2013) examined the logistical accessibility and influence on hinterland connectivity on their influence in port performance, examined adverse consequences of poor hinterland connectivity towards the Mombasa port performance. Chandrakant (2011) Studied the

Indian port performance and with the use of linear regression model concluded that equipment quality, port connectivity to rail have minimal impact on the dry ports throughput output. Keceli (2016) developed a simulation model that can be used for estimating the port gate traffic which would then be used as decision support tool by terminal operators in budgetting and planning of the infrustructure to be employed at gate operation (Keceli, 2016). A recent study conducted to identify the logistical factors influencing the Mombasa port performance, found the key factors which affects the port performance to be infrastructure, Analyzed the CFS performance at Mombasa port, the study findings indicate that the port location and connectivity to hinterland is a major determinant of the ports throughput (Ruto & Datche, 2015). There are narrow differentials in efficiency of individual container freight stations, Odhiambo (2013) identified these differentials to be due to personnel and equipment in use by the CFSs, the researcher used Data Envelopment Analysis (DEA) method to analyze the data and a sample size of 11 CFS operating within Port city of Mombasa, the study concluded that the equipment used in use at the CFSs to handle the cargo determined the operational efficiency of the individual CFS.

Mbembe (2012) Using the Porter's Model to analysis model sought to identify the roles the CFSs play in decongesting Mombasa Port as a way of providing suggestions towards the addressing of the capacity constraints at the port which has for a long time affected operation at the port. Using a descriptive method and examining of the 17 CFSs to point out the role of decongestion and identify the inefficiencies of these CFSs such as weak regulatory framework, transfer delays of cargo.

2.6 Critique of the existing literature relevant to the study

There are various studies conducted by various researchers locally and international levels, with some journals providing researches which are relevant to this study and Port operations in general. Although these studies are not similar, they provide a pool of literature. Upadhye (2012) Studied role of ports, CFSs and inland container depots in logistical development in India, he studies a sample of Indian ports including Haldia, Kolkata, Chennai and Mumbai Ports during the study, the study findings clearly highlighted the roles to include better customs clearance, cargo management, cost effective storage and linkage to hinterland. He further identifies the developments, challenges facing these CFSs as well as noting that these CFSs are major elements in developing the Indian Ports. The study clearly brings out these roles played by these

CFSs or internal Container Terminals and their importance in hinterland connectivity and logistics to be adopted not only in Indian ports but ports around the globe.

Nyema (2014) sought to investigate factors that influence terminals efficiency at Mombasa port, adopted an exploratory approach with descriptive design having a stratified sampling of 50 respondents whith only 30 respondents reached out from target population of 500 people, to arrive to a conclussive findings of the study. According him inadequate machinery, poor infrastructure connectivity to the hinterlands and insufficient storage capacity at the port are key factors that directly influence container terminal efficiency.

Mbembe (2012) conducted a research to investigate the roles the CFSs play in decongesting Mombasa port, although the researcher used the porters Diamond Analysis model to conclude the role which is played by these CFSs in addressing the congestion problem at the port of Mombasa. The study further concludes by identifying some factors which the researcher considered as hindering the efficiency of the port, the study highlights regulatory framework as being weak for the CFSs, the delays in the transfer within the CFSs and the port.

Korir (2013) in his research the Analyzed the performance of the CFSs at Mombasa, made a sample analysis of five months' container allocations and CFS deliveries from October 2012 to February 2013, in order to measure the efficiency in the CFS operations. He used the following efficient delivery indicators; the total allocation, delivery as by the last sling, delivery by 48 hours. The researcher observed that almost all the CFSs operating in Mombasa are located near residential areas, all using roads as the only means of transporting the containers from the port, and some their location are outside the rail-line routes, most of the CFSs operate manually. The researcher concluded that despite their significant contribution in decongesting the port, the level of operating efficiency is insufficient. Milimu (2015) assesed the factors which affects the clearance of containers at mombasa port, using a descriptive study with stratified random sampling to examine handling equipments, transport infrastructure and capacity as study variables. Using linear regression models the study concluded that processing of clearing documents, infrastructure and capacity greatly affects the cargo clearance.

The modern container terminal operations are majorly influenced by the terminal technology in use and logistical connectivity, by railroads and gate technologies employed by the terminal

operators to the approaches involved and even the customs operations and regulations in place do influence the terminal connectivity (Caglar, 2014).

2.7 Summary

Majority of the studies undertaken by the researchers and scholars has put more emphasis on Decongestion of the Mombasa Port. The study has focused on the theories relevant to the variables under study, which include the theory of constraints, traffic flow theory and systems theory. The variables of the study discussed include Container Freight storage, Customs Speed of Clearance and cost of clearance which the researcher identified to be the effects of container freight Stations on the performance of Mombasa port.

No study has been undertaken to measure any of the effects of these CFS as most generalized conclusion is only tied to decongesting the port. Much focus should be put to better answer the question of how this is achieved and what other overall effects of these CFSs on the performance of Port of Mombasa.

