

UNIVERSITY OF GHANA
CHALLENGES FACING MERIDIAN PORTS SERVICES (MPS) IN THE HANDLING AND
DELIVERY OF CONTAINERS TO CUSTOMERS ON THE MPS TERMINAL, THE CASE
AT THE TEMA PORT

BY

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(10084012)

DISSERTATION SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES,
UNIVERSITY OF GHANA IN PARTIAL FUFILMENT OF THE REQUIREMENT FOR THE
AWARD OF MASTER OF ARTS DEGREE IN PORTS AND SHIPPING ADMINISTRATION

AUGUST, 2014

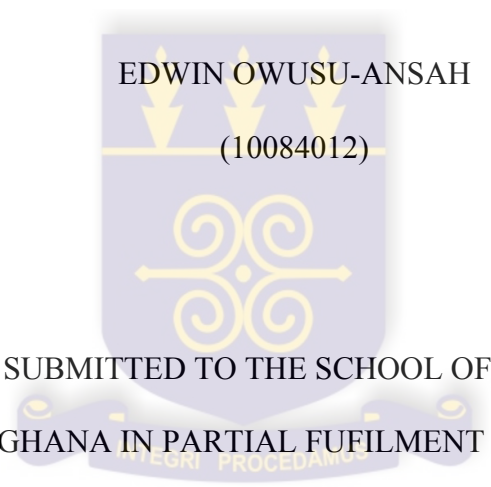
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The image shows a large, semi-transparent watermark of the University of Ghana crest in the background. The crest features three golden arrows pointing downwards from a horizontal line, with a central golden emblem consisting of four interlocking spirals. Below the crest, a banner contains the motto 'VERITAS PROCEDAMUS'.

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ADMINISTRATION

AUGUST, 2014

DECLARATION

I EDWIN OWUSU-ANSAH, hearby declare that except for references to other peoples's work which I have duly acknowledged, this M.A thesis is entirely my own work and that no part of it or the whole has been presented for another degree elsewhere

SIGNUATURE

DATE

STUDENT

EDWIN OWUSU-ANSAH



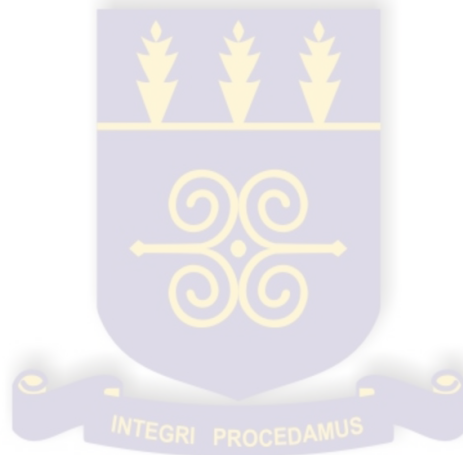
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DEDICATION

I dedicate this work to the Glory of God, my dear parents and siblings.



ACKNOWLEDGEMENT

It is my pleasure to give Glory and Honour to the Almighty father for his guidance and countless mercies throughout this period.

My profound gratitude to Dr. Kwadwo Kwabia, formerly of the Department of Sociology, University of Ghana, Legon, Professor Maxwell Asimeng of the Department of Sociology, University of Ghana, Legon and Mr. S. O. K. Yeboa of the Department of Ports and Shipping, Regional Maritime University for their support. Their contribution in diverse ways to making this work as a whole is deeply appreciated.

I will also like to express my profound gratitude to Mrs. Joana Botchway, Head of Department, Ports and Shipping and the entire teaching and non-teaching staff of the department.

My gratitude goes to Meridian Ports Services (MPS) for giving me the permission to use their organization as a case study. My special thanks go to my course mates of M.A. class of 2010, especially, Mr. Augustine Tuffou and Okatakyie Douglas Nti for their support and their in-depth contribution to this work.

I owe a special appreciation to those that responded to my questionnaires both at Meridian Ports Services, all the ICD Companies located in the port area, clearing agents and the Ghana Ports and Harbours Authority for sparing part of their busy schedule to grant me audience when I needed them the most.

Finally, I will like to acknowledge all the authors whose work, I have used to complete this work.

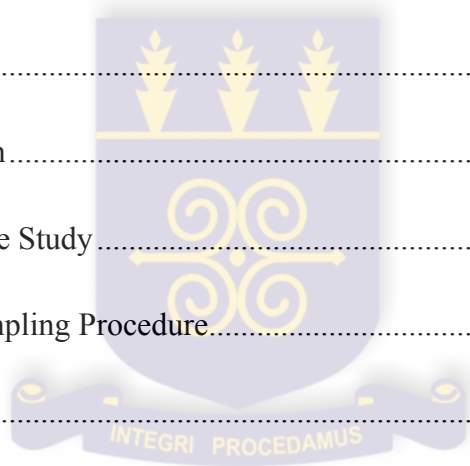
ABSTRACT

The study made use of a descriptive cross sectional survey approach. The research approach involves the use of questionnaires to obtain quantitative data. The target population for the research consisted of workforce comprising management, employees, and customers of MPS container terminal. Consequently, six (6) technical/operations managers were randomly selected from a population of eight (8) managers. Also, a sample of seventy (70) respondents was randomly selected from a population of one hundred and eighty (180) operations and technical staff. Likewise from a population of three hundred (300) customers of the MPS container terminal, a sample of eighty (80) was selected. In processing the data, statistical package for social sciences (SPSS) was made use of. The study revealed that the equipments being used at MPS include; Reach stackers,, Rubber-tyred gantry (RTG) Ship-Shore Gantry (STS), Empty Handlers, Computers and LXE Trucks. Also, the challenges facing MPS in the delivery and handling of containers include, clerks who are not properly trained to direct the operator and twist lock not accurately fixed on trucks making landing of containers difficult. There is no maintenance culture which has led to the equipment not properly being maintained. Limited equipment to handle and deliver, power outages and high electricity bill were some of the challenges identified by the study. The study recommended that MPS should develop the maintenance culture of regularly servicing the handling and delivery equipment in order to make them last longer and also new handling and delivery equipment must be acquired to augment the ones already in use so as to serve the customer better and to make workers comfortable to use.

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CHAPTER ONE

INTRODUCTION

1.0 Background of the study

The world has now become a global village and countries have become interdependent on each for goods and services (Intriligator, 2003). No single country can boast of being self-sufficient, in order to promote economic development and prosperity it is essential that there exist efficient and cost-effective transportation systems that link global supply chains. Global maritime transport has changed significantly over the last decade and is growing at a fast pace. An estimated 80 per cent of merchandise trades worldwide are transported by sea ports all over the world, hence maritime transport plays a very crucial role in the economic development of many countries (UNCTAD, 2013). This is so because the trade competitiveness of all nations whether developed and developing, as well as even landlocked countries are greatly dependent on effective and efficient access to international shipping services as well as port networks (UNCTAD, 2013) .

Maritime transport is faced with both opportunities and challenges. The opportunities, include; deeper regional integration; growing expansion of sources of supply; and accessibility to new markets, these are facilitated by cooperation agreements as well as improved transportation networks (UNCTAD, 2013). The predominant challenges faced are; issues of energy security and costs, climate change, and environmental sustainability which are all interconnected in one way or the other (UNCTAD, 2013). However in

countries in Sub-Saharan Africa, including Ghana, maritime transport is still being face with challenges in the handling and delivery of containers to customers (Harding, Pálsson & Raballand, 2007).

The fastest growing section of maritime transport is container traffic, thus, shipping lines are investing in containerships so as to benefit from economies of scale (Harding, Pálsson & Raballand, 2007). Containerized trade accounts for more than 16 percent of seaborne trade globally by volume in 2012 and more than half by value in 2007 (Bernhofen, El-Sahli, & Kneller, 2013). Containerization has been closely associated with globalization and fragmentation of global production. In a study involving 157 countries conducted over the period 1962–1990 provided practical evidence that containerization is of principal importance to the twentieth century economic globalization (Bernhofen, El-Sahli, & Kneller, 2013). The study also revealed that , containerization accounts for a 320 per cent increase in bilateral trade over the first five years after its adoption and 790 per cent over 20 years after its adoption in 22 of the industrialized countries used for the study

Containerized trade flows were predicted in the past by looking at the performance of world GDP, container volume growth was ranging between three to four times the GDP growths. However, some observers are recently questioning this ratio; the argument is that GDP growth is no longer an accurate predictor of container-demand growth since other factors such as the degree of containerization of bulk cargoes, the rate of offshoring of manufacturing, the goods-versus-services composition and the manufactured-versus-commodities share of countries are also at play (Containerisation International, 2013). .

Some analysts predict that the GDP multiplier has decreased from an estimated average of 3.4 times over 1990–2005 to just 1.5 times in 2012 (Containerisation International, 2013). At the industry level, many people are recognizing that the reduction in the value of the multiplier has consequences for future growth in demand and for containerized trade. According to containerization International (2013), current growth rates should be considered as the “new normal” for the container industry since the 2008/2009 global economic crisis has moved the industry away from the 9–10 per cent growth recorded over the past thirty years. Despite this significant growth deceleration, containerized trade volumes managed to expand in 2012 to reach 155 million TEUs (Clarkson Research Services, 2013). Consumer demand in developing countries are set to grow, thus markets in the South will continue to drive global container trade growth (Clarkson Research Services, 2013).

since the introduction of very large container vessels in West Africa, there has been an increase in the gap in between few large efficient ports and most other ports. West African countries have also benefit economically from the high quantity of empty containers exported from the region to expand their exports base. Noteworthy progresses have also been made in Nigeria and in other West African countries.,. The Shipping line industry strives for economies of scale, and container vessels capacities are growing at a fast rate (Harding, Pálsson & Raballand, 2007). Thus, Maritime transport as well as container handling have had a positive impact on the economies of scale in many countries, as proved by the studies of (Cullinane and Khanna, 2000; Vanelslander, 2006).

