

**ANALYSIS ON THE EFFECTS OF CARGO HANDLING FACTORS TO
PORT PERFORMANCE IN TANZANIA:
A CASE OF DAR ES SALAAM PORT**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS
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CERTIFICATION

The undersigned certifies that he has ready and hereby recommends for the acceptance by the Open University of Tanzania a dissertation entitled “*Analysis on the Effects of Cargo Handling Factors to Port Performance in Tanzania: A Case of Dar es Salaam Port*” in partial fulfillment of the requirements for the Degree of Master of Business Administration in Transport and Logistics Management of the Open University of Tanzania.

.....

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.....

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DECLARATION

I, **Zikomo Mapunda**, do hereby declare that this dissertation is my own original work and that it has not and will not be presented to any other institution for the award of the degree or other similar award.

.....

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.....

Date

DEDICATION

This dissertation is dedicated to my family. I say thank for their support, tolerance during the whole period of my study.

ACKNOWLEDGEMENT

Many thanks to my Supervisor Dr. Salvio Macha for her support this work has been possible. I would also like to extend my sincere gratitude to Dr. Salum Mohamed, and Dr. Proches Ngatuni they have always proved to be supportive teachers to me. Finally, I want to extend my deepest appreciation to my family for their patience, understanding, and encouragement. My special thanks also go to my Boss Mr. Nelson Mlali, Operation Manager at Tanzania Ports Authority for his continuous support.

ABSTRACT

The purpose of this study was to provide an analysis on the effects of cargo handling factors to port performance in Tanzania. The study wanted to find out why despite the increasing importance of cargo handling in economic growth and port performance, yet in some countries like Tanzania there is less effort to improve the situation. The assumption was cargo handling is a backbone of a port, therefore, any effort to improve cargo handling simultaneously influencing the economic growth, development and performance. In order to find answers to the above raised puzzle the study employed qualitative research methodology, through IDI's, observation, and documentary reviews. The finding of the study reveals that there are several problems concerning cargo handling in Tanzania ports. Among the problem mentioned mostly include bureaucracy (hierarchical), cargo clearance and logistics management. These problems have said to deteriorate the performance of port and subsequently in economic growth and development. Additional to that it is revealed that inadequate technological equipment in cargo handling is among the hindrance factor to the performance of the port. It was revealed that some countries decided not to be served by Tanzania port because of mentioned problems. Lastly, the study recommended that in order to improve performance of Tanzania port, raise revenue, economic growth and development cargo handling factor should be improved.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The purpose of this study was to analyze the effects of cargo handling factors to port performance with a reference point of Dar es Salaam port. The assumption of the study is cargo handling is one among the determinants of port performance. It is common knowledge that ports play a key role in economic growth and development. Similarly, European Union (2013) reported that nearly 75% of the trade worldwide is handled in ports. This implies that effective cargo handling leads to positive outcomes to port performance and countries economic growth and development.

Jean-Francois et al, 2012; and Usman 2015) have study about the state of cargo handling in African ports. In doing so, their study shows that there is a problem of cargo handling in many of the African ports. In fact, their findings influence the will to undertake the study of this kind as they noted that; the case of cargo dwell times is an illustration of a more general problem in African port developments. Most, if not all, the binding constraints to grow such infrastructure are the result of an equilibrium in which certain actors cause of problem. One of the resulting problems is the delay in cargo clearance.

According to them, the process of cargo clearance in its international standards should take three to four days. But this is not in case of African port where the processes take 15 days to three week. Their assumption is dwell time and clearance time is a major commercial instrument used to attract cargo and revenues.

In a similar manner, de Langen et al, (2007) noted that cargo handling is the backbone of a port. This is in line with Rigot (2012) who suggest that the port performance indicators that focus on the cargo-handling are very important in evaluating the performance of a port. Basing on the analysis provided above no one can deny that cargo handling factors have effects to port performance, more plans and effort to develop a port should given a priority. This is due to the fact that Tongzon (2007) recognized that there are factors influences decisions to route cargo through a certain port over the other.

However, Caldeirinha, V. et al, (2011) Globalization, which emerged from trade growth between continents, regions and countries, has led to an expansion of global sea-trade creating huge impacts for ports. As noted by Estrada, (2007), Esmer, (2008) ports have become an intersection node in logistic chains, in which goods engage in additional operations taking advantage of proximity or their stay in transit to other places. Hence, port efficiency is an important requirement in order to survive in the competitive world of shipping industry. Different facilities in the port are expensive to run and purchase. Hence, under-utilizations will result in capital loss and higher cost for running the port.

Some of the reviewed literatures suggest that Dar es Salaam port is facing similar problems related to cargo handling. The study, the study by Kiwanuka (2013) shows that, despite the fact that Dar es Salaam port favored with geographical location and other services relevant to port operation, yet, recently, several countries and customers shifted to Mombasa. These countries are such as Rwanda, Burundi, Msumbiji and Uganda. One of the main reasons for this shift as explained by

Kiwanuka (2013) resulted from poor cargo handling. It is noted that cargo clearance at the port surrounded with several problems including the delay in clearance. Similar to Kiwanuka (2013), Mapunda (2014) also have noted the same.

This study comes about because globally, maritime transport is growing at a high pace since transport users understand the laws of the economy of scale that favors maritime transport above other transport modes. Apart from ocean going cargo vessels becoming more fuel and capacity efficient, shipping is an industry in which supply and demand are more harmonized in sub-markets to reduce empty legs on maritime routes as much as possible. This is particularly the case in container shipping which has developed the structure of main ports and feeder ports based on respectively global and regional routes. To maintain access to the global market, many African ports receive their cargo partly via transshipment from larger regional hubs rather than directly from the country of origin. 50% of Africa's container traffic is shipped through these hubs (UNESCO, 2009).

Therefore, since maritime trade in Africa on domestic economies accounts for more than 90% of the continents imports and exports, ports therefore play a fundamental role in facilitating Africa's integration to international trade. However, despite of this fact explained above it seems that cargo handling in Tanzania port have given little attention. The assumption is Tanzania has the opportunity to become a vital International Hub for landlocked countries such as Uganda, Rwanda, Burundi and DRC. The general shift in trade to the East (China and India) is likely to be beneficial to Tanzanian sea ports in the form of increasing demand. DSM port will be well positioned to serve as an import/export hub for all types of cargo, so long as

it can compete on capacity and port performance with other East African hubs. In this case, this study wants to analyze the effects of cargo handling factors to port performance.

1.2 Statement of the Problem

Cargo handling plays a key role in the port performance and subsequently in economic growth and development. This is due to the fact that, large percent of trade in Africa and the rest of the world are handled in ports. Thus, the importance of ensuring efficiency in cargo handling in the ports is related to the ability to adapt efficiency in order in to meet the ever changing and developing needs of industry. Tanzania as a point of reference, the contribution of cargo handling in port performance have inadequately researched and documented. However, the little knowledge which is available suggests the needs to undertake the study of this kind.

Vessletracker (2012) shows that cargo clearance at Dar es Salaam port is a serious problem. While UNCTAD (2012) noted that internationally should take between two to three days to clear the cargo, but in Tanzania it takes between ten to seventeen days for customers to clear their local imports and transit imports through Dar es Salaam port (Vessletracker, 2012). Generally, all of these shows there is a problem to be addressed. Therefore, this study set out to analyze the effect of cargo handling factors on port performance in Tanzania.

1.3 General Objective

The general objective of this study is to analyze the effects of cargo handling factors to port performance in Tanzania.

1.4 Specific Objectives

- (i) To examine the effects of bureaucracy in cargo handling to port performance
- (ii) To examine the influence of cargo handling equipment in the port performance.

1.4.1 Research Questions

- (i) What are the effects of bureaucracy in cargo handling and port performance?
- (ii) What is the influence of cargo handling equipments in the port performance?

1.5 Significance of the Study

This study aimed at adding on available knowledge in the effects of cargo handling to port performance. Likewise, findings from the study are expected to inflict an increasingly interest and importance to Tanzania Ports Authority (TPA) on its new expansion strategy on building new ports and upgrading an existing ones and for achieving higher levels of competitiveness, where specifically, it's now about to install a new port at Bagamoyo, Pwani and upgrading Ports of Dar es Salaam, Tanga and Mtwara to suit International competition.

The study is also important in that it will divulge valuable information that can help various stakeholders and the public in general to find amicable solutions to improvement of the port services and consequently lead to more revenue to the government and improved port services such as expedited delivery services to the users of the Port (the public). The study is envisaged to divulge important information for academic succession, whereby new ideas will be poured out and will be used as a cornerstone for other similar studies.

1.6 Scope of the Study

This study focuses on the effects of cargo handling factors to port performance, specifically; the study is also aimed to examine the effects of bureaucracy in cargo handling and port performance. Additional to that the study will also analyze the contribution of cargo handling equipment to port performance. Nonetheless, the study will also focus on performance measurement that can be used by port managers in improving cargo handling and raises economic growth and development.