2.8 Research gaps

A lot of research has been done about Mombasa port by researchers internationally and locally, most of these researches have been focusing on individual CFS efficiency while a few of them focusing on port performance. Mbembe (2012) investigated the roles of container freight station on decongesting the Mombasa port, during the study, the researcher used a descriptive survey having a study population of 17 CFSs, the researcher uses the porters Diamond analysis model as the analysis tool to conclude with research findings that these facilities play a great role in decongesting the port of Mombasa. Milimu (2015) on his study seeking to unearth the fators that affect cargo clearance, further recommends other studies relating the private sector involvement in port performance. Korir (2013) on the other hand, researched on Analysis on Performance of Container Freight Station in the Port of Mombasa in Kenya, whereas Odhiambo (2013) investigated the operational efficiency of individual Container Freight Stations in Mombasa. Adieri (2012) analyzed the efficiency of container freight stations in Mombasa. All these studies focused on single role such as decongestion or Efficiency, whereas none was done to see the effects of these CFSs on performance. Therefore, the study seeks to fill in the gaps from previous studies by examining the Effects of the Container Freight Stations on the performance of Mombasa port.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter highlights the research design that was adopted, target population under study, the sample size, data collection methods and techniques used when organizing and analyzing the data.

3.2 Research design

The research study adopted a descriptive research design, descriptive studies are focused on unearthing and answering the "what is" question therefore describing the traits inherent in the study population (Neuman, 2014). Descriptive study describes the behavior or characteristics of a group to determine the relationships that exist between different factors and establish statistical relationships based on quantitative measures of two or more parameters (Ngulube, 2012).

3.3 Population

The population is defined as an abstract idea of a given group which has observable characteristics from which a sample is drawn (Neuman, 2014). The population of the study included those who have observable characteristics which are being studied and relevant to this study (Kothari, 2011). The target population was the customs operations within Mombasa region, the target population therefore should possess these traits of a given group the researcher seeks to carry out the study. The population of the study targeted the KPA staff and KRA Customs operations, the clearing and forwarding agents and the CFS management.

Table 3:1 Population

POPULATION STRATA	TARGET POPULATION	PERCENTAGE
KPA operations	67	16%
KRA Customs	123	27%
CFS management	20	04%
Clearing & Forwarding agents	244	53%
TOTAL	**454**	**100.0%**

Source: KRA Human Resource Southern Region (2017)

3.4 Sampling frame

The list of cases in a population from which the sample of the population is drawn is the sampling frame (Neuman, 2014), the sampling frame for this study included the port of Mombasa, the CFSs operating around Mombasa port and clearing and forwarding agents being served at these CFSs. These CFSs include; African line, Awanad, Boss-freight, APM terminals, Consol Base (FFK), Focus, Interpel, and Kencont, Kipevu, Makupa CFS, Mombasa Island Container Terminal, Mitchel cotts, and Portside, Regional and Shimanzi. Since the study sought to collect data from the customs officers, Kenya Ports Authority, Management of the CFSs and the Clearing and Forwarding agents within the Mombasa region, the study therefore used stratified random sampling.

3.5 Sample and sampling technique

The study adopted a stratified random sampling technique, for most of the KPA staff and KRA staff having experience with the CFS operations. Since the study targeted KPA staff, KRA operations as well as the Clearing and Forwarding together with CFS operators, to stratify the population into four strata. A stratified random sampling creates divide the population into strata, a sample size of 198 was obtained, this was obtained from the sample tables. A sample size of 10%-30% is adequate for a study (Neuman, 2014). The research adopted the Slovin's formula to calculate the sample size from the target population

$$n = N / (1+Ne^2)$$

Where; n is the sample size,

N is the population size,

e -the level of precision.

95% level of confidence will be used which gives p = 0.05 chance of deviation from the actual

Therefore;

Sample size $n= 454/ (1 +454(0.05^2))$

n = 198.

Table 3:2 Sample Size

POPULATION STRATA	POPULATION SAMPLE	PERCENTAGE
KPA operations	26	13
KRA Customs	66	33
CFS management	5	02
Clearing & Forwarding agents	101	51
TOTAL	**198**	**100.0**

3.6 Data collection instruments

The study adopted the use of structured questionnaires which contained closed ended structured questions. A questionnaire is a set of pre-formulated questions in a predetermined sequence, used in eliciting the feelings, beliefs, experiences, perceptions or attitudes of respondents (Sreejesh, Mohapatra, & Anusree, 2014). The study used primary source of data majorly to arrive into findings. These structured questionnaires were dropped and picked by researcher at a later at date which gave the respondents time frame to fill them. Follow up were conducted to ensure and facilitate proper response rate.

3.7 Data collection procedure

These structured questionnaires were dropped and picked by the researcher at a later date to give the respondents time to fill them. Follow up with short interviews were conducted to ensure and facilitate proper response rate. Secondary data was also collected through acquisition of annual or monthly reports from the port, records of trade statistics obtained from the CFSs and where possible internet.

3.8 Pilot testing

Pilot testing was conducted to detect weakness in the design and testing the reliability and validity of instruments used during the study. The researcher conducted a sampled respondent's in-order to refine measuring instruments and procedures. The pilot testing was also useful in identifying errors that were present in the data collection instruments.

Pilot testing is an activity that helps the study in determining whether there are errors, limitations, or other weaknesses within the design and allow the researcher to make necessary adjustments and corrections before embarking on the survey.

3.8.1 Validity

Validity is upheld when the instrument measures what it is intended to measure. Purposely to identify and eliminate flaws and problems present in the data collecting instruments, through testing all the aspects of the data collection instruments (Sreejesh, Mohapatra, & Anusree, 2014). Validity seeks to ensure that the researcher's approach and technique actually relay to his objectives (Blaxter, Hughes, & Tight, 2010). The researcher depended on the supervisors and Lecturers from Kenya School of Revenue Administration to ensure the validity of the collection instrument for the study.