In Ghana, there are two ports located on the Atlantic Ocean at Takoradi and Tema. The Tema Port, which is bigger, was officially opened in 1962. It is largest man-made harbour in Africa (ghanaports.gov.gh). In addition to the handling goods for Ghana, the Tema Port also serves as a traffic junction, where goods are transshipped to landlocked countries to the north of Ghana (ghanaports.gov.gh). Most of the nation's import and export cargo is handled at the Tema Port, but most of the nation's chief exports are shipped from Sekondi-Takoradi and Tema (ghanaports.gov.gh). The port of Tema has a 77,200-m² (7.72-hectare) paved area for the storage of containers, steel products and other conventional cargo (ghanaports.gov.gh). The port's container yard has a capacity of over 8,000 TEUs (ghanaports.gov.gh). Both the Tema and Takoradi harbours are operated by the Ghana Ports and Harbours Authority (GPHA), which is statutory public corporation mandated to build, manage, operate, maintain and regulate seaports in Ghana. It was established by the PNDC law 160, which merged Ghana Ports Authority, Ghana Cargo Handling Co Ltd and Takoradi Lighterage Co Ltd (ghanaports.gov.gh).

In 1986, the government of Ghana with support from the World Bank initiated the port rehabilitation program with the aim of resuscitating the ports infrastructure and management system which had been ran down. It also introduced some level of privatization in the operations of the two ports (ghanaports.gov.gh). Port privatization is the process of restricting the port authority thereby giving large roles to the private sector in port management and operations of port facilities, based the assumption that better operational performance can be achieved through private sector participation

Meridian Port Services Limited (MPS) is a joint venture between Ghana Ports and Harbours Authority and Meridian Port Holdings Limited. The Meridian Port Holdings Limited is also a joint venture between Bolloré Group and APM Terminals. Meridian Port Services Limited has been given concession at the Tema port, to build, operate and transfer a container terminal for 20-years. Since MPS operates as a concessionaire, it was required to clear the concession area and construct approximately 165,000 m² of heavy duty paving plus, offices, gates, workshops and ancillary buildings. It was also under obligation to invest in container handling equipment and IT systems to improve container delivery and handling at the port. Thus, the site clearance and demolition came to a completion in June 2006 and civil construction works was started in August 2006. Approximately two thirds of the container terminal yard was made available since the first of April 2007, thus the terminal became operational partially from this period. In February 2008, the construction and finishing works came to a completion. The completed container terminal consists of 277,000 m of paved container storage and marshalling yard plus 574 meters of deep-water (11.5 meters) quay (<http://www.mps-gh.com/en/about-us/our-history.php>). Meridian Ports Services can boast of modern port handling equipment and infrastructure, with well-trained staff to deliver the best services on their terminal safely (<http://www.mps-gh.com/en/about-us/our-history.php>).

1.1 Problem statement

No single country can boast of being self-sufficient. Importation and exportation of goods and services occur globally. Even industrialized countries import raw materials from developing countries for production. Thus, competent and cost-effective transportation

systems that connect global supply chains are vital for the development of the economy of any. Most of the products that are imported or exported across countries are done through maritime transportation; it accounts for an approximately 80 per cent of all trades worldwide (UNCTAD, 2013). Therefore it can be concluded that maritime transportation is very crucial to the economic development of every country worldwide. Even landlocked countries like Mali and Burkina Faso rely on maritime transport from neighbouring countries for trade.

There are challenges facing maritime transport, some of these challenges are issues of energy security and costs, as well as the effect of climate change and environmental sustainability (UNCTAD, 2013). Even though containerized trade is the fastest-growing market segment in maritime (Bernhofen et al 2013), in developing countries like Ghana, there are still challenges with the handling and delivery of containers to customers in the maritime transportation business (Harding et al 2007). Though it has been illustrated that maritime transportation is essential to Ghana's economic development not much research has been done in the area of maritime transportation in Ghana, including the challenges face by companies involved in the maritime transportation business in the handling and delivery of containers to customers. Meridian Port Services Limited (MPS) is a company involved in maritime transportation in Ghana. It operates under concession at the Tema

Port and has been in existence for seven years. Thus its serves as a suitable container terminal for the study of the challenges associated with the handling and delivery of containers to customers. Thus this study aims at identifying the challenges in the handling and delivery of containers to customers at container terminals using

Meridian Port Services Limited as a case study as well as identifying ways of mitigating or eliminating these challenges.

1.2 Research objectives

General objective: To identify the challenges facing Meridian Ports Services (MPS) in the handling and delivery of containers to customers on the MPS terminal.

Specific objectives:

- i. To identify the equipment used in handling and delivering containers on the MPS container terminal.
- ii. To determine whether handling and delivering equipments are well maintained
- iii. To identify the challenges that customers are facing in clearing their containers from MPS container terminal.
- iv. To determine ways of mitigating or eliminating the challenges faced by facing MPS in the handling and delivery of containers to customers at their terminal.
- v. To make recommendation to the appropriate authorities on ways of mitigating or eliminating the challenges that MPS faces in handling and delivering containers on their terminal.

1.3 Research questions

- i. Which equipments are used in handling and delivering containers on the MPS container terminal?

- ii. Are handling and delivering equipments well maintained?
- iii. What are the challenges facing MPS in the handling and delivery of containers to customers at their terminal?
- iv. What are the ways of mitigating or eliminating the challenges faced by facing MPS in the handling and delivery of containers to customers at their terminal?

1.4 Significance of the study

The findings of this study will help create awareness about the importance of maritime transport to Ghana's economy as well as the challenges encountered in the handling and delivery of containers to customers at container terminals. This study will also try to find ways of mitigating and eliminating these challenges and thus make recommendations to appropriate authorities. This can go a long way to help in the handling and delivery of containers at container terminals as well as improving maritime transport in Ghana which may translate to economic growth. The study will also will add to the stock of knowledge about maritime transport for students and researchers and consequently provoke further research in this field.

1.5 Scope of the study

The study is confined the management and employees of MPS and customers of the MPS container terminal. Consequently, the study is delimited to only a population of eight (8) technical/operational managers, one hundred and eighty (180) technical/operational staff and a population of three hundred (300) customers of the MPS container terminal which

included ICDs, exporters, importers, shipping lines, truck drivers, was considered for this study. Thus the study is confined to only one port or harbour in Ghana (Tema Harbour). The study is also limited to only one container terminal, Meridian Port Services Limited. All these delimitations are set by the researcher due to constraints of time and money.

1.6 Definition of terms

Challenges: Problems encountered in the handling and delivery of containers to customers at the container terminal.

Customer: A person or organization who patronizes the services of MPS.

GPHA: Ghana Ports and Harbours Authority.

Handling: The use of equipment to carry containers.

ICD: Inland container depot

MPS: Meridian Port Services Limited.

Operator: The person who operates a machine.

DGPS: Differential global positioning system

LXE: Light guide Express Entry (Hand computer)

1.7 Organization of the rest of the study

The study is divided into five chapters. Chapter one introduces the research study, providing the background to the study, statement of the problem, objectives and research questions, and significance of the study, scope of the study, operational definitions and the organization of the study. Chapter two presents a review of literature on the topic. An overall review of existing literature; journal and articles on maritime transportation as well as the challenges associated with the handling and delivery of containers are presented in this chapter.

Chapter three presents the methodology used for the research. This includes: a description of the study design, the setting, the target population, sampling criteria, and the rationale for the questions in the questionnaire, the analysis of the answers with reference to the objectives of study, the data collection procedure and the statistical tools used for the study. Chapter four presents and discusses the research results and findings with a focus on the data analysis. Finally, chapter five consists of a discussion, limitations, conclusion, and general recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, relevant literature on maritime transport, containerised trade, challenges facing customers in the clearance of containers from container terminals, challenges facing businesses involved in the handling and delivery of containers to customers at terminal points and ways of mitigating or eliminating the challenges facing businesses involved in the handling and delivery of containers to customers at terminal points is reviewed. The chapter will end with a conclusion. The literature reviewed contributes to the development of a theoretical basis to address the research questions and objectives outlined in the first chapter of the research work.

2.1 Scope of Maritime Transportation and Containerised Trade

The transportation systems can be subdivided into land-based, water-based (maritime) or air-based transportation. Over the past decade, global maritime transport has undergone considerable change. Maritime transport is now developing at a fast pace and container traffic is the fastest growing segment of maritime transport. Approximately 90% of world trade is transported on ocean going ships and this account for 70% of world trade in terms of value (Hoffmann, 2004). Within maritime transportation, ocean going ships are classified into container ships, general cargo transporting ships, passenger ships, bulk carrier (which transports dry bulk products) and tankers (carrying for example liquefied gas or crude oil). Container ship transportation is the most important mode of maritime

(ocean going) transportation. Consumer goods which have a high ratio of value per ton are almost completely transported by container (Stopford, 2009). The total number of containers shipped internationally is expected to grow to 177.6 million TEU (twenty-foot equivalent unit) by 2015 (www.unescap.org).

The maritime shipping container was developed in 1956 by Mr. Malcolm McLean who is known as the founder of containerization (Maersk Sealand Inc., 2003). The Ideal X, which is a converted tanker, was the first cargo ship carrying containers. In its maiden voyage, it sailed from Newark, New Jersey to Houston, Texas which marked the first scheduled containership service in the world (Maersk Sealand Inc., 2003).

Formerly, break-bulk cargo ships were the main mode of transporting dry goods in the maritime transportation industry, however over the past three decades; intermodal container transportation has taken over as the principal mode of transporting dry goods (Maersk Sealand Inc., 2003). Thus before the advent of containerization, all products except bulk commodities were moved in instalments in break-bulk (Maersk Sealand Inc., 2001). Thus, boxes were loaded one after the other onto a truck, was driven to a port. At the port (dockside) the boxes were unloaded one after the other afterwards hoisted into the hold of the ship. On arrival at the destination, the boxes were unloaded individually and delivered via train or truck. Thus in the past freight handling was sluggish, fragmentary and repetitive, and the cargo was at risk of being damaged and pilfered. Hence these challenges were solved with invention of containerization. Hence, a trailer containing several boxes could be loaded at the door of the shipper, closed, transported by truck to the port, lifted off its chassis and just stored aboard ship. On arrival at the destination, this process would be reversed.