1.7 Organization of the Study

This study organized in three chapters. Chapter one introduces the problem, background of the problem, statement of the problem, objective of the study and significance of the study. Generally, this section will cover the reasons why this study is relevant at this moment. Chapter two will present literature review and theoretical framework. The section will try to search for available knowledge in the similar topic, (what other has written about the topic). Among other things here research gaps will be established. Chapter three will present the research methodology for this study. The section covered issues like research design, study area, population of the study, sampling procedure, sample size, method of data collection, reliability and validity of the data and ethical consideration in this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this section was to review the literature related to the research topic proposed by the study. In so doing, the review was organized according to the specific objectives essentially to ensure significance to the research problem. Notwithstanding, the review aimed to eliminate duplication of what has been done and provide a clear understanding of existing knowledge base in the problem area. The literature review is based on authoritative, recent, and original sources such as journals, books, thesis and dissertations. The literature review also clarifies the variables, gives insights on how they have been studied previously, the methodologies used, and it leads to the knowledge gap and enables a conceptual framework to be developed. It also provides the theoretical underpinnings of the study. In this case, the themes of this section is presented by the following title and sub-titles.

2.2 Concepts and Definitions

2.2.1 Cargo and Cargo Handling

As used in this study cargo refers in particular to goods or produced being conveyed generally for commercial gain either by ship, boat or aircraft (Jean-Francois et al, 2015). Nonetheless, the term is now often extended to cover all types of freight including that carried by train, van, truck and intermodal container. On the other hand, the term is also used in case of goods in the cold chain, because the perishable

inventory is always in transit towards a final end use, even when it is held in cold storage or other similar climate controlled facility. On the other hand Cambridge Dictionaries online define cargo handling as an activity of moving goods on and off ships, planes, trucks (Cambridge University Press 2015). This implies Multi-modal container units, designed as reusable carriers to facilitate unit load handling of the goods contained, are also referred to as cargo, especially by shipping lines and logistics operators.

2.2.2 Bureaucracy

Bureaucracy is the administrative structure and set of regulations in place to control (rationalize, render effective and professionalize) activities, usually in large organizations and government. Its efficiency is a function of the environment in which it operates. The word "bureaucracy" stems from the word "bureau", used from the early 18th century in Western Europe to refer to an office, i.e., a workplace, where officials worked. The original French meaning of the word bureau was the baize used to cover desks. The term bureaucracy came into use shortly before the French Revolution of 1789 and from there rapidly spread to other countries. The Greek suffix - kratia or kratos - means "power" or "rule". Ideally, bureaucracy is characterized by hierarchical authority relations, defined spheres of competence subject to impersonal rules, recruitment by competence, and fixed salaries (Panagiotis, 1966).

However, as an organization structure, bureaucracy is made up of many departments and divisions that are administered by lots of people. Currently, bureaucracy has a bad reputation because it has come to mean an organization or government that is

chin-deep in red tape and unnecessary procedures. When dealing with a bureaucracy, expect to fill out lots of forms and wait.

2.2.3 Port Performance

Performance is the normal way to handle internal and external pressures, by monitoring and benchmarking a company's production. Productivity and efficiency are the two important concepts in this regard and are frequently utilized to measure performance. Unfortunately, over the last ten years or so, these two similar but different concepts have been used interchangeably by various commentators (Coelli et al, 1998). Performance measurement plays an important role in the development of a company (or firm).

As a result, all ports, without exception, use a variety of methods to examine their performance. It is clear shown that, ports are essentially providers of service activities, in particular for vessels, cargo and inland transport. As such, it is possible that a port may provide sound service to vessel operators on the one hand and unsatisfactory service to cargo or inland transport operators on the other.

Therefore, port performance cannot normally be assessed on the basis of a single value or measure. The multiple indicators of port performance can be found in the example of the Australian port industry (Talley, 1994). The indicators are selected from the perspective of the stevedore, the shipping line and the port authority (or port management). Evaluations are made by comparing indicator values for a given port over time as well as across ports for a given time period.

2.3 Theoretical Literature

2.3.1 The Balanced Scorecard

It is common knowledge that cargo handling is essentially to port performance. Nonetheless, it is also essential to measure the performance outputs and take relevant action which based in desired results not materialize. Regular performance reviews will certainly assist to the analysis of the effects of cargo handling factors to port performance. In so doing, the balance scorecard theory can help to provide relevant explanation and predict future performance associated to cargo handling to port performance.

Balance scorecard is theory of performance measurements. It was developed by Robert S. Kaplan and David P. Norton in 1995. The theory is useful in studying or explaining the phenomenon whose central focuses is value creation such as cargo handling to port performance. Subsequently in logistic and supply chain management. The theory highlights the measurement for driving performance improvements. As argued by a prominent British scientist, Lord Kelvin that “If you cannot measure it, you cannot improve it”.

As defined by Kaplan and Norton (1996), “the Balanced Scorecard translates an organization’s mission and strategy into a comprehensive set of performance measures that provides the framework for a strategic measurement and management system”. This strategic management system measures organizational performance in four ‘balanced’ perspectives such as financial like the readily measurable economic consequences of actions already taken; customer which contains measures that identify the customer and market segments in which the business unit will compete

and the measures of the business unit's performance in these targeted segments. Other include internal business process which measures the critical internal processes in which the organization must excel and learning and growth which measures the infrastructure that the organization must build to create long-term growth and improvement.

Noticeably, the communication of the Balanced Scorecard's Strategic objectives and measures encourages dialogue between business units and amongst the different levels of management. This process enables the organization to plan and set targets through benchmarking, identify mechanisms and provide resources to achieve these targets by focusing on continuous improvement, re-engineering and transformation programs and by establishing short term objectives for financial and non-financial measures on the Scorecard.

2.3.2 Queueing Theory

Large numbers of ports are facing some challenges related to cargo handling especially delay in cargo clearance. It is assumed that this delay leads to port congestions. In so doing queue theory can best explain the impact of this delay through its concepts such as waiting line and its impacts to service provision and delivery. Queueing theory is the mathematical study of waiting lines, or queues. In queueing theory a model is constructed so that queue lengths and waiting time can be predicted. The Theory has its origins in research by Agner Krarup Erlang in 1909 when he created models to describe the Copenhagen telephone exchange. János (2012) explain that Queueing theory deals with one of the most unpleasant experiences of life, waiting and queueing is quite common in many fields.

According to him queueing theory were raised by calls and Erlang who was the first who treated congestion problems in the beginning of 20th century by using queueing theory.

The theory also can be used performance measurements. To characterize a queueing system we have to identify the probabilistic properties of the incoming flow of requests, service times and service disciplines (János, 2012). The arrival process can be characterized by the distribution of the interarrival times of the customers, denoted by $A(t)$, that is:

$$A(t) = P(\text{interarrival time} < t).$$

In queueing theory these interarrival times are usually assumed to be independent and identically distributed random variables. The other random variable is the service time, sometimes it is called service request, work. Its distribution function is denoted by $B(x)$, that is:

$$B(x) = P(\text{service time} < x).$$

The theory shows that the service times, and interarrival times are commonly supposed to be independent random variables. The theory continue to explain that the structure of service and service discipline tell us the number of servers, the capacity of the system, that is the maximum number of customers staying in the system including the ones being under service (János, 2012). The service discipline determines the rule according to the next customer is selected. The most commonly used laws are FIFO - First In First Out: who comes earlier leaves earlier; LIFO - Last

Come First Out: who comes later leaves earlier; RS - Random Service: the customer is selected randomly and priority.

It is important to note here that, the aim of all investigations in queueing theory is to get the main performance measures of the system which are the probabilistic properties that is distribution function, density function, mean, variance of the following random variables: number of customers in the system, number of waiting customers, utilization of the server/s, response time of a customer, waiting time of a customer, idle time of the server, busy time of a server (János, 2012). Of course, the answers heavily depend on the assumptions concerning the distribution of interarrival times, service times, and number of servers, capacity and service discipline. It is quite rare, except for elementary or Markovian systems, that the distributions can be computed. Usually their mean or transforms can be calculated (János, 2012).

2.3.3 An Economic Model of a Port

Another theoretical explanation to port performance and the problem related to cargo handling in an economic model of a port that developed by Wayne K in 2007. A port's economic production function represents the relationship between the port's maximum throughput and given levels of its productive resources, that is:

Maximum Port Throughput = f (port Productive Resources)

where throughput may be the number of containers (measured in 20-foot equivalent units or TEUs) or tons of cargo handled and port productive resources include labor, immobile capital (e.g. berths and buildings), mobile capital (e.g. cranes and

vehicles), fuel and ways (e.g. port roadways and railways). If the port achieves the maximum throughput for given levels of its resources, then it is technically efficient; otherwise it is technically inefficient (Wayne K in 2007).

The theory is useful in explaining port evaluation performance that can help to solve several challenges to port operations including port congestion. The theory stress on the production capacity (or optimum throughput) of a port which has been classified as: (a) design capacity, (b) preferred capacity and (c) practical capacity (Chadwin, Pope, & Talley, 1990). A port's design capacity is its maximum utilization rate. For example, the design capacity of the storage area of a container port is the maximum number of containers that can physically be stored in the area. A port's preferred capacity is the utilization rate beyond which certain utilization characteristics or requirements cannot be obtained, e.g. the utilization rate beyond which port congestion occurs. The model continue to explain that port congestion at the gate of a container port occurs when the waiting times for trucks to enter the gate increase beyond normal waiting times due to the increase in the number of trucks seeking entrance. A port's practical capacity is its maximum utilization rate under normal or realistic conditions. For example, the practical capacity for a container port's shipside crane is the maximum number of containers that the crane is expected to load and unload from a ship per hour under normal working conditions.