3.8.2 Reliability

The consistency of measurement under same conditions and subject in providing same results is reliability. "It is important that all surveys are tested before the actual survey is conducted. This is done to ensure that the questionnaire is cleared to respondents and can be completed in the way the researcher wishes" (Kate, Belinda, Vivienne, & John, 2003). Using the SPSS 25 Cronbach's Alpha was factored in the reliability analysis of the questionnaire, a value of 0.7 in Cronbach alpha is considered to be adequate for a data collection instrument be considered reliable. The Cronbach's Alpha is used to as a measure of the internal consistency of the instrument (Kirkpatrick & Brooke, 2003).

3.9 Data analysis and Presentation

To ensure that any anomalies are corrected at the field, the researcher before picking the dully filed questionnaires confirmed whether they were fully completed. The data collected for this study was be quantitative in nature.

Data processing, editing and coding, descriptive statistics and measures of central tendency, measures of deviation and correlation analysis was conducted using the Statistical Package for Social Science (SPSS) version 25. Tables and charts were used to summarize and clarify the research findings.

The study assumed a linear regression equation to explain the relationship between the independent and dependent variables and to investigate the effects of the CFSs to the port performance.

The linear regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Y - Port performance

β_0- constant term, the intercept indicates the performance when independent variables are Zero.

$\beta_1, \beta_2, \beta_3$- coefficients explaining the effects of independent variable X_1, X_2, and X3 to dependent variable Y

X_1- CFS Storage

X_2- CFS Customs Clearance Speed

X_3- CFS Cost

ε- The error term, other factors that might influence the port performance but not included in the study

CHAPTER FOUR

RESEARCH FINDINGS

4.1. Introduction

This chapter gives response rate of respondents during the study, the Clearing Agents, KPA staff, KRA Customs and the CFS management, Pilot Results are discussed based on the reliability of the data collection instruments. Demographic analysis, on education levels, department of operation, working position and period worked by the respondents. Descriptive analysis is provided on the variables, Correlation analysis and Regression analysis and the interpretation of the findings.

4.2. Response Rate

The study administered 198 questionnaires, out of 198 administered 135 from the data collected, giving a 68% response which is adequate for the study. Therefore, a response rate of 68% witnessed in the study is adequate to be a representation of the target population.

Table 4:1 Response Rate

	Response rate	**Percentage %**
Respondents	135	68%
Non-respondents	63	32%
Total	**198**	**100%**

4.3. Pilot Results

Pilot testing was conducted to test the reliability and validity of instruments used during the study, reliability was tested using the SPSS Cronbach's Alpha.

Table 4:2 Reliability Results

Scale	**Cronbach's Alpha**	**Items Tested**	**Comments**
CFS Storage	0.875	4	Accepted
CFS Customs Clearance Speed	0.812	4	Accepted
CFS Cost	0.792	4	Accepted
Mombasa port Performance	0.801	4	Accepted

Reliability analysis was conducted in order to measure the internal consistency of the data collection instruments, using the SPSS version 25, Cronbach's alpha was used to view the values on how the questions a related. Cronbach's alpha, an average index of 0.70 is considered adequate to consider the instrument reliable (Kirkpatrick & Brooke, 2003). The CFS storage had an index of 0.875, CFS Customs Clearance Speed having 0.812, CFS Cost 0.792 while Mombasa port Performance had 0.801, as shown in the table 4.2 above. Therefore, indicating that there was high reliability of the data collection instrument.

4.4. Demographic Analysis

Demographic analysis was guided by the level of education, the Department the respondents were working, the working position and the number of years the respondents had worked.

4.4.1.Level of Education

Table 4:3 Level of Education

Level of Education	Frequency	Percentage %
Certificate	32	23.7%
Diploma	45	33.3%
Bachelor's degree	53	39.3%
Master's degree	5	3.7%
Total	**135**	**100.0%**

Most of the respondents have a bachelor's degree with 39.3%, while 23.7% have certificate and 33.3% having diploma qualifications, whereas only 3.7% have master's degree as shown in table 4.3 above, which shows a similar trend in distribution of educational qualification from the respondents as according to Milimu (2015) while conducting a study at the Kenya Ports Authority.

4.4.2. Department

Table 4:4 Department

Department	Frequency	Percentage %
KRA customs	55	40.7%
Kenya Ports Authority	10	7.4%
Clearing and forwarding	66	48.9%
CFS management	4	3.0%
Total	**135**	**100.0%**

From the respondents, the KRA Customs department had a response of 40.7%, KPA having 7.4% clearing with 48.9% while CFS had 3.0% response. Majority of the respondents were the Clearing and Forwarding Agents followed by the KRA officials and KPA staff while CFS Staff were the lowest.

4.4.3. Working position

Table 4:5 Working Position

Working Position	Frequency	Percentage %
Top management	3	2.2%
Middle management	36	26.7%
Supervising management	6	4.4%
Operations	90	67.6%
Total	**135**	**100.0%**

A lot of operations employees participated in the study with 66.7%, supervisory management comprising 4.4% middle management of 26.7% and top management 2.2%. This is so because the operations have first-hand experience and information related to the study.

4.4.4. Number of years worked in the position

Table 4:6 Duration Worked

	Frequency	Percent
Below 5 years	45	33.3%
5-10 years	56	41.5%
11-15 years	30	22.2%
Above 15 Years	4	3.0%
Total	**135**	**100.0%**

From work experience, 33.3% have worked for less than 5 years, while 41.5% between 5-10 years of work experience, 22.2% between 11-15 years and 3.0% have worked over 15 years. This implies that majority of the research respondents have experience and are conversant with the field.