The need to transport general cargo or product in masses that were very small for the traditional bulk system and the need to transport expensive as well as delicate cargo led to the development of containerized shipping. From its inception such cargo were transported in ship holds, loose or tied down with pieces of wood or burlap until the mid-1960's where pallets and containers were produced to aid in the reduction of the costs involved with moving general cargo. The former mode of transportation was an expensive, required intensive labour and was very slow. Hence shipping liners faced the challenge of continuing moving cargo in this way and still made a profit. Pallets can be fork lifted directly into bulk liners or put inside containers and are being employed recently for break-bulk and container shipments.

The introduction of the first deep-sea container service for the transport of general cargo occurred in 1966. Since then, container shipping has become a common mode of transporting all kinds of products, especially high-value cargo. Since it was introduced, there has been a steady rise in the utilization of containers for seaborne cargo. Thus it has led to a reduction in costs and lower rates, customer demand, and increasingly cost-efficient processes (Rinaldi, 1972).

The maritime shipping containers may be thought as just storage boxes for making handling loose items easy. However global trade has been revolutionized through the introduction of containerization and intermodalism (intermodal freight transport) as media for transporting goods from the supplier to the customer. Over the past forty years containers have been the most successful innovation in the transport sector with over 600 million freight containers currently in service worldwide (Bohlman, 2001). Containerization involves the utilization of shipping containers, van trailers in

combination with other modes of transport for the movement of goods from one place to the other. During the process of containerization, goods are usually moved from origin to destination without unloading or reloading (Rinaldi, 1972).

The twenty - foot container is currently the leading container in use. Conventionally, the measurement of ship capacity is in Twenty-Foot Equivalent Units (TEUs), because both 20 – foot and 40 – foot containers are used during maritime shipping (Jankowski, 2003). The containers have a standard handling fitting on their tops and forklift pockets along the bottom in order to make movement easy.

An internationally recognized standard has been developed by the commercial maritime industry, thus there is now smooth operation of maritime shipping containers to operate intermodally using ships, trucks, and railroad to efficiently transport shipping containers around the world (Jankowski, 2003). Standards for maritime shipping containers have also been established by the International Standardization Organization (ISO) under the ISO 9000 series of standards and this is recognized by governments and international organizations globally (Jankowski, 2003). These standards encompass terminology, specifications, classification, dimensions, identification, thermal and dry bulk requirements, handling, and security of containers, and container handling equipment. However due to increase acts of terrorism, asymmetric warfare, and threat of weapons of mass destruction these ISO 9000 standards may need to be revised in the near future (Jankowski, 2003).

2.2 The Process of Handling and Delivery of Containers to Customers at Container Terminals, associated Challenges and their Management

A marine terminal serves as an interface between land and sea where loading of freight or goods or unloading to or from ships occurs. Containers are also temporarily stored at marine terminals prior to them being picked up by a land truck or loaded on a ship. Handling accounts for over 80% of the charges faced by a carrier bringing a container vessel to a port for loading and unloading (Tovar, Trujillo and Jara-Diaz, 2004). There are diverse group of agents working at container ports and they include; port authorities, terminal operators, tug boats, consignees, etc. Container transport within the port can be handled by a port authority, a terminal operator or inland logistics companies. Generally, there are two categories of cargo ships that moor at a marine container terminal, these are; ‘container ships’ and ‘bulk carriers’. A bulk carrier is especially manufactured for the transportation of unpackaged bulk cargo (like coal, grains, cement, and ore) in its cargo holds. However container ships are designed to carry their entire load in truck-size intermodal containers, here a technique known as ‘containerization’ is employed.

//Containers are large storage boxes which are reusable and are used for the transportation of products and raw materials from one location to the other. Containerization is a system of commercial intermodal freight transport using containers. The use of containers has numerous advantages in comparison to orthodox bulk which include; less damaging, less product packaging and higher productivity (Agerschou, 2004). The main functions of container terminals are the delivery of containers to consignees and receipt of containers from shippers, loading and unloading containers from vessels and the temporal storage of containers in order to account for either

efficiency of the deployed equipment or the variance in arrival times of the sea and land carriers (Zhang, Liu, Wan, Murty & Linn, 2002). The primary objective to be achieved at marine container terminals is the quick flow of containers at a minimum cost. The ‘turn around time’ which is the time to load/unload a ship has been largely considered as a measure of container terminal efficiency (Henesey, 2006).

The flow of containers in a marine terminal can be grouped into four broad subsystems. All containers irrespective of whether for importation or exportation purposes passes through these subsystems between the ship and designated customer/consignee located on land. ‘Ship to/from berth’ is the unloading or loading movement between vessel and berth. ‘Transfer’ entails moving containers from the berth to the container storage area. The ‘storage area’ is where containers are temporarily loaded. ‘Delivery and Receipt’ implies that a container is delivered by a customer to the port by for export or a container meant for importation is picked up by a consignee from the port. Each subsystem has a container handling capacity which is dependent upon the operational strategy and resources available. The performance of the container terminal is determined by these subsystems. Any bottleneck in each of these subsystems will prolong the container’s transfer time and therefore have an effect on the productivity of terminal and customer service. It is also essential that there is proper collaboration and synchronisation among these four subsystems in order to increase overall performance (Henesey, 2006).

At each subsystem of a container terminal, managers are faced with making certain decisions, these can be classified into ‘planning’ decisions and ‘controlling’ decisions (Henesey, 2006). According to Henesey (2006), planning decision concentrates on designing and developing processes to be carried out in order that there is the

achievement of an efficiently managed terminal. It also involves ensuring that the subsystems work in a logical manner. Control decision entails monitoring and controlling processes as well as making sure that levels of productivity are retained within the policy of decisions made by terminal management. Rushton et al. (2010) see both the planning decision and control decision as entailing; 'doing the right thing'. Decision types have also been classified into three levels which are dependent on the time frame for planning, they are; 'strategic' level (long term), 'tactical' level (medium term) and 'operational' level (short term) (Rushton et al., 2010; Henesey, 2006). Planning decisions are concerned with strategic level decisions and controlling decisions are concerned with operational level decision. However, when it comes to the tactical level both planning and controlling decisions are involved.

The strategic level typically entails choosing the location, size, resource types and other essential materials needed to set up the container terminal (Rushton et al., 2010; Henesey, 2006). Tactical level usually deals with resource allocation, determination of the size of workforce etc. (Rushton et al., 2010; Henesey, 2006). Operational level usually entails process management, daily scheduling of jobs, scheduling of workers, equipments, etc. (Rushton et al., 2010; Henesey, 2006). However, it should be noted that different authors has used different classification of decisions and processes in a container terminal. Vis and de Koster (2003) proposed four subclasses of decision problems which include; arrival of a ship, unloading and loading of ship, transport of containers from ship to stack and stacking of containers. Murty, Liu, Wan and Linn (2005) classified operations into nine decisions which comprise of; allocation of berth to vessels, allocation of Quay Cranes (QCs), appointment time to external trucks, routing of trucks, dispatch policy at

the terminal gate and dock, storage space assignment, RTGC deployment, IT allocation to QC and IT hiring plans. Vacca, Bierlaire and Salani (2007) also classified decision problems into five types which include; berth allocation, quay crane scheduling, yard operations, transfer operation and ship stowage planning. The subclasses of decision problems are discussed below.

The first subclass is known as berth and refers to the places where ships can moor. Berths allocation, however entails assigning a place at the quay where a ship can moor when it arrives at the port. . When allocating a ship to a berth, the following factors must be considered; length of ship, depth of berth, ship's timing window, priorities and berthing preferences, location of berth with respect to stacking area where containers for a particular ship are stored etc. The decision as to which berth to allocate a ship is made at operational level, but the decision as to how many berths should be available at the quay is made at strategic level. Berths are essential resources since they are determinants of a terminal's capacity and their construction are costly in relation to the investment made in the other facilities in the port (Park and Kim, 2003).

The second subclass is quay crane scheduling. This takes place after a ship has been docked at a berth. It entails unloading and loading of containers. Quay Cranes (QCs) are used to unload the import containers from ship's deck to shore. The QCs put the containers on transfer vehicles which are used to transport the containers from the QCs to the container stacking area. When containers are designated for exportation., QCs load them on the ship from the transfer vehicles. The challenge associated with quay crane scheduling is the determination of how many QCs to assign to a ship and the set of jobs (loading and unloading moves) that are to be performed by a QC. Here the primary

objective is to reduce the time needed to unload and load a ship, and hence minimizing ship's turnaround time. Several studies have been conducted on how to solve the problem associated with quay crane scheduling. Daganzo (1989) conducted a study on the static quay crane scheduling problem which involved one crane working on hold of a ship at a time so as to minimize ship's aggregate cost of delay. He suggested that the development of exact and approximate solution techniques must be done to solve the scheduling problem. Lim, Rodrigues, Xiao and Zhu (2004) examined quay crane scheduling problem with spatial and separation constraints. Their objective was to determine a crane-to-job matching which maximizes throughput. They thus provided dynamic programming procedures which involved a probabilistic tabu search and squeaky wheel optimization heuristic for solution. Moccia, Cordeau, Gaudioso and Laporte (2006) developed a branch-and-cut algorithm to tackle challenges associated with large sized scheduling problems in order to reduce the vessel completion time and the crane idle times. Sammarra, Cordeau, Laporte and Monaco (2007) disintegrated the quay scheduling problem into two categories; routing problem and scheduling problem. Tabu search heuristic was suggested to be used in solving the routing problem, while a local search technique was created as the solution to the scheduling problem.

The third subclass is the problem associated with transport of containers to stack and vice versa. There is the transportation of inbound containers from the quay side to the storage area and the transportation of outbound containers from storage area to quay side. Internal Trucks (ITs), Automated Guided Vehicles (AGVs), Straddle Carriers (SCs) and Trucks with multi-trailers are the equipment or vehicles that are used in the transfer operations. The choice of the type of handling equipment to be used for transport

operations falls under the domain of strategic level decisions, which are made when designing a new terminal. In ports where there are low labour costs, there is a preference for system of manned vehicles (Vis and de Koster, 2003). Scheduling and routing (which container will be handled by which equipment and which path is chosen) of containers are addressed at the operational level. Transport operations are often augmented to minimize number of vehicles, idling of cranes and vehicles, distance travelled by vehicles etc.