2.4 Empirical Literature

2.4.1 Empirical Literature Review Worldwide

Jean-Francois et al (2012) have studied the role of cargo handling to port performance. Their main concern was why cargo spends weeks in Sub-Saharan

African ports. Their findings suggest that there is a problem of cargo handling in many of the African ports. In fact, their findings influence the will to undertake the study of this kind as they noted that; the case of cargo dwell times is an illustration of a more general problem in African port developments. Most, if not all, the binding constraints to grow such infrastructure are the result of an equilibrium in which certain actors cause of problem. One of the resulting problems is the delay in cargo clearance.

According to them, the process of cargo clearance in its international standards should take three to four days. But this is not in case of African port where the processes take 15 days to three week. Their assumption is dwell time and clearance time is a major commercial instrument used to attract cargo and revenues. There has major concern worldwide about the role of cargo handling to port performance. In so doing several researchers, author and organization have attempted to research about this topic. One among them is Rigout (2012), in his study on the effect of container terminal concessions on port performance; analyzed the way cargo handling contributes to port performance. In a similar manner De Langen et al, (2007) explain that the backbone of ports is cargo handling. His study continues to note that the port performance indicators that focus on the cargo-handling product are very important to analyze. The study provides three possible indicators concerning cargo-handling products.

However, it is noted that Port throughput is the most widely used in the port industry since it can be measured uniformly. Also, port throughput, to a large extent, is a determinant for the other port performance indicators. For example, the size of

logistics space depends on port throughput volumes. If a port has higher throughput volumes, the logistics capacity has to increase with the throughput volumes.

According to him, this also applies for the value added generated in the ports and the port related employment. Other potential indicators can be found in Chung's division of indicators (Rigout, 2012). He states that to evaluate the operational performance, the ship turn-around time is a good indicator. However the ship turn-around time does, in its basic form, not mean much. The vessels' length of stay depends on the volume of the cargo, the available facilities and the composition of the cargo (Chung, 1993). Tonnage handled per ship day or ship hour is obtained by dividing the port throughput measured in tonnages by the total number of hours that the vessels are in the port. Chung furthermore states that the asset performance is influenced by the total port throughput: generally this is measured as total throughput divided by the meters of quay or number of berths. To make the financial performances comparable with other ports, they are stated relatively, meaning in ratio to the port throughput. In general, the other port indicators are (indirectly) determined by port throughput.

Likewise, the literature by Talley (2007) provides important information about cargo handling to port performance worldwide. The study assumes that performance indicators are choice variables for optimizing the port's economic objective. As noted by Tongzon (1995) using port throughput as port performance is based on the assumption that ports try to maximize throughput. Traditionally the performance of ports has been evaluated by comparing the actual throughput with its optimum throughput (Talley, 2007). However, "if performance indicator standards are

unknown, a port's performance can be evaluated just by knowing the actual values of its performance indicators”.

UNCTAD (2012) have also discussed about cargo handling to port performance worldwide. Their assumption is cargo handling plays a key role in the port performance and subsequently in economy and development. The study continues to note worldwide large percent of trade is handled in ports. This implies that cargo handling through port is the most efficient way in logistics and transportation. In a similar manner Song et al (2013) have also studied about the factors influences port performance.

The findings of his study suggest that berth utilization, frequency with which shipping lines call at a port, geographical location of a port and economic activities of a port hinterlands influences performance of a port. Though this study agrees with him on the above outlined factors, his analysis has not considered the importance or contribution of cargo handling factors to port performance. The assumption is business environment around ports have changed rapidly competition among port has become intense. In this case, this study aimed at analyzing the contribution of cargo handling to port performance because.

Therefore, the summary derived from above empirical literature review worldwide shows that cargo handling is the backbone of port. Hence, its performance indicators is determined by the following performance indicators such as the size of logistics space on port throughput volumes, the port related employment, the operational performance and the ship turn-around time is a good indicator. Others include

vessels' length of stay, the available facilities and the composition of the cargo and the tonnage handled per ship day or ship hour is obtained.

2.4.2 Empirical Literature Review in Africa

Africa like many other continents its economy and development is very much depends on port. The evidence from literature by UNCTAD, (2012) suggests that large percent of trade in Africa and the rest of the world are handled in ports. In this case it is important to note that ensuring efficiency in cargo handling in the ports is necessary condition in order to meet the ever changing and developing needs of industry in Africa. In fact UNCTAD proceed with the assumption that port should be treated as an important factor in economic and development.

However, their study suggest for improving efficiency in cargo handling as a necessary conditions in improving the port performance. Therefore, similar to the role of cargo handling to port performance worldwide, it seems also the backbone of port in Africa is cargo handling. Another study by African Development Bank (2010) explained about the contribution of cargo handling to port performance. The study suggests that approximately 80 percent of world merchandise trade carried by ships, maritime transport remains by far the most common mode of international freight transport.

It is the backbone to facilitating international trade, offering the most economical and reliable way to move goods over long distances. Ships can carry large volumes of merchandise and use free highways in the seas, which only require infrastructure investments at the seaports. This implies that like any other continent in the world

Africa is also in the position to improve economic and development because of cargo handling via marine transportation

Contrary western European port, the study by ADB (2010) highlighting several weaknesses facing Africa port. It is generally recognized that the African continent lacks natural ports, while its artificial seaports have been poorly developed (UNCTAD, 1999; Wood, 2004; Hoyle, 1999). African ports became more congested following the rise in GDP growth and levels of global trade witnessed in most African countries in the years leading up to the global financial crisis of 2008. Indeed, over the last decade, the amount of cargo transiting through Africa's ports has tripled, but containerization is still low and the inland transportation linkages remain weak (World Bank, 2009). Nonetheless, as discussed in this and the following chapters, governments are now demonstrating the political will necessary to confront this challenge, in a drive to improve port and other infrastructure. It is evident that, several ports have introduced, or renovated, container and cargo transshipment and bulk terminal (for coal, oil, food and mineral) facilities. This has greatly improved port performance and efficiency, for example in Egypt following the regulatory reforms of 2000.

World Bank (2009) also added knowledge towards the role of cargo handling to port performance. However, the study went beyond cargo handling by identifying several factors necessary in the improvement of port performance. All in all, they have identified that shipping container and cargo handling is important measures of economic health. The study noted that during the decade 1995–2005, cargo shipping through maritime grew substantially, reflecting the expansion of world trade and

rapid economic growth in the developing world. Nonetheless, like other studies the study has outlined several challenges facing various ports in Africa. They include outdated, inefficient ports acted as a brake on burgeoning trade. Actually, the study suggests that they will continue to do so unless port capacity and efficiency can be improved.

On the other hand, noted that Sub-Saharan Africa has a proliferation of ports, few of which are large by world standards. Most are poorly equipped and operate at low levels of productivity. Few are capable of handling the largest of the current generation of ships, and they are generally unprepared for the dramatic changes in trade and shipping patterns that are now occurring. While they are moving slowly from publicly owned service ports to so-called landlord port structures, often with embedded container-terminal concessions, they are still behind other regions in the development of modern port-management structures. Additional momentum for modernization is coming from the growing presence of global shipping lines and international terminal operators in African ports.

All the same, World Bank (2009) noted that in North Africa, the situation is better, but there is still a lot to be done. Outside the advanced ports of Morocco and Egypt, traditional challenges remain boosting capacity in line with demand, modernizing port facilities, and adopting the new generation landlord port model, which entails greater private sector participation. actually, the study was based on a detailed review of maritime ports in 26 countries of Sub-Saharan Africa and 5 countries in North Africa, encompassing traffic development, institutional and regulatory frameworks, infrastructure development and investment, performance cost and quality, and

security arrangements. In Sub-Saharan Africa, the ports are grouped into three maritime trading regions: East Africa, southern Africa, and West Africa. Two important cargo modes container traffic and general cargo are emphasized. We also look at the development of dry and wet bulk cargo traffic. General cargo constitutes a mix of non-bulk cargo types among them palletized, break-bulk, and bagged.

2.4.3 Empirical Literature Review in Tanzania

Several authors in Tanzania have also studied about the topic under study. However, their findings suggest the need to undertake more studies on the same topic. It is noted that while in developed world and some other countries in Africa have recognize the need to efficiency and improve performance for their ports, Tanzania is still lagged behind with several problems in her ports. This is manifested in several researches attempted to examine the role of cargo handling and port performance. This section starts with Kiwanuka (2013). Kiwanuka used a case study approach to analyze the effects of cargo handling to port performance. His findings show that there is a problem in cargo handling especially in the port of Dar es Salaam. Among the greatest problem identified are cargo clearances. The study continues to note that in the port of Dar es Salaam it takes between ten to fifteen days for one to clear the cargo. He identified that several countries which were served their cargo to Dar es Salaam port were now shifted to Mombasa. This is different from port in Western countries, as noted by UNCTAD (2012) that at international standard cargo clearance should take between two to three days.