4.5. Descriptive analysis

4.5.1. Container Freight Stations Storage

The study had an objective of investigating the effects of Container Freight Stations Storage on Performance of port of Mombasa. With a likert scale questionnaire having an ordinal scale defined as; 5= Strongly Agree, 4= Agree, 3= Neutral, 2=Disagree, 1= Strongly Disagree the researcher sought the opinions on the respondents on the statement that the Container Freight Stations Storage has positively affected the performance of Port of Mombasa. The respondents agree with the statement that CFSs have provided sufficient yard capacity to handle containers imported at Mombasa port with a mean of 3.8148 and a standard deviation of 1.05226, This is in agreement with Korir (2013) who asserts that Creation of the CFSs to serve Mombasa port has greatly reduced congestion of containers at the port. All the individual CFS storage yard Capacity is adequately utilized with a mean of 3.6444 and standard deviation of 0.93415 which is in agreement with Ruto & Datche (2015) when they underscore that the port performance is affected by the storage provided and the utilisation of the space provided. Most of the respondents agree with statement that CFSs are still needed for more additional storage capacity at the port even after port expansion as evidenced with a mean response of 3.9704 with a standard deviation of 0.89727. The respondents agree with the statement that Creation of CFSs within and around the port has improved decongestion at the port with mean of 3.7926 with a

standard deviation of 1.12034, this therefore similar to Mbembe (2012) findings that CFSs assists in delivery of the cargo and storage and have played a role in decongesting Mombasa port.

Table 4:7 Descriptive statistics on CFS storage.

	Statements	Mean	STD Dev
B1	CFSs have provided sufficient yard capacity to handle containers imported at Mombasa port	**3.8148**	**1.05226**
B2	All the individual CFS storage yard Capacity is adequately utilized	**3.6444**	**.93415**
B3	CFSs are still needed for more additional storage capacity at the port even after port expansion	**3.9704**	**.89727**
B4	Creation of CFSs within and around the port have improved decongestion at the port	**3.7926**	**1.12034**

4.5.2. CFS Customs Clearance Speed

With an objective of determining the effects of Container Freight Stations Clearance speed on Performance of Port of Mombasa. The respondents agree with the statement that CFSs have sufficient customs verification yards to improve the speed of clearance have a mean of 3.8000 with a standard deviation of 0.90438 implying that the customs verification yards at the CFSs are sufficient enough to improve the Customs Clearance Speed at the port. The respondents are neutral with the statement that CFSs have adequate customs officers to facilitate speedy customs clearance at the CFS mean of 3.0815 and standard deviation of 1.04132, this response is in agreement with Wanyama (2017) that the number of Customs Officers at the CFSs ought to be improved so as to improve with the Speed of Clearance at the port. According to Nyema (2014) the Customs Clearance at the port of Mombasa was averagely classified to be effective. Proximity of the CFSs to the port improves the time taken to clear the cargo/ containers at the CFS has mean of 3.7852 and standard deviation of 0.97265. CFSs have efficient cargo management systems that facilitate speedy customs clearance having a mean of 3.8519 and standard deviation of 1.01862.

Table 4:8 Descriptive statistics on Customs Clearance Speed

	Statements	Mean	STD Dev
C1	CFSs have sufficient customs verification yards to improve the speed of clearance	**3.8000**	**.90438**
C2	CFSs have adequate customs officers to facilitate speedy customs clearance at the CFS	**3.0815**	**1.04132**
C3	Proximity of the CFSs to the port improves the time taken to clear the cargo/ containers at the CFS	**3.7852**	**.97265**
C4	CFSs have efficient cargo management systems that facilitate speedy customs clearance	**3.8519**	**1.0186**

4.5.3. Container Freight Stations' Cost

The study had a specific objective of establishing the effects of CFS cost on Performance of Port of Mombasa. The respondents' opinion on the statement that Adoption of CFSs has positively affected the Cost of importation by reducing the cost incurred by importers and clearance cost. had a mean of 3.6074 with a standard deviation of 1.03734, therefore indicating agreement to the statement. Handling charges, Demurrage and internal CFS costs have overall effect on cost of clearance as respondents still agree having a mean of 3.7037 with a standard deviation of 1.07255, this is in agreement with Korir (2013) who acknowledges that adequacy of handling equipment and machines at CFSs positively improved Containerized cargo clearance. CFSs has sufficient handling equipment and machine that improve the speed and cost of clearance at Mombasa port have a mean of 3.6370 and a standard deviation of 1.21316, the respondents' opinions on statement deviates from Wanyama (2017) conclussion on the respondents opinion on the adequacy of the handling machines in use at the CFSs characterising them as being too old, lacking service or outdated and frequented with breaking downs. The technology and information system adopted by the CFSs affects CFS cost of clearance and charges to customers have a mean of 3.6889 and standard deviation of 1.06130, Hassan, (2013) found out that success of the CFSMIS at the CFSs is directly influenced by the technology and information systems adopted.