The fourth subclass is yard operations and this involves two classes of problems which are storage space assignment and scheduling of yard equipment (such as yard cranes). Yard refers to an area with a terminal for temporary storage of inbound and outbound containers prior to them being picked up by a truck or stowed onto a vessel. There are two types of storage operations namely; wheeled operations and stacking operations. At wheeled terminals there is the storage of each container on a separate chassis so as to provide individual accessibility to each container. Wheeled terminals require large storage space, thus their use is only feasible in places where land is cheap. At stacked terminals, the containers are stacked on ground and piled on top of one another. The advantage of stack terminals is that several containers can be stored in a limited space; however the disadvantage is that each container is not directly accessible. Thus there is the need for the provision of efficient stacking rules in such terminals to keep reshuffling and rehandling of containers at a minimum. Storage space is assigned to ensure an optimum space allocation in order to keep handling and rehandling of containers as traveling time of vehicles well as at a minimum. Researchers have proposed ways of solving the storage assignment problem as well as transportation planning problem. A

time-space network was developed by Chen, Chao and Hsieh (2000) to aid in the assignment of storage location for containers in advance. Ambrosino, Marina and Sciomachen (2002) proposed a binary linear programme and a heuristic approach a solution to the problem. Lee, Cao and Meng (2007) proposed that to decrease reshuffling, unloaded containers should be grouped according to their destination vessel, and to decrease traffic congestion, a workload balancing protocol must be made.

The second class of the yard operations problem is yard crane scheduling. All terminal decisions, associated with the allocation of available handling equipment and the scheduling of all activities are dependent on efficient and quality of management of yard operations (Rashidi and Tsang, 2006). The choice of equipment for handling of containers is a decision that is made at strategic level. The equipment used for this purpose includes reach stackers, forklift trucks and yard cranes. The primary aim of crane scheduling is to maximize the use of cranes and minimize the waiting time of transport vehicles. The workload at different blocks within a yard is not constant but changes over time thus scheduling must be done properly so that blocks with heavier workloads have more cranes deployed there. The usual limitations in a scheduling problem include traffic congestion and interference among cranes. Zhang, Liu, Wan, Murty, and Linn (2002) addressed the dynamic crane deployment problem by the development of a mixed integer program (MIP) using Lagrangean relaxation. Ng and Mak (2005) proposed a branch and bound algorithm to solve an MIP that finds an optimal schedule that minimizes the sum of truck waiting times. A crane scheduling model where constraints associated with operations such as fixed yard crane separation distances and simultaneous container

storage/retrievals are dealt with was developed by Li, Wu, Petering, Goh and Souza (2009).

The last subclass of decision problems deals with delivery and receipt operations. External trucks (XTs) are used to transport export containers into the port and import out of the port. During delivery and receipt operations, external trucks (also known as drayage trucks) have to go through terminal gates for documentation processing, inspection, security checks etc. There is the need to enhance the delivery and receipt operations in order to minimize the turn around time of external trucks. The turn around time of external trucks basically comprise of two components which are; waiting at gate and waiting at yard. Idling at yard denotes waiting for a yard equipment to get to the truck and load or unload the container to or from the truck. Long queuing of trucks at the terminal gates is another challenge which results in larger turn around time and emission due to congestion. Recently, in order to reduce queuing at gates, some ports have adopted appointment or reservations systems, here there is the selection of truckers from a given list of available time windows to arrive to pick up or deliver their containers. Giuliano and O'Brien (2007) observed that there is the lack of specific guidelines for the implementation of appointment systems and secondly, every terminal is allowed to manage their own system, and this has resulted in little time savings for truckers.

Though the delivery and receipt operations are very essential to terminal operations very little research has been dedicated to this topic (Henesey, 2006). Most studies have focused on either the terminal operator's or drayage operator's perspective. Huynh and Walton (2008) in their study determined the maximum number of trucks a terminal operator could allow into its terminal based on what resources are available. They also

researched into the effect of limiting the truck arrivals on the terminal's throughput and the utilization of resource. Huynh (2009) looked at rules for scheduling trucks to reduce total delays to trucks. Unlike terminal operators who make decisions on the day to day running of a terminal, the drayage operators are users who must comply with the policies set by the terminal operators. Thus the basic objective of drayage operators is the avoidance of idling time at the terminals. This is accomplished when drayage operators schedule their fleet to meet the appointment windows or avoid congestion periods. Namboothiri and Erera (2008) researched on how a port's appointment based access control system affects the management of a fleet of trucks that provide container pickup and delivery service to a port. Ioannou et al. (2005) also researched into methods used to generate optimum or near optimum time windows for cargo delivery or pickup at marine container terminals with emphasis on the objectives and constraints of the terminal operator and freight carriers.

2.3 The Process of Clearing Containers at Container Terminals, associated Challenges and their Management

In Ghana, the main people concerned with clearance of cargo at the ports are the shipping lines, Customs Exercise and Preventive Service (CEPS), destination inspection companies (which includes Quarantine Board, Environmental Protection Agency and Ghana Immigration Service), Clearing Agents and Port Authority (GPHA, 2005). Clearing Agents or Custom Brokers are employed by importers to clear cargoes. The Destination Inspection Companies authenticate the documents and afterwards give out a Final Classification and Valuation Report (FCVR) in which the value of the consignment

and the duty payable is stated. The Shipping Lines bring in cargo and give out necessary documents which include; freight receipt, bill of lading, packing list and invoice. CEPS is responsible for the valuation of particular types of items which include; importations without used items, invoices, and commercial items found in personal effects. They also make sure that the right duty is collected. Ghana Ports and Harbour Authority (GPHA) facilitates the physical clearance process and also makes sure that there is the collection of rent and handling charges.

According to GPHA (2005), in order to clear imported good, one has to undergo a number of processes. Firstly, the importer or his agent must present an original copy of the delivery order and other relevant documents to the GPHA revenue staff so that they can undertake verification of the authenticity of the documents as well as checking against the consignment's information on the GCNet. From here there is the determination of the relevant charges, payment is made and receipts are issued. The importer or his agent then goes to the container depot with the receipts and deposit their delivery order at the charting office where it again undergoes verification with information on the container received from the stevedores. After this the container is tracked down, chartered, and then the dispatch of the delivery order is made to the yard where the container is situated. House to house containers are picked from the stack, consolidated and loaded directly on the importers truck and containers that are supposed to be unstuffed are taken to the delivery bay where they are unstuffed and inspected by CEPS officials before being released. After this, the importer or his agent takes the delivery order to the tally sheet or waybill desk where there is the preparation of the waybill and relevant copies are given to the importer or agent so they can proceed to the

exit point. At the exit gate verification of the tally sheet against the cargo loaded onto the truck is carried out by the GPHA security personnel. They also crosscheck if the required GPHA charges have been paid. A final verification of documentation against the cargo is carried out CEPS and other security agencies. Then truck is released when all essential checks have been done completing the clearance process.

According GPHA (2005) goods that are meant for exportation go through the following processes. The exporter or agent makes the declaration on the GCNet CEPS Front End Software (FES) where the commodity type, quantity, volume and other essential information are given. The exporter or agent the proceeds to the CEPS compliance office where he or she is assigned to an examination officer. The examination officer then escorts the agent or exporter to the stuffing platform to observe the stuffing procedure, this is mandated by law. The packing can either be carried out by the freight forwarder (who deals with export trade) or shipping lines. The exporter or agent then goes to the GPHA export desk where completion of a shipping note is carried out. In the shipping note, the commodity, weight, destination, exporter and consignee is indicated. The value of the goods is then assessed at a depot in the GPHA revenue office and the necessary charges are paid. GPHA then releases CDI which is referred to CEPS by the agent. A handwritten note which is sealed and embossed by CEPS is then released directly to the shipping line. The shipping lines are obliged by law to raise the payment invoice and provide copies of the bill of lading within 48 hours. When no anomalies and amendments are needed, the shipping line releases the original bill of lading to the exporter or agent. The agent or exporter takes this document to the export shed where a CEPS official releases it online through the GCNet. After this, the goods are then loaded into a vessel.

Finally, the original copy of the bill of lading is sent by the agent or exporter to the consignee in the destination country.

In the past the processes one underwent for import and export was quite uncoordinated, and in there was the duplication of roles by the various institutions involved in the process. However since the advent of the automated (GCNet) system coordination among the various institutions is better and now only eight processes have to be carried out during importation and exportation of goods.

2.4 Conclusion

Maritime transport is essential to the economic development of any country. Container traffic has become the quickest growing sector in maritime transport. There has been a revolution in global trade since the inception of containerization. Containers are large storage boxes which are reusable and are temporarily stored at marine terminals before they are being picked up by a land truck or loaded on a ship. Handling containers accounts for more 80% of the charges faced by a carrier bringing a container vessel to a port for loading and unloading. Advantages associated with the use of containers include; less damaging, less product packaging and higher productivity.

Container terminals are employed during the delivery of containers to consignees and receipt of containers from shippers, loading and unloading containers from vessels and the temporal storage of containers in order to account for either efficiency of the deployed equipment or the variance in arrival times of the sea and land carriers. The basic object of a container terminal is to ensure the quick flow of containers at the lowest cost.

The processes that containers go through in a container terminal can be grouped into four broad subsystems. These subsystems are ship to/from berth, transfer, storage area, and delivery and receipt. At each subsystem of a container terminal, managers make decisions which are classified into 'planning' decisions and 'controlling' decisions. Managers are also faced with decision problems which are grouped into four subclasses which are; berth allocation problems, quay crane scheduling problems, problems associated with transport of containers to stack and vice, yard operations problems and problems with delivery and receipt operations.