In a similar manner Bijanda (2013) also has studied about the port performance. Her study was interested to investigate the effectiveness of container handling in

Tanzania port. Like Kiwanuka, she also discovered that container handling in Tanzania port is also a problem. Although both their findings have used as a baseline to this study, but they offered inadequate information towards understand the problem under study. First of all no information have been provided as to why cargo clearance take long time compared to other port in the world. Second, their studies have not researched on the effects of bureaucracy in cargo clearance subsequently port performance. On the other hand, they have detailed a number of indicators determinant to port performance while cargo handling has given little attention.

Nevertheless, the URT, (2012) made an assessment of Tanzania's Ports in the Regional Economic Environment. The overall study objective was to critically examine the key challenges facing Tanzania's ports and logistics infrastructure, and the collective implications of these for trade in the East African regions served by those ports. The specific objective is to propose recommendations to inform the policy debate on strategies to improve connectivity of African countries to regional and global markets with the aim to boost trade and, in turn, contribute to the economic development process. The study assesses thereby the geographical situation of Tanzania's ports in the wider economic environment and the role they can play in the economic development of an area or region.

Like, other studies conducted in the country, still the study by URT, (1012) strengthen the will to undertake the research on cargo handling to port performance. Despite the analysis from the government study aimed at providing solution still there are several challenges need to be addressed. The study by Kiwanuka (2013) shows several countries such as Rwanda, Burundi and Congo withdraw from serving

in Tanzania port. This shows there is a problem which needs to be addressed. Actually, the necessity to undertake study of this kind also influenced with the fact that East Africa as defined as Tanzania and neighboring countries consist of some 168 million people, a combined GDP of \$83 billion and an annual volume of trade exceeding \$27 billion. The main seaports in this region are Mombasa and Dar es Salaam. Both provide vital access to world markets for this region and thus their roles are not only important to the national interest but are also crucial for neighboring states which depend on Tanzanian ports for their international trade. Tanzania has the opportunity to become a vital International Hub for landlocked countries such as Uganda, Rwanda, Burundi and DRC. The general shift in trade to the East (China and India) is likely to be beneficial to Tanzanian sea ports in the form of increasing demand. DSM port will be well positioned to serve as an import/export hub for all types of cargo, so long as it can compete on capacity and port performance with other East African hubs.

Table 2.1: Summary from Literature Review

Variable Factor	Country	Methodology	Key Findings	Author
port performance		Quantitative	Cargo handling the ship turn-around time. The vessels' length of stay	Rigout (2012)
Port performance		Quantitative	Cargo handling Port throughput Size of logistic space Port related employment	De Langen et al, (2007)
Port performance	China	Quantitative	Cargo handling equipment's Tonnage handled per ship day port throughput number of berths financial performances comparable	(Chung, 1993)

			with other ports,	
Port performance		Quantitative	Cargo handling factors Berth utilization Frequency of shipping lines call at a port Geographical location of a port Financial resources	Song et al (2013)
Port performance	Africa	Quantitative	Efficiency in cargo handling influencing port performance Measured by Financial performance	UNCTAD (2012)
Port performance	Africa	Quantitative	Influenced by Cargo handling because -80% of world merchandise trade carried by ships -Maritime transport remains the most common mode of international freight transport Volume of cargo Lack of natural ports Its financial performance Overcapacity Political will	African Development Bank (2010)
Port performance	Africa	Quantitative	•Its financial performance Growth in containerization Poor cargo handling equipment's Type of ships call at a port	World Bank (2009)
Port performance	Tanzania	Quantitative	Delay in cargo clearance Problem in cargo handling	Kiwanuka (2013)
Port performance	Tanzania	Quantitative	cargo handling facilities	Bijanda (2013)

Source: Field data 2015

2.5 Research Gap

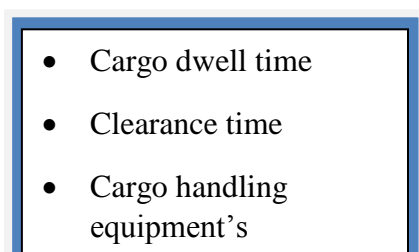
Following a critical review conducted for this study several gaps and inadequacies were identified. First, of all the literature in Tanzania were able to shows several problems facing Tanzania ports, but they have not explain the causes. For instance it has been identified that cargo clearance take more than fifteen days while at international standard the process supposed to be between two to three days. But there is no explanation to this delay, and recently some countries such as Rwanda, Burundi and Congo shifted to Mombasa port. Second, the reviewed literature has not discussed the effect of bureaucracy in cargo handling and port performance. The assumption of this study is that the delay in cargo clearance is partly influenced by the problem in bureaucracy. Finally, the studies have not discussed role of cargo handling equipment in the port performance. Generally, the contribution of cargo handling to port performance in Tanzania has given little attention. Therefore, the aim of this study is make analysis on the effects of cargo handling factors to port performance in order to that knowledge gap in Tanzania.

1.6 Conceptual Framework

In this study port performance is influenced by the cargo handling, bureaucracy in cargo handling and cargo handling equipment (technology). Therefore, port performance is dependent variable and such its efficiency depends on the other independent variable as mentioned above.

Independent variable

Factors



Dependent variable

Effect

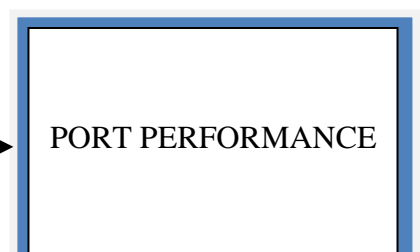


Figure 2.1: Conceptual Framework**2.6.1 Theoretical Framework**

This study applied Queuing theory in making an analysis to the effect of cargo handling factors to port performance. Queuing theory has its origins in research by Agner Krarup Erlang in 1920. Queuing theory is the mathematical study of waiting lines, or queues (Ivo and Jacques, 2015). Providing too much service involves excessive costs. And not providing enough service capacity causes the waiting line to become excessively long. The ultimate goal is to achieve an economic balance between the cost of service and the cost associated with the waiting for that service. Queuing theory is the study of waiting in all these various guises (Jin, 2009). In queuing theory a model is constructed so that queue lengths and waiting time can be predicted.

The reasons for using this theory are many; first, the theory is capable in capturing the information's related to the research objectives and subsequently research questions. For instance the concept of waiting line captures very well the problem of delay in cargo clearance. This delay influences the increases of customers in line which influence the length of the queue. It important also to note that, queue theory is also a theory of decision making. The decisions of customers in seeking services determined by the length of queue in waiting line; whether to get service or not will depends on the available alternatives. For instance, Kiwanuka (2013) noted that, due

to problem in cargo clearance at the port of Dar es Salaam, Rwanda, Burundi and Congo had once shifted to Mombasa port because of waiting lines caused by delay in cargo clearance at the port. This is due to the fact that, the principle prerequisite of queuing theory is the first in the first out.

Second, the use of queue theory influences by other studies, researcher and literatures which has used the theory to study the related topics. For instance, Oyatoye E.O. (2011) has used the theory to study the problem of port congestion in order to enhance sustainable development of Nigeria ports. He noted that Nigeria Ports are characterized with incessant congestion problem in the recent past. This has resulted in diversion of ships scheduled for Nigeria Ports to other neighboring country ports which has caused the country to lose a lot of revenue. The effectiveness of a Port is contingent upon loading and unloading of ships. The traffic movement through a port is a complex phenomenon because of the random nature of the arrival and service time of the ships. Queuing model was applied to the arrival and services pattern which causes the problems of congestion and proffer solutions to the problem areas.

It is important to note that, port congestion usually happens when there is a delay in cargo clearance. This situation increases the length of waiting lines because the principle of service deliver is first in first out.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section discusses the research methodology. The chapter outlines the whole research process, from the design of the study, sampling framework, methods data collection and data analysis. Therefore research methodology presents the model for conducting the entire research.

3.2 Research Paradigms

According to Wahyuni, (2012) there are set of fundamental beliefs (assumptions) that offers philosophical dimension guiding the social sciences. It offers basic belief system or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways. As noted by Tashakkori and Teddlie (1998), the choices towards what paradigm to apply depend on the ontological and epistemological nature of the study. However, this study takes the stand of the Interpretivist Philosophy. Methodologically, interpretive approaches rely heavily on naturalistic methods (interviewing and observation and analysis of existing texts). These methods ensure an adequate dialog between the researchers and those with whom they interact in order to collaboratively construct a meaningful

reality. Generally, meanings are emergent from the research process. Typically, qualitative methods are used.

3.2 Research Design

As documented by Brown et al. (2003), research design provides the glue that holds the research project together. A design is used to structure the research, to show how all of the major parts of the project, which include the samples or groups, measures, treatments or programs, and methods of assignment that work together try to address the central research questions. Generally, this study opted for exploratory research design to analyze the effects of cargo handling to port performance. The rationale of using this design was that the problem has not been clearly defined. It often occurs before we know enough to make conceptual distinctions or posit an explanatory relationship. Exploratory research helps determine the best research design, data collection method and selection of subjects. It should draw definitive conclusions only with extreme caution Baby (2007) and Rangarjan, (2013).