Table 4:9 Descriptive statistics on Cost of Clearance

	Statements	Mean	STD Dev
D1	Adoption of CFSs has positively affected the Cost of importation by reducing the cost incurred by importers and clearance cost.	**3.6074**	**1.03734**
D2	Handling charges, Demurrage and internal CFS costs have overall effect on cost of clearance.	**3.7037**	**1.07255**
D3	CFSs has sufficient handling equipment and machine that improve the speed and cost of clearance at Mombasa port.	**3.6370**	**1.21316**
D4	The technology and information system adopted by the CFSs affects CFS cost of clearance and charges to customers.	**3.6889**	**1.06130**

4.5.4.Mombasa Port Performance

The study's general objective on investigating the effects of Container Freight Stations on performance of port of Mombasa, the researcher sought to determine the performance of the port of Mombasa and how it has been affected by the operation of the CFSs. The questionnaire sought to measure the respondents' opinions on the Customs Clearance Speed with the statements, Speedy Customs Clearance at Container Freight Stations has improved the Performance of Port of Mombasa. The respondents strongly agree with the statements that CFS storage by the CFS have assisted in providing more space to increase capacity handled at the port annually with a mean of 4.1926 and a standard deviation of 1.10963. Improvement in Cargo dwell time in Mombasa port is attributed to the operation of CFSs has a mean of 4.2716 with standard deviation of 1.00348. Operation of the CFSs at Mombasa port has eased the Cargo Clearance at the port having a mean of 4.3111 with a standard deviation of 0.85052. Adoption of CFSs has positively affected the performance of Mombasa Port with mean of 4.1481 with a standard deviation of 0.88536, concuring with Korir (2013) that the CFSs adoption within and around mombasa has positively affected the cargo clearance.

Table 4:10 Descriptive Statistics on Performance

	Statements	Mean	STD Dev
E1	CFS storage by the CFS have assisted in providing more space to increase capacity handled at the port annually.	**4.1926**	**1.10963**
E2	Improvement in Cargo dwell time in Mombasa port is attributed to the operation of CFSs.	**4.2716**	**1.00348**
E3	Operation of the CFSs at Mombasa port has eased the Cargo Clearance at the port.	**4.3111**	**.85052**
E4	Adoption of CFSs has positively affected the performance of Mombasa Port.	**4.1481**	**.88536**

4.6. Correlation analysis

To find out the relationship between the independent variables and the dependent variables, correlation analysis was conducted, this involved the Karl Pearson's Correlation.

4.6.1. Pearson Correlation

Table 4:11 Correlations

Pearson Correlation Correlations					
Model		**CFS STORAGE**	**CFS** CUSTOMS **SPEED**	**CFS COST**	**PERFORMANCE**
CFS_STORAGE	Pearson Correlation	1	.515**	.359**	.638**
	Sig. (2-tailed)		.000	.000	.000
	N	135	135	135	135
CFS_CUSTOMS SPEED	Pearson Correlation	.515**	1	.524**	.700**
	Sig. (2-tailed)	.000		.000	.000
	N	135	135	135	135
CFS_COST	Pearson Correlation	.359**	.524**	1	.530**
	Sig. (2-tailed)	.000	.000		.000
	N	135	135	135	135

PERFORMANCE	Pearson Correlation	.638**	.700**	.530**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	135	135	135	135

**** Correlation is significant at the 0.01 level (2-tailed).**

Using Karl Pearson's coefficient of correlation (r) to establish the relationship between the variables under study, there is a strong positive correlation between storage and speed given by 0.515 this inferring a strong correlation, positive moderate correlation between storage and cost of 0.359. The independent variables relation to the independent variable; CFS storage to the Performance has a moderate correlation which is positive, implying that the CFS Storage has a strong positive effect to the performance, implying that an increase in the CFS Storage would result to a corresponding strong increment on the performance of the port of Mombasa, Milimu (2015) underscores that there is existence of a very strong positive relationship between the space capacity and the containerized cargo clearance at the port of Mombasa. CFS Speed to Performance given by 0.700 indicates a strong positive correlation, which the CFS Clearance Speed strongly affects the performance, the CFS Clearance speed strongly affects the performance of the port whereby an increase in the CFS Clearance speed would result to a stronger increment of the performance of the port. CFS Cost to the Performance has a moderate positive correlation of 0.530 therefore indicating a moderate effect on performance. This is in tandem with Adieri (2012) where he acknowledges the strong relationship between the Speed of Clearance at the CFSs with the efficiency of the CFSs and performance of the port through cargo clearance.

From the correlation analysis, the independent variables have a moderate correlation which is positive. Correlation is significant at the 0.01 level (2-tailed) as marked in the table 4.11 above with two asterisks.

4.7. Regression Analysis

To further understand the relationship between the dependent and independent variables further analysis was conducted.

4.7.1. Analysis of Variance (ANOVA)

Table 4:12 ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	581.698	3	193.899	70.731	.000[b]
	Residual	359.117	131	2.741		
	Total	940.815	134			

a. **Dependent Variable: PERFORMANCE**
b. **Predictors: (Constant), CFS_COST, CFS_STORAGE, CFS_SPEED**

Using ANOVA to understand the significance of the regression model to the study, the significance level tested as denoted by the p-value, the results indicate a p-value of 0.000 which is less than 0.05, the minimal acceptable significance value being equal or less to 0.05. Therefore, the regression model is statistically significant to predict the effects of container freight stations on the performance of the port of Mombasa. Furthermore, while basing the confidence level at 95%, there is high reliability of the model. Basing the confidence level at 95% the analysis indicates high reliability of the results obtained. The overall ANOVA results indicates that the model was significant at $F = 70.731$, $p = 0.000$.