Shipping lines, Customs Exercise and Preventive Service (CEPS), destination inspection companies (which includes Quarantine Board, Environmental Protection Agency and Ghana Immigration Service), Clearing Agents and Port Authority are the main group of people concerned with clearance of cargo at the ports in Ghana. Before the introduction of the (GCNet) system, the processes involved in the importation and exportation of goods was uncoordinated, but since the inception of the (GCNet) system, the automated coordination among the various institutions has improved.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes the method that was adopted by the study to achieve its objectives. The research design, the population from which the sample was selected and the sampling procedure, the instrument used to collect data and how the data was analysed is presented in this chapter.

3.1 Research Design

The study made use of a descriptive cross sectional survey approach to generalize the research results and draw conclusions. According to Zikmund (2006), surveys require asking people who are called respondents, for information, using either verbal or written questions. A descriptive survey was employed because it provides a more accurate and reliable information to help address the project objectives. The research approach involves the use of questionnaires to obtain data. Self-administered questionnaires comprising both closed and open-ended questions were administered. The data obtained was transformed into information using SPSS. Graphs and tables were used to give a visual representation of the results

3.2 Population of the Study

Neuman (2000) defines a research population as the specific pool of cases, individuals or groups of the individuals which the researcher wishes to investigate. The target population for the research consisted of workforce comprising management and

employees of MPS and customers of the MPS container terminal. Consequently a population of eight (8) technical/operational managers, one hundred and eighty (180) technical/operational staff and a population of three hundred (300) customers of the MPS container terminal which included ICDs, exporters, importers, shipping lines, truck drivers, was considered for this study.

3.3 Sample and Sampling Procedure

Sampling is the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population (Monga, 2009). A sample is obtained rather than the whole population for reasons such as timeliness, large size of the population, inaccessibility of some of the population, destructiveness of the observation and accuracy. The economic advantage of using a sample is obviously to reduce resources. The population was divided into strata and simple random sampling was used to select respondents from each stratum. The workers of MPS were divided into Operations /Technical Managers and Operations/technical staff. The sample size that was used was based on the sample size calculation below

Sample Size Determination:

$$n = \frac{N}{1+N(e)^2}$$

Where **n** is the sample size, **N** is the population size, and **e** is the level of precision.

Table 1: Sample size determination

	Operations and technical staff	Customers of MPS
Population	180	300
n = $\frac{N}{1+N(e)^2}$	$n = \frac{180}{1+180(0.1)^2} = 64^*$	$n = \frac{300}{1+300(0.1)^2} = 75^*$
Sample size used	70	80

**A sample size not less than this number will be appropriate for this study*

Based on the sample size calculation for the operations and technical staff, a sample size of 64 and above will be appropriate for this study, the study consequently relied on a sample of seventy (70) respondents who were randomly selected from the population. Likewise from a population of three hundred (300) customers, the sample size of 75 obtained from the calculation above imply that a sample size not less than 75 customers will be appropriate for the study. Thus study therefore selected a sample 80 customers of MPS container terminal which included ICDs, exporters, importers, shipping lines, truck drivers.

Also, due to the small total number of the managers, six(6) out of the eight (8) managers were randomly selected representing a 75% population coverage. The use of simple random technique to select a sample from each group (or sub population) ensured that the units had equal chance to be selected into the sample (Monga, 2009).

3.4 Instrument

Questionnaire was the main instrument used for this study. The questionnaire comprised of both open and closed ended questions. Both open and close ended questions were used to enable respondents, where necessary, to provide their own views. Three questionnaires were designed and given to the technical staff, technical managers and customers respectively. The first section of the questionnaires focused on the biodata of the respondents and the subsequent sections were designed to address the objectives of the study. The questionnaire for the technical staff, customers, and managers had a total of 19 questions, 15 questions and 15 questions respectively.

3.5 Data collection procedure

The questionnaire was self-administered. The questionnaire was used to collect information from the employees and management of MPS because of their busy schedule. Informal training of two days was given to a data collection assistant who was a national service personnel to help in collecting the data. The respondents were approached to answer the questionnaire during their break time periods. Some respondents such as machine operators, and tally clerks work in shifts, and others who did not have permanent offices and were contacted at the canteen to assist in the answering of the questions. A period of 2 weeks was used to collect the data from the respondents.

3.6 Data Analysis

In analyzing the data, the questionnaires were examined for correctness and completeness. The responses to the open ended questions were grouped into thematic headings. Coding and keying data into a database of statistical package for social

sciences (SPSS) was done, and the data was analysed quantitatively. The processed data was presented tables for visual representation.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.0 Introduction

The chapter presents the results of the study based on the data collected and processed using the statistical package for social sciences. The results of the processed data is presented based on the research objectives. The results are presented in six sections. Section one deals with the demographic distribution of the respondents and the subsequent sections deal with the objectives of the study. The chapter goes on to discuss the results of these findings in relation to the literature review in chapter two.

4.1 Results

Questionnaires were administered to workers of MPS operations and technical departments, the customers of the MPS container terminal and management of MPS operations and technical departments. In all, a total of Seventy (70) questionnaires were distributed to workers of MPS operations and technical departments, eighty (80) were distributed to the customers of the MPS container terminal and six (6) were distributed to the management of MPS operations and technical departments. All the questionnaires were responded to, meeting a 100% response rate. The main statistical methodologies used in this analysis, interpretations and presentations are: frequency distribution tables, multiple response analysis, and some basic graphs.

The study is guided by five primary objectives. The objectives include; to find out the equipment use in handling and delivering containers on the MPS container terminal, to find out whether handling and delivering equipments are well maintained, examine

challenges that customers are facing in clearing their containers from MPS container terminal, identify challenges facing MPS in the use of particular equipment in handling and delivering containers on their terminal and to make recommendation on the challenges that MPS faces in handling and delivering containers at their terminal.

4.2 Demography of respondents

This part deals with responses from workers of MPS operations and technical department.

Table 2 :Demographic distribution of workers of MPS operations and technical department.

	Frequency (n=70)	Percentages (%)
Age		
20-29 years	12	17.0
30-39 years	18	26.0
40-49 years	37	53.0
50 years and above	3	4.0
Educational level		
J.H.S	2	3.0
S.H.S	6	9.0
Diploma	52	74.0
HND	2	3.0
Degree	8	11.0
Gender		

Male	68	97.0
Female	2	3.0
Working department of respondents		
Operations	60	86.0
Technical	10	14.0
Work experience of workers in the operations and technical department of MPS		
1-4 Years	7	10.0
5-9 years	12	17.0
10-15 years	30	43.0
16-19 years	16	23.0
20 years and above	5	7.0

Source : Field data, 2014

Table 2 shows the demographic distribution of the respondents of MPS workers. The results show that 97% of the respondents were males while 3% were females. We can infer from the results that there is a greater proportion of male workers compared to female workers at the MPS operations and technical department.

As shown in table 2, 86% of the respondents work in the operations department and 14% work in the technical department.

From the results of the analysis there are twelve (12) respondents who belonged to age group 20 to 29 years representing 17.1%. Similarly (18) eighteen respondents belonged to age group 30 to 39 years representing 25.7%. Thirty-seven (37) respondents belonged to

age group 40 to 49 years, whilst three (3) respondents are age 50 years and above. Thus the study shows that majority of the respondents belonged to age group 40-49 years.

Also, the educational level of workers in the operations and technical department are shown in table 2. Two (2) respondents each have Junior High school education and HND representing respectively 2.9% each. In addition six (6) respondents have Senior High school education representing 8.6%, whilst fifty-two (52) respondents representing majority of the respondents have Diploma in various fields representing 74.3%. The results also shows eight (8) operations and technical workers having their degrees in various fields representing 11.4%.

On the issue of working experience of the operation and technical workers working in MPS, 10% of the workers indicated they have been working for a period of 1 to 4years and 17 % said they have being working for a period of 5years to 9years. Similarly 43% of the workers indicated that have been working at MPS for 10 to 15years. In addition 23% of the workers indicated they have been working at MPS for about 16 to 19 years, whilst 7 percent of the workers have being working for about 20years and above. Thus majority of the workers had been working for a period of 10-15 years.

Table 3: Demographic distribution of customers of MPS.

	Frequency (n=80)	Percentages (%)
Gender		
Male	67	84.0
Female	13	16.0
Age		
20-29 years	7	8.0
30-39 years	35	44.0
40-49 years	23	29.0
50 and above	15	19.0
Educational level of customers		
JHS	8	10.0
SHS	42	52.0
Diploma	20	25.0
Degree	10	13.0
Business engaged in by customers		
ICD company	47	59.0
Importer	6	7.0
Exporter	5	6.0
Clearing agent	10	13.0
Shipping agent	12	15.0

Source: Field data (2014).

As shown in table 3, 84 percent of the customers of MPS were males whilst 16 percent were females. The results seem to suggest that there are more males customers than female.

As shown in table 3 , 8% (7) of the respondents belong to age group 20 to 29 years, 44% (35) of the respondents belong to age group 30 to 39 years, 29% (23) of belong to age group 40 to 49years, whilst 15 respondents are aged 50 years and above. Thus majority of the respondents belong to age group 30-40 years.

Also, 10% (8) of the respondents had Junior High school certificate, 52% (42) of the customer had Senior High school certificate. In addition 25% (20) of the respondents have diploma in various fields whilst 13% (10) of them had a degree in various fields. Thus majority of the respondents had senior high school certificate.

Table 3 enumerates the category of business the customers do with MPS container terminal. From the results of the analysis 7% (6) of the respondents indicate that they have been working as importers. 59% (47) of the customers representing majority of the respondents are ICD companies, 6% (5) of them are exporters, 13% (10) are clearing agents and 15% (12) of the customers are shipping agents. From the results it can be inferred that most of the customers engage more in import than export.

Table 4: Demography of the managers at MPS terminal.

	Frequency (n=80)	Percentages (%)
Age		
30-39 years	1	17.0
40-49 years	3	50.0
50 years and above	2	33.0
Educational level		
Diploma	1	17.0
Degree	3	50.0
Masters	2	33
Gender		
Male	5	83.0
Female	1	17.0
Work experience of workers in the operations and technical department of MPS		
5-9 years	1	17.0
10-15 years	2	33
16-19 years	3	50

Source: Field data (2014).