This study was qualitative in nature. According to Creswell (1994), a qualitative study is defined as an inquiry process of understanding a problem or an event, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting. In a similar manner, Bogdan and Biklen (1998), qualitative research places emphasis on understanding through looking closely at people's words, actions and records. This approach was used in order to capture what people understand about the effects of cargo handling to port performance, words that they associated with it and the way the problem can be

improved. Therefore, qualitative inquiry is capable in exploring people's attitudes, opinion and perception about cargo handling and port performance.

3.3 Study Area

The study area was Tanzania Port Authority in Dar es Salaam region. Dar es Salaam Port is the largest Port in Tanzania and an important port in for the land-locked countries of the southern African region. According to the International Association of Ports and Harbors, it is the fourth largest port the African Continent's Indian Ocean coastline after Durban, Mombasa and Maputo (Mapunda, 2014).

3.4 Population of the Study

The study population for this study included TPA staffs, port managers, port customers and customer department. The Dar es Salaam port has a total of 800 hundred staffs. However, the study interviewed almost 41 respondents out of 800 (see 3.6 for more justification). The criteria for recruitment were base on knowledge of cargo handling, and being employed by Tanzania port authority. Additional to that researcher got assistant from port manager in recruiting port customers. This population provides relevant answers to research questions and subsequently research objectives.

3.5 Sampling Techniques

This study opted for purposive sampling techniques to analyze the topic under study. This because the study wants to recruit people who are knowledgeable with issues related to port operation and management. In qualitative research sample selection has a profound effect on the ultimate quality of the research (Coyne, 1997).

3.6 Sample Size

Samples for qualitative studies are generally much smaller than those used in quantitative studies. Ritchie, Lewis and Elam (2003) provide reasons for this. There is a point of diminishing return to a qualitative sample as the study goes on more data does not necessarily lead to more information. This is because one occurrence of a piece of data, or a code, is all that is necessary to ensure that it becomes part of the analysis framework. Frequencies are rarely important in qualitative research, as one occurrence of the data is potentially as useful as many in understanding the process behind a topic. This is because qualitative research is concerned with meaning and not making generalized hypothesis statements (Crouch and McKenzie, 2006). Finally, because qualitative research is very labor intensive, analyzing a large sample can be time consuming and often simply impractical.

Within any research area, different participants can have diverse opinions. Qualitative samples must be large enough to assure that most or all of the perceptions that might be important are uncovered, but at the same time if the sample is too large data becomes repetitive and, eventually, superfluous. If a researcher remains faithful to the principles of qualitative research, sample size in the majority of qualitative studies should generally follow the concept of saturation (Glaser and Strauss, 1967) when the collection of new data does not shed any further light on the issue under investigation. Therefore, a total number of 41 key informants were interviewed, the categories and criteria has described in the Table 3.1.

Table 3.1: Sampling Frame

Types of Group	No. of key Informant	Recruited	Sampling Techniques
Port customers	15	15	Purposive
Customer department	5	5	Purposive
Port staffs	20	20	Purposive
Port manager	1	1	Purposive
Total	41	41	

Source: Field Data (2015)

3.7 Method of Data Collection

3.7.1 In-depth Interview

An in-depth interview is a qualitative research technique conducted in a form of conversation/discussion between researcher and respondent (person to person discussion) with the purpose of exploring issues or topics in great detail (Babbie, 2010). The interviewer encourages participants to freely discuss their feelings and opinions, and probes on questions to gain insight and depth to responses. This type of interview is often unstructured. Therefore it permits the interviewer to encourage participants to talk at length about the study topic, hence to increase insight into people's thoughts, feelings, and behaviors.

3.7.2 Documentary Review

In this study the documentary review was used as a source of secondary data and creates the foundations of research gap for this study. Several documents are reviewed ever since it is impossible to review all of them. The review involves reports carried out by individuals and organizations on the problem understudy. The

purpose is to generate concepts and theoretical knowledge available and to prepare research instrument and field observation.

3.7.3 Observation

This study was also use observation as method of data collection. This was in the form of non-participant observation. In this method researcher observed issues related to container handling, space available of shipping and other services that can be seen and interpreted. Form this method, the study noted because of delay in cargo clearance, Dar es Salaam resulted to the problem of port congestion, shortage in cargo storage spaces and the length of customers waiting line.

3.8 Reliability and Validity of Data

This study observed all scientific research requirements in terms of reliability and validity of the data. In fact, the principles of validity and reliability are fundamental cornerstones of the scientific method (Kothari, 2004). Together, they are at the core of what is accepted as scientific proof, by scientist and philosopher alike. The idea behind reliability is that any significant results must be more than a one-off finding and be inherently repeatable. Other researchers must be able to perform exactly the same experiment, under the same conditions and generate the same results (Kothari, 2004).

This was reinforcing the findings and ensured that the wider scientific community was accepting the data. In case of validity, the study was ensure the entire data collected, concept and establishes whether the results obtained meet all of the

requirements of the scientific research method. However, the study undergone the reliability test that is the Cronbach's test and the result was 0.7 which is very good rate as far as the software is concern.

3.9 Data Processing and Analysis

The intermediate stage of data collection is data processing and analysis which implies the task of classification, coding, and tabulation (Kothari, 2004). This study uses content analysis to get descriptive statistics; the use of frequency table, and percentages.

3.10 Ethical Implications

The researcher considered every requirement of research ethics to establish trust with the participants and to respect them as autonomous beings, thus enabling them to make sound decisions (Bush and Grove, 2003). Ethical measures are as important ensuring the validity and reliability of the data collected. Other ethics to be considered informant consent, confidentiality, anonymity, privacy, dissemination of results, by ensuring the respondents that, the information provided were going to be used in research purpose only, and the respondents have the right to withdraw from the study partially or completely.

CHAPTER FOUR

RESEARCH FINDINGS

4.1 Introduction

The purpose of this study was to analyze the effects of cargo handling factors to port performance. In so doing, the section is based in two research objectives as indicated in chapter one answering the following two key research questions which are (i) what is the effects of bureaucracy in cargo handling and port performance (ii) what is the influence of cargo handling equipment to port performance?

In order to find answers to these research questions, the study utilized qualitative research techniques and methods in collecting the information related to research objectives. The findings was be presented basing on participant opinion, attitudes and perceptions about the topic understudy. This will be shown more in informant's quotations rather than percentage, table and graphs because the dominant methods during the process of data collection were interview and observation. However, only

on respondent characteristics some percentage, table and graphs will be shown and discussed. The study covered all important departments of Dar es Salaam port. In this case, the finding of this study is arranged on the following theme and sub-themes.

4.2 Characteristics of Key Informants

4.2.1 Age of the Respondents

In this study the analysis of age composition revealed that the age of respondents range between 26 and 50 plus. According to Table 4.1, about 31.7% percent of the total population belongs to the age group of 31-35 and 29.3% follow to the age 36 – 40. On the other hand, about 22.0% of respondents fall in the age of 50+ and 17.1% only belong to the age of 26 – 30.

Table 4.1: Age of the Respondents

Age Group	Frequency	Percentage
26 – 30	7	17.1%
31 – 35	13	31.7%
36 – 40	12	29.3%
50+	9	22.0%
TOTAL	41	100

Source: Field Data (2015)

As noted in Table 4.1, it implies that Dar es Salaam port still has energetic labor force and at the same time it implies that majority of respondents have at least length of time to work at the port. Table 4.1 which show the age distribution of respondents.

If we assume that age determine the ability of someone to work, then Dar es Salaam port has human resources that if invested heavily can contribute in the increasing efficiency of port performance.

4.2.2 Gender of the Respondents

Looking at Table 4.2, one finds that 80.5% percent of the respondents who participated in this study were male and the rest percent of the respondents were female. The reason for high number of male than female was due to the fact that manual activities related cargo are traditionally regarded as men's work (oriented).

Table 4.2: Respondent Gender

Gender	Frequency	Percent
Male	33	80.5%
Female	8	19.5%
TOTAL	41	100

Source: Field Data (2015)

Employment opportunities in many organization and institutions seem to be dominated by male. Perhaps this should be considered as an historical phenomenon where during colonialism it is men whom given first priority in acquiring formal education compared to female. It follows that, though most countries successful attained political independence but still the impacts of colonialism continue to affect gender issues in most of African countries and Tanzania in particularly. In fact, Table 4.2 which is the gender distribution, where '1' represents male and '2' stands for female. If we assumed that the number of men and women were normally distributed from 1 to 2 (continuously) then the mean distribution point, according to

the frequency of men and women would fall on 1.20. In other words, as 2 have not been reached, the asymmetrical point of distribution is within men region.