4.7.2.Coefficient of determination (R^2)

Model summary
Table 4:13 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786a	.618	.610	1.65570

a. Predictors: (Constant), CFS_COST, CFS_STORAGE, CFS_SPEED

From the model in table 4.13 above, R represents a simple correlation, which therefore indicates that there is a high degree of correlation given by 0.786. The coefficient of determination R^2 defines the amount of variation of the dependent variable that can be explained by the independent variables, R^2 being 0.618 infers that 61.8% of the relationship is explained by the

identified independent variables of the study while 38.2% can be explained using other factors not under the study. This therefore means that effects such as storage, improved speed and reduced cost are attributed to the CFS operation in Mombasa port performance.

Adjusted R square provides information on how well a model can be generalized in the population. Adjusted R Squared is a corrected goodness of fit which defines the model accuracy, which identifies the percentage of variance in the population that is explained by independent variables (IBM, 2017). The above adjusted R Squared is 61% therefore indicating a high predictability of independent variables to dependent.

4.7.3.Coefficient

Table 4:14 Multiple Regressions

Model		Unstandardized B	Coefficients STD. Error	Standardized coefficients BETA	t	Sig.
1	(Constant)	3.432	.950		3.613	.000
	CFS_STORAGE	.337	.060	.355	5.590	.000
	CFS_SPEED	.401	.066	.423	6.079	.000
	CFS_COST	.167	.056	.181	2.836	.004

a. **Dependent Variable: PERFORMANCE**

Pursuant in determination of the relationship between the dependent variable and independent variables, performance being dependent variable while storage, speed and cost are independent variables. The regression model to be used is as follows:

$$Y= \beta_0 +\beta_1X_1+\beta_2X_2+\beta_3X_3 + \varepsilon$$

β_0- constant term, the intercept indicates the performance without other variables under study

$\beta_1, \beta_2, \beta_3$- coefficients explaining the effects of independent variable X_1, X_2, and X3 to dependent variable Y

Y - Port performance

X_1- CFS Storage

X_2- CFS Custom's clearance Speed

X_3- CFS Cost

ε- The error term, other factors that might influence the port performance but not included in the study

$$Y = 3.432 + 0.337X_1 + 0.401X_2 + 0.167X_3 + \varepsilon$$

Implying that Port Performance(Y) = 3.432 + 0.337 CFS Storage + 0.401 Customs Clearance Speed + 0.167 Cost of Clearance.

This regression model has been established from the table above, 3.432 is the y-intercept while all factors are zero, therefore being the performance of Mombasa port without the operation of the CFS, and this implies that there has been performance of port of Mombasa without the operation of the CFSs.

CFS Storage affects the Mombasa Port performance significantly, from the model above, a unit increase in the CFS storage results to 0.337 increase in the performance of the port of Mombasa. Increase while assuming other factors constant, implying that a unit change in CFS Storage will result to a 33.7% increment. Milimu (2015) underscores that one of the factors that strongly affect the clearance of the containerized cargo at the port of Mombasa is space capacity.

Customs Clearance speed at the CFS affects the performance of Mombasa port by 0.401, therefore a unit increase in the CFS Customs Clearance Speed will result to a 40.1% improvement on the performance at the port of Mombasa. This is in agreement with Nyema 2014 that the average effectiveness of the Customs Clearance influences the ports performance.

CFS Cost has least affected the performance of the port of Mombasa, having a 0.167, meaning that a change in CFS Cost would result to a corresponding 16.7 change in the performance. If there is an improvement in the CFS Cost will lead to an improvement in the CFS overall effect on the performance of Mombasa port by 16.7%.

The error term in this model describes the other effects that CFSs have on the port of Mombasa but are not included in the study. The (beta) coefficient, is measured in standard deviation units

and is therefore not dependent on the units of measurement of the variable. The standardized coefficients refer to how many standard deviations a dependent variable will change, per standard deviation increase in the predictor variable.

Table 4.14 above shows an overall P-value of 0.000 being less than 0.05 (5%), therefore an indication that the regression model obtained from the study is significant at the calculated 95% level of significance. The independent variables of the study; CFS storage, CFS Customs Clearance Speed and CFS Cost, have a significant effect on the Dependent variable; performance of the port of Mombasa.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

5.1. Introduction

The chapter provides the summary of the research findings, the conclusions of the study are drawn based on the research findings and in relation to the objectives of the study discussed in chapter one. Recommendations based on the objectives of the study are provided in this chapter, and areas of further studies noted.

5.2. Summary of Findings.

The research study focused on the effects of Container Freight Stations on the Performance of Mombasa Port with the objective of investigating the effects of Container Freight Stations on performance of port of Mombasa.

5.2.1. Container Freight Stations' Storage

The study sought to answer the research question to what extent do the Container Freight Stations Storage affect the performance of Port of Mombasa? The findings reveal that the operation of Container Freight Stations Storage has a strong effect on the performance of Mombasa Port. The results indicate that 33.7% change in the performance due to the unit change in the CFS Storage Operation, this is achieved through provision of ample Cargo Storage areas within the CFSs which improves efficiency and reducing decongestion at the Port. This is in agreement with Milimu (2015) that space capacity has a significant effect on the cargo clearance at Mombasa port.

The correlation analysis indicates the coefficient of correlation, r between the CFS Storage and Performance to be 0.638 indicating a strong positive relationship between CFS Storage and the Performance of the Mombasa Port. These research findings are in tandem with Korir (2013) findings where he acknowledges that CFSs have positive implications in salvaging KPA from congestion through provision of more space more space for cargo and container storage.