As shown in table 4, 83% of the respondents were males while 17% were females. The results seem to suggest that there are more managers at the MPS terminal than females.

Likewise, 50% of the respondents belonged to age group 40-49 years, also 17% belong to age group 30 to 39 years. Also, 33% of the respondents are aged 50 years and above.

Also, 50% of the managers had a degree, 33% had a masters and 17% respondent had diploma. The results seem to suggest that majority of the managers had a degree.

The table 4 shows the number of years of experience possessed by managers. As shown in table 3, 33% had between 10-14 years of working experience in MPS, 17% of the respondents had between 5 to 6 years of working experience, whilst 50% of the managers have 15 and above years of working in MPS.

4.3 This section presents the results of the study based on the objectives.

4.3.1 The first objective of the study sought to identify the equipment used in handling and delivering containers at the MPS container terminal.

Table 5: Kind of handling equipment being used to handle and deliver containers

Response	Frequency	Percentage
RTG	10	14.3
STS	7	10.0
Reach Stacker	26	37.1
Empty handler	7	10.0
LXE	5	7.1
Office Computer	1	1.4
Mobile Crane	14	20.0
Total	70	100.0

Source: Field data (2014).

With regards to handling equipment use at the ports, 14 percent of the workers indicated they make use of rubber tyred gantry (RTG), 10 percent each said they use ship-to-shore gantry crane (STS) and Empty handler whilst 36 percent said they use Reach Stacker. 5 respondents make use of (LXE), one person use Office Computer and 14 of them use Mobile Crane.

4.3.2 The second objective of the study sought to examine whether handling and delivering equipments are well maintained

Table 6: Respondents perception as to whether or not MPS has a maintenance culture.

Response	Frequency	Percentage(%)
Yes	25	35.7
No	45	64.3
Total	70	100.0

Source: Field data (2014).

As shown in table 5, when respondents were asked if the equipment the workers work with are adequately maintained, 36 percent of the workers said yes while 64 percent of the respondents said no. This result shows that the maintenance culture in MPS is very poor as per respondent's perception

Table 7: **Rate of maintenance of MPS Container terminal.**

Response	Frequency	Percentage
Periodic maintenance	4	66.7
On the spot repair when break down occurs	1	16.7
Policy to check machine regularly	1	16.7
Total	6	100

Source: Field data (2014).

As shown in table 7, when respondents were asked t how MPS equipment are being maintain at the MPS container terminal. 66.7% of the respondents said periodic maintenance, 16.7 % said on the spot repair when break down occurs and Policy to check machine regularly.

4.3.3 The third objective of the study sought to identify the challenges that customers are facing in clearing their containers from the MPS container terminal.

Table 8: Challenges in clearing container from MPS

	Frequency	Percentage
Yes	80	100.0
No	0	0.0
Total	80	100.0

Source: Field data (2014).

As shown in table 8, the customers were asked if they encounter challenges in clearing container from MPS container terminal. As shown in the table, all the respondents said yes they encounter challenges.

Table 9: **Challenges encountered in clearing containers from MPS**

	Frequency	Percentage
No handling equipment	3	3.75
Inefficient staff	7	8.75
MPS operators services private individual and leave ICD companies	9	11.25
Inadequate and the availability of machines	11	13.75
delay in delivery of containers	15	18.75
Wrong location of containers	4	5
Paper work difficulty	4	5
Staff not friendly	6	7.5
It takes long time for truck to come out of the port	12	15
Broken seal	9	11.25
Total	80	100

Source: Field data (2014)

Tables 9 shows the challenges the customers encountered in clearing containers from MPS terminal. From the results, approximately 4% of the respondents mention no handling equipment, 9% mention inefficient staff at the terminal, 11% said MPS services private individual and leave ICD companies, while 14% mention inadequate availability of machines. In addition, 19% of the customer mention delay in delivery of containers, 5% each mention wrong location of containers and paper work difficulty at the terminal. More so 8% said Staff are not friendly to customers, 15% said it takes long time for truck to come out of the port, whilst 11% mention broken seal.

4.3.4 The fourth objective of the study sought to identify the challenges facing MPS in the handling and delivery of containers to customers at their terminal.

Table 10: Views about challenges MPS faces in handling and delivering containers

Response	Frequency	Percentage
Yes	5	83.3
No	1	16.7
Total	6	100.0

Source: Field data (2014).

With regards to manager's view about challenges faced by MPS, 83% (5) of the managers indicated the MPS container terminal faces some challenges, while 17% (1) said they do not face challenges at the Terminal at the moment.

Table 11: **challenges in delivering containers to customers**

Response	Frequency	Percentage
Narrow space in yard to deliver containers	5	7.1
Pressure from customers	14	20.0
Machines not responding to what one wants them to operate	2	2.9
High truck difficulty in taking records	10	14.3
Trucks are not road worthy (difficult to position containers on the trucks)	14	20.0
customers cannot locate their containers	17	24.3
Re-stacking containers which has not been landed well	2	2.9
wrong update of container positions	2	2.9
Some trucks do not have twist locks.	4	5.7
Total	70	100.0

Source: Field data (2014).

As shown in table 11, with regards to the challenges the workers face when delivering container to customers, 7% mentioned narrow space in yard to deliver containers, 20% each mention pressure from customers and trucks are not road worthy, 3% said Machines not responding to what one wants them to operate, 14% said high truck difficulty in taking records, whilst 24% said customers cannot locate their containers due to poor update of containers. In addition, 3% each said re-stacking containers which has not been

landed well and wrong update of container positions pose problem them and 6% said some trucks do not have twist locks.

Table 12: Challenges in delivering containers to the trucks

Response	Frequency	Percentage
clerks not properly trained to direct the operator	10	14.3
Twist locks not accurately fixed on trucks so make landing containers difficult	36	51.4
Collecting pickup tickets	15	21.4
Bad trailers	9	12.9
Total	70	100.0

Source: Field data (2014).

Table 12 shows that when respondents were again asked to enumerate the challenges they face when delivering containers to the trucks, 14% (10) of the workers said clerks not properly trained to direct the operator, 51% (36) of the respondents representing majority of the respondents indicated that twist locks are not accurately fixed on trucks so makes landing containers on it difficult, 21% (15) of the workers talked about collecting pickup tickets, whilst 12.9% (9) workers mention bad trailers.

Table 13: **Challenges in handling container from vessel to quay side**

Response	Frequency	Percentage
No challenges	12	17.1
Reach stackers do not pick containers from vessel to quay side	15	21.4
Bad vision at night	17	24.3
No signal on the LXE	12	17.1
Bad cell guards	8	11.4
Working at blind side	6	8.6
Total	70	100.0

Source: Field data (2014).

Table 13 shows the challenges in handling containers from vessel to quay side. As shown, 17 % of the respondents said they have no challenges because they indicated they do not work at this site. Besides 21% said, reach stackers cannot not pick containers from vessel to quay side. Similarly 24% said they faced bad vision at night, 17% said they receive no signal on the LXE, 11% said they work with bad cell guards and 9% said they have being working at their blind side.

Table 14: **Challenges with type of equipment**

Response	Frequency	Percentage
STS (power outage and high insurance paid)	2	33.3
RTG (Frequent breakdown because of it age)	3	50.0
Reach stacker (Expensive spare parts)	1	16.7
Total	6	100.0

Source: Field data (2014).

Table 14 shows the challenge(s) manager's face with the type of equipment they use. 33% (2) of the respondents said the STS normally experience power outage leading to frequent breakdown of this machine. 50% (3) of the respondents also pick RTG equipment they work with and said the equipment also experience frequent breakdown and 17% (1) of the respondents said reach stacker have expensive spare parts. Thus frequent breakdown of the equipment because of its age seem to be a major challenge.

Table 15: **Comfortability in use of equipment**

Rate use of handling equipment	Frequency	Percent(%)
Poor	12	17.1
Fair	15	21.4
Good	26	37.1
Very good	10	14.3
Excellent	7	10.0
Total	70	100.0

Source: Field data (2014).

With regards to comfortability of equipment use at the port, the respondents were asked to rate the level of comfortability on a scale of 1 poor to 5 excellent. From the above table 11, 17% of the workers indicate comfortability in use of equipment is poor, 21% said is fair, 37% said good, 14% said very good and 10% of the said it is excellent.

4.3.5 The fifth objective of the study sought to make recommendation to the appropriate authorities on ways of mitigating or eliminating the challenges that MPS faces in handling and delivering containers on their terminal.

Table 16: **Strategies to overcome challenges**

Recommendations on the challenges	Frequency	Percentage
Place containers at the right location for easy identification	4	5.0
Training of staff	9	11.3
Extortion should be reduce to the barest minimum	10	12.5
effective monitoring of clerks	20	25.0
Workers need to work hard	9	11.3
Provision of water in the terminal	8	10.0
New machines needed	11	13.8
Maintenance culture should be promoted	9	11.3
Total	80	100.0

Source: Field data (2014).

Table 16, shows the strategies that can be put in place to overcome the challenges at MPS terminal. As shown in the table, 5% (4) of the customers said containers should Place at the right location for easy identification, 11% (9) mentioned training of staff to acquire new skill. In addition, 13% (10) of the customer mentioned extortion should be reduced

to the barest minimum. Also 20% of the respondents mentioned effective monitoring of clacks, 11% (9) said workers need to work hard, 10% (8) of them mention provision of water in the terminal, 14% (11) of them said new machines needed, while 11% (9) of them said maintenance culture should be promoted.

Table 17: **Recommendations**

Recommendations	Frequency	Percentage
More lighting is needed at the quay side	4	5.7
Practicing good maintenance culture	3	4.3
Replacing obsolete equipment	7	10.0
Trucks delivering containers must be checked	9	12.9
Periodic checking of equipment	5	7.1
Contract workers should repair their communication gadgets to enhance communication	2	2.9
Employ good engineers	12	17.1
Regular update of positions of containers	5	7.1
Yards must be re-designed to conform to modern standards	4	5.7
Supervisors must undergo further training to enhance their jobs	9	12.9
Proper information should be given before the start of work	7	10.0
Motivate workers	3	4.3
Total	70	100.0

Source: Field data (2014).