4.2.3 Education Level of the Respondents

It is common knowledge that education provides people with knowledge and skills that can lead to a better life. It is noted that, education is a key determinant of the lifestyle and status an individual enjoy in the society. In this case, this study categorized the respondent education into four main groups as indicated in Table 4.3. However, the high percentage of respondent with bachelor degree can be attributed to the growing concern over the importance of higher education in social and economic development in contemporary Tanzania. Various higher learning institutions are increased and the establishment of higher student loans board can also be attributed with this high level of respondents with bachelor degree. For instance, the study revealed that only 17.1% attained certificate level while about 29.3% of respondent attained a port graduate diploma and almost 39.0% of respondents attained a bachelor degree while 14.6% of respondents attained a master's level of education. This implies that the country has knowledgeable and skilled people to participate in social and economic development.

Table 4.3: Percentage Distribution of Education of Respondents

Education Level	Frequency	Percent
Postgraduate Diploma	12	29.3%
Bachelor degree	16	39.0%
Certificate	7	17.1%
Master's Degree	6	14.6%

TOTAL	41	100.0
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Source: Field Data (2015)

The information provided in the Table 4.3 indicates that at least large percent of human resources in Dar es Salaam port attended higher learning institutions. This means that majorities have basic knowledge on various filed related to port activities. Therefore, Table 4.3 which is education level of respondents, where ‘1’ represents postgraduate diploma, 2 is Bachelor degree, 3 is Certificate and forth Master’s degree. If we assumed that the number of respondents attained education were normally distributed from 1 to 2 (continuously) then the mean distribution point, according to the frequency of men and women would fall on 1.17.

4.3 Description of the Study Area

This study conducted at Dar es Salaam port. The port is the major port in Tanzania which located in Temeke District. It is noted that Dar es Salaam port is serving the Tanzania hinterland and the landlocked countries of Malawi, Zambia, Democratic Republic of Congo (DRC), Burundi, Rwanda and Uganda (TPA, 2013). These countries are connected to the port through two railway systems (TRL-1.0 metre gauge and TAZARA-1.067 cape gauge), road network as well as TAZAMA pipeline to Zambia. It is managed by Tanzania Port Authority. The key informants were those from TPA staffs and port customers. This authority (TPA) was established by the Ports Act No. 17 of 2004 as landlord port authority.

It would appear that in this case the role of TPA is to promote effective management and operations of sea and inland waterways ports, provision of services in relation to

loading and unloading of cargo and passenger services, developing, promoting and managing port infrastructure and superstructure, maintaining port safety and security and entering into contracts for the purpose of delegating the powers of the Authority (through licensing and concessioning ports services).

4.4 Cargo Traffic in Tanzania Ports

It is noted that in the period between 2012 to 2013 the total cargo traffic handled at Tanzania ports reached 13.713 million tons equivalent to a 13.4% increase from the preceding year. Imports were 10.944 million tons, exports were 2.282 million tons, outwards were 0.271 million tons, inwards were 0.127 million tons and transshipment was 0.086 million tons. The reason for selecting Dar es Salaam port is because the port continued to dominate the market share by handling 12.530 million tons or 91.3% of the total cargo and it has capacity of 11.0 million tons per annum. The port handles over 90% of the total maritime ports' throughput (TPA, 2013). Tanga port handled a total of 0.457 million tons or 3.3% of total cargo and Mtwara port handled a total of 0.203 million tons or 1.4% of total cargo. Smaller sea ports of Kilwa, Lindi and Mafia handled a total of 0.049 million tons or 0.3% of total cargo. Lake ports (Mwanza, Kigoma and Kyela) on the other hand handled 0.472 million tons, or 3.4% of total cargo. Dar es Salaam port has intrinsic.

4.5 Current State of Cargo Handling at Dar es Salaam Port

One of the question put forward to the respondent was how do they explain the current state of cargo handling in Tanzania ports. The aim of this question was to

establish respondent attitudes and perception toward operation of the port, its contribution to social and economic development of the country.

On the other hand, the question aimed to establish satisfactory level among various port users on the services delivery especially those related to cargo handling. In answering this question almost all respondent, they said, the port has been getting some improvements compared to previous years. They said, maritime transport is growing at high pace because transport users are aware about the laws of the economy of scale that favor maritime transport modes.

They continue to note that cargo vessel is becoming more fuel and capacity efficient shipping as an industry in which supply and demand are more harmonized in sub-markets to reduce empty legs in maritime routes. Almost all respondents acknowledge that the location advantage of Dar es Salaam port open up an opportunity for the port to increasing the amount of cargo traffic. One of the key informants during the interview reported that;

It is almost 7 years since I started working at Dar es Salaam port; actually I see an increase in tonnage of cargo handling at the port. Sometimes some ship has to wait until some ship has cleared.

The above explanation was supported by other respondent who have explained another factor that gives advantage the Dar es Salaam port especially in cargo handling. It is was reported that the growing in international trade have helped to improve Dar es Salaam port in terms of potential position in handling the international sees trade shipping. In the interview with one among the respondents, he commented in this way;

In fact, the annual report of 2012/2013 shows the great improvement that Dar es Salaam port is getting especially in cargo traffic. It is clearly documented that Dar es Salaam port alone handles more than 90% of the country international sea trade (In-Depth Interview, May, 2015).

The forgoing indicates that cargo handling is a backbone of a port. This implies that the port performance is determined by its capacity in cargo handling. The volume of the cargo traffic and the geographical location of the port contributes not only to the port performance, also are critical in economic growth and development. Though not mentioned by respondent, but it is common knowledge that the larger the volume of the cargo, the greater the opportunity of generating the revenues. It is from this fact that social and economic development could be realized.

Despite of increased in cargo traffic, it is noted that customers and other port users are experiencing several problems and challenges. Almost all respondents mentioned bureaucracy as one of the main challenges affecting people especially in cargo clearance. In the interview with the key informants, it was noted that with bureaucracy the port now is characterized by congestion, long dwell time, and long vessel stay. In a similar manner, other respondents mentioned, pileup of overstayed cargo increases clearance burden to clients. In the interview with one TPA staffs reported that;

It is true that the location of the port is advantageous, but the problem is unnecessary bureaucracy, customers are complaining and day to day are getting dissatisfied with days spent in cargo clearance. It went up to 14 days for customer to clear their cargo.

4.6 The Effects of Bureaucracy in Cargo Handling and Port Performance

Respondents were asked to explain the effects of bureaucracy to port performance. The findings of the study indicate that the impact are many and contributes negatively to port performance. One of the effects explained by the key informants is delay in cargo clearance. They said, this delay leads to the problem of port congestion which now has become a matter of serious concern to all users of the port. They claimed that Dar es Salaam is a major port which is serving the neighboring land-locked countries of Burundi, the Democratic Republic of Congo (DRC), Malawi, Rwanda, Uganda and Zambia.

According to them, they said, TPA should have minimized the problem of bureaucracy so that the container terminal performance in particular satisfies regional customer needs. One of the key informants reported that;

Imagine due to port congestion the country is losing about 30% of the transit cargo business which goes to Mombasa and Beira ports. (In-depth interview, May 2015).

The forgoing was supported by other key informants when was explaining the effects of bureaucracy to port performance. According to him bureaucracy affects very much the business environment and operation to both port authority and general cargo customers. She explained that bureaucracy leads to loss of market at the same time brings loss of customer loyalty to the port. At his owned word she had the following to report;

Importers are complaining for the congestion at the Dar es Salaam Port because they take more time to clear up their consignments. When they asks for their goods, they required to send to TRA a clearance letter two weeks prior to the arrival of their goods. You see all of this is because of bureaucracy. (In-depth interview, May 2015).

In a similar manner, the above observation was supported by another key informant who is a port customer, he added that;

Just imagine container dwell times remain high at between 20 to 23 days. How the business will survive within this timeframe at the same time we experience the low turnaround of vessels,

The forgoing was also supported by another key informant, in explaining about the impact of bureaucracy to port performance it was noted that several problems emerged. In his word he reported that;

Corruption now is a serious problem at Dar es Salaam port, for one to get service it doesn't matter who comes first but who have money to bribe the authority. Imagine there is no any serious government intervention to minimize the corruption at the port. It is noted that some of the leaders in management and other politicians are making huge money out of it.

4.7 Cargo Handling Equipment to Port Performance

One of the questions put forward by researcher to the key informants was what is the current state of cargo handling equipment at the port? In this question researcher wanted to capture the available cargo handling facilities, its effectiveness and challenges associated to it. From the analysis of the findings it was noted that cargo handling equipment's have an influence toward the port performance. In answering this question almost all respondent said that there is a problem in cargo handling equipment at the port of Dar es Salaam. They said that, this shortage affect the performance of the port. They said, this shortage leads to port congestion that which whenever congestion happen port users experience additional costs. One of the key informants during the interview reported that;

Despite of increasing in cargo traffic at the port, but still we have few cargo handling equipment's. For instance we have only two FORK

LIFTS with 12816 and they mostly carry a huge general cargo. (In-depth interview, May 2015).