5.2.2. CFS Customs Clearance Speed

With the research question being to what extent the customs Container Freight Stations Clearance Speed affected the Performance of Port of Mombasa? Customs Clearance Speed at the CFSs has significantly affected the performance of the Mombasa Port. From the model obtained,

40.1% change in the Mombasa Port Performance is attributed to a unit change in the Customs Clearance Speed. The correlation analysis indicates the coefficient of correlation, r between the CFS Customs Clearance Speed and Performance to be 0.700 which indicated existence of a very strong positive relationship between the CFS Customs Clearance Speed with the Performance of the Port of Mombasa.

5.2.3. Container Freight Stations' Cost

The study sought to answer the research question to what extent has the CFS Cost affected the Performance of Port of Mombasa? CFS Cost has least affected the performance of the port of Mombasa, having a 0.167, meaning that a change in CFS Cost would result to a corresponding 16.7% change in the performance. If there is an improvement in the CFS Cost will lead to an improvement in the CFS overall effect on the performance of Mombasa port by 16.7%. The correlation analysis indicates the coefficient of correlation, r between the CFS Cost and Performance to be 0.530 showing a moderate relationship between the CFS' Cost to the Performance of the Port of Mombasa.

5.3. Conclusion.

From the study findings, the study concludes that the independent variables of the study had diversified effects, ranging from significant to moderate effects on the dependent variable supported by the Coefficient of correlation test, the significance from the models obtained, coefficient of determination and the regression model obtained as follows; the p-value in the model obtained was $p=0.000$ which is less than 0.05 ($p<0.05$) an indication of relevance of the studied variables, significant at the calculated 95% level of significance

5.3.1. Container Freight Stations Storage

With an objective of investigating the effects of Container Freight Stations Storage on Performance of port of Mombasa. The study concludes that the Container Freight Station's storage has a strong positive effect on the performance of the port of Mombasa. The Container Freight Station Storage significantly affects the performance of the port of Mombasa. This is supported by the regression model generated where the coefficient explaining the CFS Storage is 0.337 or 33.7% from the model obtained from the study. Also, the existence of Strong positive relationship with performance in Karl Pearson's coefficient of correlation of 0.638 indicated the

CFS Storage significantly affects the performance of Mombasa port. This therefore adds on weight to the findings by Korir (2013) on the operation of CFSs towards Decongestion of the Port of Mombasa through provision of storage.

5.3.2. CFS Customs Clearance Speed

The research has determined that the Container Freight Stations Clearance speed has strong positive effects on the Performance of Port of Mombasa. The Container Freight Storage Customs clearance speed strongly affects the performance of the port of Mombasa port, CFS Customs Clearance Speed significant effects on the performance of Mombasa port, this is supported by the research findings and the highest coefficient from the regression model obtained from the study of 0.401 (40.1%). CFS Clearance Speed has the strongest positive coefficient of correlation r with performance of 0.700 indicating a strong relationship hence a significant effect on the performance of the port of Mombasa. These research findings are consistent with Korir (2013) that the inclusion of private businesses at the port of mombasa has helped in managing congestion and the operation of the CFS at mombasa port significantly reduces congestion through improved speed of clearance and space provided by these facilities.

5.3.3. Container Freight Stations Cost

With an objective of establishing the effects of CFS cost on Performance of Port of Mombasa, the study has established that the Container Freight Stations' Cost least affects the performance of the port of Mombasa. Which has a weak effect and relation to the ports performance. The CFS Costs are felt at the port but do have a little impact to the ports performance, this is consistent with earlier research by Mbembe (2012) where he acknowledges efficient operation of the CFSs with minimal costs so as to be able to handle the ever increasing throughput.

5.4. Recommendations

From the study findings, the CFSs have affected the performance of the Port of Mombasa through the CFSs Storage, CFS Clearance Speed and CFS Cost.

1. The researcher therefore recommends on efficient utilization of the CFSs so as to improve the performance of the Port of Mombasa, capacity utilization will ensure the CFS yard capacity is optimized, therefore reducing transfer of inefficiencies to the CFSs from the port.

2. Improvement on the CFS cost through revision and moderation of charges to importers, while reducing the Cost of Clearance, the customer satisfaction, will not only be translated to the CFSs performance but to the port, therefore increasing the Ports Competitiveness within the region and Worldwide.
3. The number of customs officers at the CFSs can be improved so as to improve the speed of customs Clearance further. The study identified that customs speed of clearance has improved with the CFSs operation, although the respondents noted the number of Verification officers was not enough to serve the clearing effectively and efficiently.

5.5. Limitations of the study

The study was based on assumptions that respondents would spare their time to answer questionnaires in the study and that they were sincere in their responses therefore providing a reliable data for the research, the reliability of this data was based on the respondents' honest opinions as some respondents were not willing to provide information.

Funding for the research activities such as printing of questionnaires, dropping and picking of these dully filled questionnaires and adequate time to conduct this study provided another challenge. Time and financial constraints ware dealt with through planning and budgeting for available resources.

Despite of these limitations, the research managed to have a reliable data and accurate responses from the research respondents and maximized efforts from the respondents who took their time. The research used a well-structured questionnaire and assured confidentiality of the information of the respondents and the respondents were treated with respect, and the collected data is kept with the highest degree of confidentiality.