As shown in table 17, when respondents were asked to recommend ways of mitigating or eliminating the challenges that MPS faces in handling and delivering containers on their terminal, 5.7 % of the respondents said more lighting is needed at the quay side, 4.3% said practicing good maintenance culture, 10% said replacing obsolete equipment, 12.9% said trucks delivering containers must be checked, 7.1% said periodic checking of equipment, 2.9% said contract workers should repair their communication gadgets to enhance communication, 17.1% said employ good engineers, 7.1% said regular update of positions of containers, 5.7% said Yards must be re-design to conform to modern standards, 12.9% said supervisors must undergo further training to enhance their jobs, 10% said proper information should be given before the start of work and 4.3% said motivate workers.

4.4 Discussions

With regards to handling equipment use at the ports, some of the workers indicated that they make use of rubber tyred gantry (RTG), ship-to-shore gantry crane (STS) and Empty handler, Reach Stacker, (LXE), Office Computer and Mobile Crane. The results of the study showed that a majority said they used reach stacker. On the issue of whether the equipments the workers work with are adequately maintained, majority of the respondents stated that there was no maintenance culture. When respondents were asked about the rate at which MPS equipment are being maintained at the MPS container terminal the respondents mentioned periodic maintenance, on the spot repairs when breakdown occurs and Policy to check machine regularly. However a majority of the

respondents mentioned periodic maintenance. The customers were asked if they encounter challenges in clearing container from the MPS container terminal. A majority of the respondents said yes they encounter challenges. When asked the challenges they encounter in clearing containers from MPS terminal the respondents mention lack of handling equipment, inefficient staff at the terminal, MPS services private individual and leave ICD companies, inadequate availability of machines.

In addition, some of the customers mention delay in delivery of containers, wrong location of containers and paper work difficulty at the terminal challenges they encounter in clearing containers from MPS terminal. Other customers indicated that staff are not friendly to customers. This findings are supported by findings made by Giuliano and O'Brien (2007). With regards to managers view about challenges MPS faces, majority of the managers indicated they believe MPS container terminal faces some challenges, while one person said they do not face challenges at the Terminal at the moment. Other challenges according to the respondents include limited equipment to handle and deliver, weather affecting equipment, non-dedicated contract staff and limited technical staff to maintain equipment. In addition some respondents indicated, power outage and high electric bills as challenges the manager face at the terminal, whilst other responses show that from the managers show that the challenge of expensive spare parts and non availability of genuine part are encountered by MPS. Besides one person mention limited technical staff to maintain equipment. With regards to the challenges the workers face when delivering container to customers, some of the respondents stated narrow space in yard to deliver containers, pressure from customers, trucks are not road worthy and trucks do not have twist locks. The respondents were again asked to enumerate the challenges

they face when delivering containers to the trucks, majority of the respondents indicated that twist locks are not accurately fixed on trucks so makes landing containers on it difficult.

When respondents were asked the challenges they face in handling containers from vessel to quay side, the respondents indicated that reach stackers cannot not pick containers from vessel to quay side, bad vision at night, receive no signal on the LXE, work with bad cell guards and working at their blind side. The managers stated that the challenge(s) faced with the type of equipment they use include the STS normally experiencing power outages leading to frequent breakdown of this machine. On the issue of how address challenges at the terminal, the respondents indicate that more staff should be employed to take care of customers, Staffs should be trained to perform well, periodic maintenance of equipment, new machines should be procured, punishment must be given for extortion on the terminal and checking of machines daily.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter presents the summary of findings interpreted in chapter four (4). It also contains conclusions reached and recommendations made by the respondents and the researcher. This is done to link the research objectives to relevant literature. The findings from the questionnaire were discussed in separate sections. The initial discussion was based on the responses from the questionnaire and it has been grouped into the background, knowledge of respondents, their attitude and suggestion to the research problem.

5.1 Summary

The study made use of a descriptive cross sectional survey approach to generalize the research results and draw conclusions. The research approach involves the use of questionnaires to obtain data. Self-administered questionnaires comprising both closed and open-ended questions were administered. The data obtained was transformed into information using SPSS. Graphs and tables were used to give a visual representation of the results. The target population for the research consisted of workforce comprising management and employees of MPS customers of MPS container terminal. Consequently a population of eight (8) technical/operational managers, one hundred and eighty (180) technical/operational staff and a population of three hundred (300) customers of the MPS container terminal which included ICDs, exporters, importers,

shipping lines, truck drivers, were considered for this study. The population was divided into strata and simple random sampling was used to select respondents from each stratum. The workers of MPS were divided into Operations /Technical Managers and Operations/technical staff. Consequently six (6) technical/operations managers were randomly selected from a population of eight (8) managers. Also, a sample of seventy (70) respondents was randomly selected from a population of one hundred and eighty (180) operations and technical staff. Likewise from a population of three hundred (300) customers of the MPS container terminal which included ICDs, exporters, importers, shipping lines, truck drivers, a sample of eighty (80) was selected. A questionnaire was the main instrument used to collect information from the employees and management of MPS because of their busy schedule. In processing the data, statistical package for social sciences (SPSS) was made use of. Consequently, the data was analysed quantitatively. The processed data was presented using graphs and tables for visual representation.

The study revealed that the respondents were dominantly males. Also majority of the respondents belongs to age group 40-39years. On education, it was realized that the workers were of different educational background, however majority of the respondents had Diplomas. Respondents had worked in the Port Industry for several years and had a lot of experience. Majority of the respondents had working experience in port industry between 10-15 years. Majority of the respondents worked in the operations department. On the kind of equipment being used by workers to handle and deliver container on the MPS container terminal majority of the respondents used Reach stackers

Majority of the respondents indicated that they handled and delivered all kinds of container on the MPS container terminal. MPS workers also indicated that they had challenges in handling and delivering full containers because of the weight. Also some of the respondents indicated that they had difficulty handling empty containers because the of unsealed doors. . Some also said they had difficulty in handling flat rack containers while others said they had challenges in handling all kinds of containers.

Respondents were asked what challenges they faced in using the handling equipment, some said the equipments are obsolete and as such difficult to operate, others said they were not comfortable with operating this equipment While majority of the respondents said they faced health issues using those equipment.

On challenges facing the delivering of containers to customers on the container terminal, workers responded with different issues, some stated narrow space in yard to deliver the containers , pressure from customers and machines do not respond to what the operator want. Majority of the respondents however attributed their challenge to when customers cannot locate their containers. . The study revealed that the challenges facing MPS in delivering containers to trucks include; incompetent clerks to direct the operator and twist lock not accurately fixed on trucks thus making landing of containers difficult. On the maintenance culture, majority of the respondents said the equipment are not properly maintained.

On recommendations on how to overcome the challenges facing handling and delivery, some of the respondents said there is the need to employ good engineers whiles others said there is the need for proper information to be given before the start of work.

Majority of the customers considered for this study were males. Also majority of the customers were aged between 30-39 years. All the respondents were educated, however, majority were S.H.S certificate holders. Majority of the respondents were from ICD companies. . Majority of the customers face challenges in clearing their containers on the MPS terminal.

Majority of the managers were aged between 40-49 years. On education, majority of the managers had a degree. Also majority of the managers had 15 years and above working experience in the port. When managers were asked which equipments were being used in the handling and delivering of containers at the port, they stated that the equipments included, Reach stackers,, Rubber-tyred gantry (RTG) Ship-Shore Gantry (STS), Empty Handlers, Computers and LXE Trucks. On the rate of maintenance, management stated that periodic maintenance is important, there should be on the spot repair of breakdown, use of proper spare parts and policy to check the machines.

As to whether MPs handling and delivering containers faces challenges majority of the managers said yes. As to what challenges are facing MPS in handling and delivering of containers to customers, majority of the respondents complained of limited equipment to carry out the task. . Some also said power outages is a challenge facing MPS while others stated that high electricity bill are challenges which they face. Some also said non-dedicated contract staff is a challenge in the handling and delivery of containers while others believe that because of the expensive spare parts and non-availability of genuine part. 8.3% believe there is limited technical staff qualified to maintain the equipment.

With the challenges facing each type of equipment (STS) Ship-Shore gantry Crane – power outages and high insurance paid. Some of the respondents stated Rubber tyred gantry (RTG) frequent breakdown of its age. Majority also said stated that the parts of Reech Stacker are very expensive. To address these challenges, some of the manager responded that more staff will have to be employed to take care of customers, majority suggested that new machines are to be procured and some suggested punishment for extortion on the terminal. Some respondents believes staff should be trained to perform well. Some recommended periodic maintenance while others believe the machines and equipment should be checked. As to how targets are set for workers at MPS container terminal, majority of the management said they used internationally set targets while STS or RTG workers have to make monies per hour. As to strategies put in place to achieve set targets by management, some said training of staff is crucial, others said the increase in salaries and allowance, periodic medical checks and increase on insurance for high performance worker yearly.

5.2 Conclusion

The handling and delivery of containers in a port is important for the development of international maritime trade. The use of efficient equipment and technology to provide handling services to vessels and customers to the port is very essential. The satisfaction of customers should be a priority to the port managers and terminal operators.

The study concludes that MPS workers have challenges in handling and delivering full containers because of the weight. Also some they had difficulty handling empty

containers because the of unsealed doors. Some of the challenges arise from difficulty in handling flat rack containers Likewise some of the challenges they faced in using and handling equipment, has to do with how obsolete the equipments are and as such difficult to operate. On challenges facing the delivering of containers to customers on the container terminal, the study concludes that narrow space in yard to deliver the containers, pressure from customers and machines not responding to what the operator want were identified as challenges. The challenges facing MPS in delivering containers to trucks include, incompetent clerks to direct the operator and twist lock not accurately fixed on trucks thus making landing of containers difficult. The study also concludes that the equipment is not properly maintained.

On recommendations on how to overcome the challenges facing handling and delivery, some of the respondents said there is the need to employ good engineers while others said there is the need for proper information to be given before the start of work.