It was noted from the respondent that the current increase in the volume of cargo at the port do not match with the available cargo handling facilities. They explained that, the only available equipment Reach Stacker, Empty Handlers, Mobile Cranes, Terminal Tractors, Fork Lift (12-42 tons), Fork Lift (3-5 tons) and Gottwaldov. The forgoing was supported by another key informant who reported that;

There is poor cargo handling equipment at the port of Dar es Salaam, this problem leads to delay in discharging and delivery which leads also to poor turnaround of the ships/vessels.

Another problem reported by key informants which affects the port performance is improper cargo handling equipment's such as bilk cargo and coils. In this, almost all respondent claimed that this is a problem limit the efficiency of Tanzania port to compete in business at international level compared to other ports. In the similar manner, other key informant reported that these equipment not only improper, also are outdated. Contributing to this also other respondents said that despite of these entire said problem as outlined by the respondents, was reported that there is no standardization of equipment's. This expressions was supported by one of the key informants and staff at the operation department in the port, in his word he reported that;

Imagine this improper equipment tend to increase cargo handling time, in this case the dwell time of cargo is also increases. Similarly, cargo dwell time create queuing of the vessels which also leads to port congestion.

It is important to note that this queueing has an important implication over the financial performance of the port. It is clear that the queue created at the port because of shortage in handling equipment's leads to poor collection of revenue. Therefore, this leads to decline in country economic growth and developments. On the other hand, the respondents claimed that, the scarcity of land in near Dar es Salaam port together with increasing demand for more capacity dictates the use of advanced technologies to make existing port and terminal facilities more efficient. Advances in crane and cargo storage and retrieval technologies such as megacranes, robotic cranes, smart spreaders, cell elevators and others that are in the design or experimental phase could have a significant effect on the efficiency of terminal operations once properly implemented.

According to respondents, the minimization of sway in most cranes could lead to significant improvement of loading/unloading operations. Existing anti-sway systems are based on simplified models and their performance is not satisfactory. A new anti-sway control system is designed using recently developed nonlinear control techniques whose performance is shown to be superior to existing ones.

CHAPTER FIVE

DISCUSSION AND INTERPRETATION OF RESEARCH FINDINGS

5.1 Introduction

This section presents a discussion and interpretation of key findings. The main objective of the study was to analyze the effects of cargo handling factors to port performance. The focus of the followed discussion will base on the specific objective

set by the study. Therefore, in this case the themes and sub-themes of this section are arranged as follows:

5.2 Development of Port in Tanzania

Basing on the findings of this study as presented in chapter four shows that, development of port in Tanzania and African in general is associated with a number of challenges. These challenges have reduced the efficiency of the port. In fact, this study shared with African Bank (2010) which noted that port efficiency is important for trade facilitation because port are the main entry and exit points for international trade. It is estimated that in volume, at least 80% of world merchandize transit by sea, this experiences is more in developing countries where the figure surpasses for 90 percent. This implies that port efficiency has direct impact on the ability of the country to participate in international trade.

Form the findings of the study, it would appear that, shipping container and cargo traffic rates are important measures of economic health. On the other hand, the container traffic grew substantially, reflecting the expansion of world trade and rapid economic growth in the developing world. Nevertheless, inefficient ports acted as a brake on burgeoning trade. In fact this implies that, they will continue to do so unless port capacity and efficiency can be improved.

The study agreed with OSC, (2008) observation that, Sub-Saharan Africa has a proliferation of ports, few of which are large by world standards. They are generally poorly equipped and operated at low levels of productivity. Few are capable of handling the largest of the current generation of ships, and they are generally

unprepared for the dramatic changes in trade and shipping patterns that are now occurring. While they are moving slowly from publicly owned service ports to so-called landlord port structures, often with embedded container terminal concessions, they are still behind other regions in the development of modern port-management structures. Additional momentum for modernization is coming from the growing presence of global shipping lines and international terminal operators in African ports.

Nonetheless, it is important to note that, these same factors would have produced an even faster increase in container traffic, had it not been for some important constraints affecting the region's ports (OSC, 2008). The first is the marked imbalance in container trade. Efficient container trade depends on balance full containers in; full containers out. But in Sub-Saharan Africa 80 percent of incoming containers are re-exported empty, compared with more typical values of 60–70 percent of containers sent back empty from Asia. The reason is that the region's predominant exports of agricultural products and raw materials are better suited to general cargo traffic than to containerization. Consequently, general cargo trade is somewhat less imbalanced than container traffic.

Second, the lack of integrated rail and road links means that Sub-Saharan Africa's ports are poorly equipped to handle containers. As a result, adoption of containerized trade is often only skin deep. Containers are packed and unpacked in the vicinity of the ports, and the benefits of fully integrated multi-modal transport corridors associated with container adoption are not secured.

As a result, there is still comparatively little containerized transit traffic into the landlocked hinterland, and most of these countries' imports are transported in the form of general cargo. There is a great need for transshipment facilities to distribute cargo from regional hubs along the surrounding coastline. This role is played by Durban in Southern Africa, and by Mombasa and Dar es Salaam in East Africa, although Djibouti is also emerging as a new hub. In the case of West Africa, Abidjan has been a major transshipment center, but, owing to civil conflict, several shipping lines have shifted from Abidjan to Malaga in Spain. As a general rule, transshipment traffic tends to become a casualty as ports reach capacity constraints, as has recently occurred in a number of these hubs.

5.3 The Contribution of Cargo Handling to Port Performance

The findings of this study shows that cargo handling if done properly contribute positively to port performance. This implies that cargo traffic is the backbone of a port. However, it is shown that the capacity of ports to meet growing demand is in doubt throughout much of the region. Measuring the gap between demand and capacity is difficult for two reasons. First, future demand is subject to some uncertainty, for obvious reasons. Second, and more important, the cargo data collected at many ports are inadequate for capacity-planning purposes. Historically, ports have invested in new infrastructure only after it was abundantly clear that their existing capacity was strained. Lack of funds and insufficient political will often added to delays. Port authorities and governments need to remember that better ports will allow them to capture new trade opportunities, while retaining existing traffic.

Perhaps a study conducted by OSC (2008) in which this study agrees with, noted that A global benchmark is that any port operating at beyond 80 percent of its capacity is facing gridlock and will suffer a progressive decline in efficiency. Assessed against this standard, the ports of Dar es Salaam, Douala, Luanda, Mombasa and Port Sudan all appear to be facing capacity constraints for general cargo traffic. At the same time, the ports of Cotonou, Dar es Salaam, Durban, Luanda, Mombasa, and Tema all appear to be facing capacity constraints for container traffic. Pressure on capacity is, overall, higher for container traffic, with current demand substantially exceeding 100 percent of capacity in a number of cases.

5.4 Challenges Facing Port Performance and Development

5.4.1 Bureaucracy

Throughout the analysis of data as presented in chapter four, it is noted that bureaucracy¹ is one among the problem which is affecting port performance and subsequently country economic growth and development. It is noted that bureaucracy has a bad reputation because it has come to mean an organization or government that is chain-deep in red tape and unnecessary procedures. When dealing with a bureaucracy, expect to fill out lots of forms and wait. Notably effects of bureaucracy are delay in cargo clearance. It would appear that with the delay associated to clearance brought about inefficiency in the port operation. On the other hand, this delays lead to port congestion, simultaneously whenever congestion happen additional costs to exporters, importers and port

¹Bureaucracy as used in this study refers to an organization made up of many departments and divisions that are administered by lots of people. If you've ever had to deal with health insurance or financial aid, you're familiar with the dark side of bureaucracy.

authority. The experiences show that a dysfunction of a port affects the country participation in the international trade because customers shift their service to the country or port.

This study shared with Kiwanuka (2013) observation in which his finding revealed that due to the inefficiency prevailed in the Dar es Salaam port some land locked countries like Rwanda, Congo (DRC), and Malawi were once decided shifted to Mombasa Port where they can clear their cargo on time with minimal costs.

It would appear that due to bureaucracy cargo clearance at Dar es Salaam port, it takes between seventeen days for customer to clear their local imports and transit imports through Dar es Salaam port. This is a problem because UNCTAD, (2012) observed that internationally cargo clearance should take between two to three days. This leads to customer dissatisfaction and stop make business with the port. The outcome of this stop is many but one among them is decline in port revenue which contributes in country economic developments. It should be noted that today, about 90 percent of Tanzanian trade transits through the port of Dar es Salaam. Efficiency for a port is to facilitate trade of merchandise in and out of the country at the lowest costs and as fast as possible. For imports, these include the following chain of operations, anchorage; berthing; merchandise unloading; customs clearance, and exiting the merchandise from the premises. The chain is simply reverse for exports. The more cost-efficient the port is in handling these operations, the lower the costs for importers and exporters and greater the benefits for the economy.

Similar observation on which this study agrees has been made by African Bank (2010) that about 80 percent of world merchandise trade carried by ships. This means that maritime transport remains by far the most common mode of international freight transport. On the other hand, it implies that is the backbone to facilitating international trade, offering the most economical and reliable way to move goods over long distances. Therefore, bureaucracy and the delay associated to it have direct impacts in port performance and development in Tanzania and Africa in general.