5.6. Areas for future research.

The study has indicated that Container Freight Station Storage, CFS Clearance Speed and CFS Cost have affected the Performance of Mombasa port. From the study model a 61.8% in coefficient of determination the researcher recommends for further research in related areas and more-so to research on the 38.2% can be explained using other factors not under the study among other effects of the Container Freight Stations on performance of Mombasa Port. The researcher further recommends further studies on the involvement of other stakeholders at the port.

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APPENDIX I: LETTER OF INTRODUCTION

Kenya School of Revenue Administration

KENYA REVENUE AUTHORITY

ISO 9001:2015 CERTIFIED

KRA/KESRA/MSA/002

30TH OCTOBER, 2017

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: REQUEST TO COLLECT RESEARCH PROJECT DATA

This is to certify that Mr. Kenmorris Musyoka of admission number HDB335-C016-2512/2016 is a bona fide student of the Kenya School of Revenue Administration (KESRA), Mombasa Campus. He is in his final year of study and is currently conducting a research project in partial fulfilment of the requirements leading to the award of a Postgraduate diploma in Customs Administration. Mr. Musyoka is in the process of gathering data that will strictly be used for academic purposes only. Regarding this issue, the School would like to seek your permission to allow him to collect information that relates to his research from your organization.

Thank you for your support and cooperation.

Yours sincerely,

Winfred Jillani
Ag. Principal – KESRA, Mombasa Campus.

Tulipe Ushuru Tujitegemee !

KENYA VISION 2030

APPENDIX II: QUESTIONNAIRE

This research work is intended to explore the general overview of the **EFFECTS OF THE CONTAINER FREIGHT STATIONS ON PERFORMANCE OF PORT OF MOMBASA**. Please provide answers to the following questions against the most suitable alternative. (Responses will be treated with utmost confidentiality). This questionnaire consists of four sections, answer all questions as indicated by ticking the options that apply.

SECTION A: DEMOGRAPHIC INFORMATION

1. Highest level of Education and training attained?

Certificate [ ] Diploma [ ] Bachelor's Degree [ ] Master's Degree [ ]

2. Which of the following cadres do you belong to?

Customs [ ] Terminal Operators [ ] Freight Forwarders [ ] CFS Management [ ]

3. What is your current position?

Top Management [ ] Middle Management [ ]

Supervising Management [ ] Operations [ ]

4. Number of years worked in the position

Below 5 years [ ] 5-10 years [ ] 11-15 years [ ] above 15 years [ ]

SECTION B. CFS STORAGE

The CFSs have the Cargo Stack yards where the Containers sent from the port are stored while awaiting clearance and verification. **The Container Freight Stations Storage has positively affected the performance of Port of Mombasa. 5= Strongly Agree, 4= Agree, 3= Neutral, 2=Disagree, 1= Strongly Disagree**

	PARAMETERS	**5**	**4**	**3**	**2**	**1**
B1	CFSs have provided sufficient yard capacity to handle containers imported at Mombasa port					
B2	All the individual CFS storage yard Capacity is adequately utilized					
B3	CFSs are still needed for more additional storage capacity at the port even after port expansion					
B4	Creation of CFSs within and around the port have improved the decongestion at the port					

SECTION C: SPEED OF CUSTOMS CLEARANCE

Speedy Customs Clearance at Container Freight Stations has improved the Performance of Port of Mombasa. 5= Strongly Agree, 4= Agree, 3= Neutral, 2=Disagree, 1= Strongly Disagree

	PARAMETERS	**5**	**4**	**3**	**2**	**1**
C1	CFSs have sufficient customs verification yards to improve the speed of clearance.					
C2	CFSs have adequate customs officers to facilitate speedy customs clearance at the CFS.					
C3	Proximity of the CFSs to the port improves the time taken to clear the cargo/ containers at the CFS					
C4	CFSs have efficient cargo management systems that facilitate speedy customs clearance					

SECTION D: CFS COST

The CFS Costs includes the handling charges at the CFS, Demurrage and Storage Charges to importers and the CFS internal Costs. **5= Strongly Agree, 4= Agree, 3= Neutral, 2=Disagree, 1= Strongly Disagree**

	PARAMETERS	**5**	**4**	**3**	**2**	**1**
D1	Adoption of CFSs has positively affected the Cost of importation by reducing the cost incurred by importers and clearance cost.					
D2	Handling charges, Demurrage and internal CFS costs have overall effect on cost of clearance.					
D3	CFSs has sufficient handling equipment and machine that improve the speed and cost of clearance at Mombasa port.					
D4	Competition between individual CFSs have helped in reducing CFS cost of clearance and charges to customers.					

SECTION E: PORT PERFORMANCE

Port performance has been determined in speed and efficiency in port operations, quality of customer service and volumes of cargo handled. **CFSs have positively affected the performance of Mombasa Port.5= Strongly Agree, 4= Agree, 3= Neutral, 2=Disagree, 1= Strongly Disagree**

	PARAMETERS	**5**	**4**	**3**	**2**	**1**
E1	CFS storage by the CFS have assisted in providing more space to increase capacity handled at the port annually.					
E2	Improvement in Cargo dwell time in Mombasa port is attributed to the operation of CFSs.					
E3	Operation of the CFSs at Mombasa port has eased the Cargo Clearance at the port.					
E4	Adoption of CFSs has positively affected the performance of Mombasa Port.					

END OF QUESTIONNAIRE: Thank you for your support and cooperation