The equipments being used at MPS include; Reach stackers,, Rubber-tyred gantry (RTG) Ship-Shore Gantry (STS), Empty Handlers, Computers and LXE Trucks. The equipments are maintained periodically maintenance. Likewise, non- dedicated contract staff is a challenge in the handling and delivery of containers. To address these challenges address some of these challenges, more staff will have to be employed to take care of customers, new machines are to be procured and punishment should be given for extortion on the terminal.

5.3 Limitations

Questionnaires were the main instrument used for the study and as such the study was exposed to questionnaire related shortcomings. These include non-response, error, and probable inaccurate answers.

Another limitation encountered during the current study was the prejudice mind set of respondents. Respondents had the tendency to respond to questions to follow a perceived favourable or social desirable norm, that is, personal likes and dislikes.

Also there is scanty literature available on this research area and this made getting related literature on the study difficult

5.4 Recommendations

Based on the findings of the study, the following recommendations are made;

- i. MPS should develop the maintenance culture of regularly servicing the handling and delivery equipment in order to make them last longer.
- ii. New handling and delivery equipment must be acquired to augment the ones already in use so as to serve the customer better and to make workers comfortable to use.
- iii. Containers must be put at the right location for customers to pick them up on time to prevent them from being lost on the terminal.
- iv. Clerks who work on the terminal should be monitored and given requisite training and skills to capture every detail on the state of containers leaving MPS terminal.
- v. Yard should be redesigned to conform to modern standard.

- vi. More lighting is needed at Quayside to enable the operators see more clearly.
- vii. Proper information should be given before start of a new shift in order to alert the new shift with happenings and progress of work in their absence.
- viii. Trucks delivering containers must be checked before leaving the MPS terminal to make sure they are delivering the right container.
- ix. Obsolete equipment should be replaced and infrastructure upgraded to improve the delivering and handling of containers on the terminal
- x. The study also recommends that more studies should be carried out in this field to bridge the knowledge gap in this field.

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APPENDIX A

Table 18: **Kind of Container Handled and Delivered.**

Kind of containers handled and delivered	Frequency	Percentage
Full Containers	10	14.3
Empty Containers	23	32.9
All Kinds of containers	37	52.9
Total	70	100

Source: field data (2014)

Table 19: **Reason for difficulties in handling deliveries**

	Frequency	Percentage
Full container(weight)	14	20.0
Empty(their door are not sealed)	36	51.4
Flat Rack(difficult to use flippers)	13	18.6
All Kind(Some are half way filled)	7	10.0
Total	70	100.0

Source: field data (2014)

Table 20: **Number containers cleared**

Containers cleared per week	Frequency	Percentage
1 - 300 Containers	12	15.0
301 - 600 Containers	15	18.8
601 - 900 Containers	35	43.8
901 and above Containers	18	22.5
Total	80	100.0

Source: field data (2014)

APPENDIX B
QUESTIONNAIRE FOR WORKERS OF MPS OPERATIONS /TECHNICAL
DEPARTMENT

Preamble:

I am a graduate student of the Regional Maritime University, Nungua. I am conducting a research into the challenges facing MPS in the handling and delivery of containers to customers, the case at Meridian Ports Services. This research is in partial fulfillment for the award of Master of Arts Degree in Ports and Shipping Administration. You have been selected to assist the study by providing sincere answers to the following questions on the subject. Your responses will be used only for the intended purpose and be treated with maximum confidentiality. Thank you

- 1) Gender
 - a) Male b) female
- 2) Age
 - a) 20-29 b) 30-39 c) 40-49 d) 50 and above
- 3) Education level
 - a) J.H.S b) S.H.S c) Diploma d) Degree e) other(s),
specify.....
- 4) How many years have you being working in the port?
 - a) 1-4 b) 5-9 c)10-15 c) 16-19 d) 20 and above
- 5) What is your current work in MPS?
 - a) Operations b) technical
- 6) What kind of (handling) equipment do you currently handle

- a) RTG b) STS c) Rack stacker d) Empty handler e) LXE f) office computer f) mobile crane
- g) Tally clerk

7) Do you believe in the private sector participation in Port operations?

- a) Yes b) No

8) What kind of containers do you handle and deliver? Select as many as you think is right.

- a) Full containers (all kinds) b) empty containers (all kinds)

9) Do you work on the terminal?

- a) Quay side
- b) Container terminal (New yard)
- c) Gate area
- d) Planning
- e) Pre gate

10) In your view which of the containers in question 9 do you find it difficulty in handling and why?

Ans.....
.....
.....
.....

11) What are the challenges you face in the use of the equipment or work tool? Tick as many as you think.

- a) Out of date (old equipment)
- b) Difficult to operate
- c) Not comfortable to operate
- d) Clerk errors
- e) Health issues
- f) Vessel design

Other(s)

specify.....
.....

12) What challenges do you encounter when handling containers from vessel to the quay side and on the stacking are or delivering containers to customers?

Ans.....
.....
.....
.....
.....

13) What challenges in your view do you encounter when delivering the containers to the trucks on the container terminal?

Ans.....
.....
.....
.....

14) Are the equipment, in your view, adequately maintained?

a) Yes b) No

15) How comfortable are you in the use of the equipment? (On a scale of one (1) to five (5))

1- Poor

2- Fair

3- Good

4- Very good

5- Excellent

16) What do you think is the main reason for your answer to question 15

Ans.....
.....
.....

17) Are you able to meet target set by MPS management?

a) Yes b) No

18) How OR why do you achieve or not achieve these targets?

Ans.....
.....
.....
.....

19) What will you recommend to solve these challenges facing the handling and delivery of containers to the customers of MPS terminal?

Ans.....
.....
.....
.....

APPENDIX C

**QUESTIONNAIRE FOR CUSTOMERS OF THE MPS CONTAINER
TERMINAL. (ICDs, CLEARING AGENTS, SHIPPING LINE AGENTS),**

Preamble:

I am a graduate student of the Regional Maritime University, Nungua. I am conducting a research into the challenges facing MPS in the handling and delivery of containers to customers, the case at Meridian Ports Services. This research is in partial fulfillment for the award of Master of Arts Degree in Ports and Shipping Administration. You have been selected to assist the study by providing sincere answers to the following questions on the subject. Your responses will be used only for the intended purpose and be treated with maximum confidentiality. Thank you

- 1) Gender a) male b) female
- 2) Age a) 20-29 b) 30-39 c) 40-49 c) 50 and above
- 3) Education background
 - a. Junior High School Certificate []
 - b. Senior High School Certificate []
 - c. Diploma []
 - d. Degree []

Any other, please specify.....

4) Which category do you belong to?

- b) ICD Company
- c) Importer

- d) Exporter
- e) Clearing agent
- f) Shipping agent

5) Does MPS handle and deliver containers on time at the container terminal

- a) Yes b) No

6) From question 5, what do you think create conditions for MPS to handle and deliver container on time or not?

Ans.....
.....
.....

7) How many containers in your view do you either clear or export to or from MPS container terminal in a week?

- a) 1-300 containers
- b) 301-600 containers
- c) 601-900 containers
- d) 901 and above container

7) How would you rate the performance of MPS in handling and delivering containers on the container terminal?

8) Do you face challenges in clearing your containers from MPS container terminal?

a) Yes b) No

9) If a) in 3, then what are the challenges you encounter in clearing your containers from MPS container terminal.

Ans.....
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9) Do you face delays in when taking delivery of your containers from MPS terminal?
a) Yes b) No

10) What in your view are the causes of the delays?

a) Congestion on the terminal b) inefficient staff c) inefficient Handling and delivery equipment

d) Extortion on the terminal e) low morale of staff f) inadequate handling and delivery equipment

g) Bureaucracy

Other(s)

.....
.....

12) MPS have got the right handling equipment to handle containers on their terminal?

a) Yes b) No

13) MPS have well motivated and skilled staff for performing their duty of handling and delivering containers to its customers?

a) Yes b) No

14)MPS staffs are well trained to handle and deliver containers to the customers of the container terminal?

a) Yes b) No

15) What in your view should be done to overcome these challenges?

Ans.....
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APPENDIX D

QUESTIONNAIRE FOR WORKERS OF MPS MANAGEMENT

I am a graduate student of the Regional Maritime University, Nungua. I am conducting a research into the challenges facing MPS in the handling and delivery of containers to customers, the case at Meridian Ports Services. This research is in partial fulfillment for the award of Master of Arts Degree in Ports and Shipping Administration. You have been selected to assist the study by providing sincere answers to the following questions on the subject. Your responses will be used only for the intended purpose and be treated with maximum confidentiality. Thank you

1. Gender

a) Male []

b) Female []

2. Age

a) 20 - 29 yrs []

b) 30 - 39 yrs []

c) 40 - 49 yrs []

d) 50 - 59 yrs []

e) 60 yrs + []

3. Level of education.

a) Diploma []

b) Degree []

c) Any other, please specify

4. Rank / Position.....

5. How many years have you work in the port industry?

a) 1-4yrs []

b) 5 - 9 yrs []

c) 10 – 14 yrs []

d) 15 and above

6) What are the equipment MPS use in handling and delivering containers on the terminal and at the quay side?

Ans.....
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.....
.....

7) How are the equipment maintained at MPS container terminal

Ans.....
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.....

8) Do you in your view believe MPS faces challenges in the handling and delivering container to its customer? a) Yes b) No

9) If yes at question 10), in you view what are some of the challenges?

Ans.....
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10) What are the particular challenges facing each type of equipment being used on the container terminal and at the quay side?

Ans.....
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.....

11) Do you in your view; think MPS has got the right equipment for handling and delivering containers on the container terminal? a) Yes b) No

12) What are some of the complains you get from customers to the terminal?

Ans.....
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12) What is MPS doing to address these challenges on the container terminal?

Ans.....
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13) How are targets set for workers on the MPS container terminal?

Ans.....
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.....

14) What is being done to make the workers achieve the target set by management?

Ans.....
.....
.....

15) What is being done to make MPS equipment last longer?

Ans.....
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