Likewise, basing on the location advantage of Dar es Salaam port and its status in cargo traffic is increasing. Hence, if the problem associated to bureaucracy would not be reduced it means the port congestion would still increase and bring more inefficiency. It should be noted that Maritime transport today handles about 90 percent of world trade, or about 12.63 billion tons of cargo. The trade reforms which made in the world trade increases in trade value and volume. The reforms noted to be the consequence of trade reforms and globalization. While the economic benefits associated with increased trade are easily demonstrated, the fruits of trade liberalization have challenged the ability of many countries to accommodate rising trade flows. The surge in cargo growth has created congestion and ports with a longstanding reputation for efficiency carriers recently imposed congestion surcharges in the ports of Dar es Salaam which are now straining to handle ever increasing cargo volumes.

Similar observation has been made by African Bank (2010) who noted that container growth in Africa exceeded growth of the world's top 100 container ports. Cargo volumes on the other hand, increased about 44 percent from 2000 to 2003, compared

to about 32 percent for the world's top 100 container ports during the same period. In fact, though growth in the top 100 ports can be attributed in part to advances in free trade, growth in many is due more to changes in carrier deployment practices (e.g., transshipment). For Africa, only Port Said and Port Damietta, both at the northern end of the Suez Canal, are handling substantial transshipment activity.

Moreover, the study continues to note that most countries in the top 100 rankings underwent economic transformations well before African countries did. The greater volume of activity in Africa is in part due to pent-up demand released after trade regimes were liberalized. So the container growth rates in the near term will eventually slow, but will likely fall within the range of the top 100 port growth rates and total container trade growth rates worldwide.

5.4.2 Cargo Handling Equipment's

Another key concern which affects the port performance is cargo handling equipment's. Throughout the analysis of research findings of this study as presented in chapter four, it was noted that although bureaucracy is serious challenge to port performance that leads to port congestion, on the other hand, cargo handling equipment is also a serious problem. It is important to note that cargo handling equipment have direct impacts towards port performance. Despite the fact that cargo volume have noted to increase in Tanzania port particularly in Dar es Salaam port but the port has shortage of cargo handling equipment's. This implies that other ship has to wait till the other one has finished. When answering the question what is the current state of cargo handling equipment's at the port of Dar es Salaam?

Almost all respondents were unsatisfied and they said, cargo handling equipment is ineffective. Since Ports play a key role in the Tanzania economy and development, as nearly 80% of the trade between the land locked countries and the rest of the world is handled in ports. Thus, the importance of ensuring efficiency in cargo handling equipment's to ports is related to the ability of Tanzania and developing countries in general to be competitive at international level. However, Tanzania ports seem to lack the ability to adapt efficiently in order to meet the ever-changing and developing needs of industry.

This is particularly the case where there is shortage in cargo handling equipment's, lack of equipment maintenance, lack of skills in using such equipment's and shortage of yard. This implies that the shortage of handling equipment's affects the operation of the port subsequently the collection of revenues. On the other hands, it reduces the capacity of governments to finance long term infrastructure. It should also be considered that the heterogeneous nature of the port sector increases the complexity of guaranteeing consistent development of the sector as a whole.

In order to guarantee the sustainable development of the sector, private investments represent a core element; nevertheless, to attract them, more convenient conditions have to be created. In particular, it is necessary to guarantee a level playing field, and competition, as well as to foster transparency and non-discriminatory practices. Finally, port authorities are often limited in their ability to determine the level of dues, thus to impact on their resources and determine their operating income. It is expected that port traffic will increase. Nevertheless, inefficiency would prevent

industry players from internalizing the whole value added derived from increased demand.

It is important to note that cargo handling equipment's is very much related to quality of service where firstly the customer's ability to define the cargo handling services to be provided by the port, and secondly the ability of the port to provide or facilitate value-added logistics services. At this juncture this study shared with EU (2013) observation that many customers would like to exercise more control over the port services they receive, including ability to reserve berthing windows so that scheduled services are not disrupted by unforeseen delays waiting for a berth; second, ability to negotiate service contracts with the port authority or cargo handling company giving them a guaranteed loading/discharge rate or ship turn-around time; dedicated storage areas within the port; and extended cargo collection and delivery times.

Likewise, shortage of cargo handling equipment's slows the speed of service. It would appear that it is reasonably well measured in respect of ships, as ship turn-around time is one of the most common ports. It is an area where it should be possible to compare port performance across a wide spectrum of ports, although even here there are technical problems to be resolved in standardizing the results for variations in ship size, type and operating pattern.

In the similar manner Clark et al., (2004), and Wilson et al., (2003) noted that Poorly-performing ports may reduce trade volumes, particularly for small, less-developed countries. Thus, port efficiency is an important issue in addressing trade

facilitation practices, which has been a recent focus of the World Trade Organization and regional trade institutions.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Introduction

The purpose of this study was to analyze the effects of cargo handling factors to port performance. Specifically, this study aimed at examining the effects of bureaucracy in cargo handling to port performance. Moreover, it aimed at documenting the influence of cargo handling equipment to port performance. In doing so, a qualitative research methodology was used in order to capture data related to the research objectives and subsequently research questions. However, this section is based on the following themes and sub-themes.

6.2 Conclusion

In examining the effects of cargo handling factors to port performance, it can be concluded, the manner in which cargo handling is taking place at Dar es Salaam port it influences poor port performance. The findings of the study noted that, cargo clearance is among the main factor leading to poor performance, customer dissatisfaction because of waiting lines caused by this delay and port congestion. In doing so, there is decline in port revenues, poor port performance and the development of negative attitudes of port customers which influences them to look for alternative port which is the port of Mombasa in Kenya.

On examining the effects of bureaucracy in cargo handling to port performance, it can be concluded that; Bureaucracy has negative implication to the port performance. It brings about unnecessary procedures when it comes to cargo clearance, as a result

port user experience the delay in cargo clearance. Nonetheless, this delay brings about port congestion. It is noted that whenever there is a congestion port user such as exporters, importers and port authority experiences additional costs. It would appear that port revenue go down because customers dissatisfaction affect their decision of using one port over the other. For instance, some countries such as Rwanda, Burundi, and Congo (DRC) were once shifted their business to Mombasa port because of the problem of delay in cargo clearance.

On examining the influence of cargo handling equipment to port performance, it can be concluded that; Cargo handling equipment has also direct impacts to port performance. The handling equipment can contribute positively or negatively. When port have cargo handling equipment's influence the availability of services, increase speed in service provisions, decreases sheep waiting lines. Other factors include availability of storage space and increase customer's satisfaction. However, this is not the case in Tanzania ports. Many ports in developing countries and Tanzania in particular characterized with shortage in cargo handling equipment's. This problem has limited the developing countries to fully participate in international trade. Port congestion has been increasing while the ship has wait at the dock till the other one has finished.

6.3 Recommendation

The following recommendations are given by this study;

- (i) Reduction of unnecessary procedures in cargo clearance would improve port performance, would raise customer's satisfaction, and would reduce port

congestion. In fact, this would also rise efficient in port performance which will have an impact to economy and development.

- (ii) The study recommends for specialization of berth
- (iii) The need to have modern cargo handling equipment's should be taken as a step toward delivering efficient and timely port capacity.
- (iv) The new national port plans should emphasize the development of physical infrastructure as well as institutional and regulatory reforms are being undertaken. This means that the need to have Port Modernization Action Plan in Tanzania.
- (v) Tanzania Port Authority and the government they need to extend cargo handling by private firms.
- (vi) Port modernization plans must look beyond the immediate port infrastructure and foster coordinated efforts to improve road and rail systems that provide linkages with hinterland markets. Addressing such bottlenecks will reduce widespread congestion around ports and ensure more effective use of container trade along integrated transport corridors.
- (vii) There is a need for modernization of cargo-handling systems. This is because lack of crane equipment and continue to rely on ships' gear, seriously limiting port productivity. In other cases, outmoded container gantries remain in use.
- (viii) New equipment is not a solution in itself equipment has to be introduced into a system designed to achieve the best performance and supported by proper staff training.

6.4 Areas for Further Study

This study suggests that other studies should focus on the contribution of Inland Container Depots. This is because ICD's is one form of cargo handling that have recently established to minimize the problem of port congestion.

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APPENDIX

Appendix I: Interview Guides (Questions)

Introduction

I am a Masters student in Business Management at the Open University of Tanzania (OUT). Currently, I am conducting a study on “The Analysis of Effects of Cargo Handling Factors to Port Performance in Tanzania: A Case of Dar es Salaam Port”. In so doing, I would like you to assist me in answering the questions follow bellow. The answers provided will remain confidential between you and researcher.

1. Respondent gender M () F ()
2. What is your education level _____
3. For how long you have been working at this port _____
4. How do you explain the current state of cargo handling at the port of Dar es Salaam?
5. What challenges affecting effective cargo handling at the Dar es Salaam port?
6. What are the effects of bureaucracy in cargo clearance at the port of Dar es Salaam?
7. What are the impacts of bureaucracy to port performance and customer satisfaction?
8. What is the current state of cargo handling equipment at the port of Dar es Salaam?
9. To what extent the cargo handling equipment affects the performance of the Dar es Salaam port?

10. Generally, what needs to be done to improve cargo handling at the port of Dar es Salaam?