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WORLD MARITIME UNIVERSITY

Malmö, Sweden

ASSESSMENT OF FACTORS CAUSING PORT CONGESTION:

A case Study of the Port of Dar es Salaam,

By

Fadhili Harubu Maneno
Tanzania

A dissertation submitted at the World Maritime University in partial Fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

In
MARITIME AFFAIRS

(SHIPPING MANAGEMENT AND LOGISTICS)

2019

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Declaration

I, Fadhili Harubu Maneno, declare that all the materials in this dissertation that are not my own work have been identified, and that no materials included for which a degree has previously conferred on me.

The dissertation includes my own views, and are not necessarily endorsed by the University

Signature:……..

Date……..

Supervised by…….

Supervisor's affiliation:……

Acknowledgement

Many thanks to Allah for giving me the wisdom, heart and power to complete this research. I take this opportunity to give my deepest thanks to Director of Transport Safety and Environment, Government of Tanzania, for the partial funding and permission to come to WMU to complete my studies. My special gratitude to the Secretary General of the International Maritime Organization (IMO) Mr. Kitack Lim and supporting staff for their great assistance and funding for my studies.

Special appreciation also goes to my supervisor, Dr. Lagbami Khannsa for, her guidance and constructive supervision. She spent much time on giving significant comments and generous assistance in this dissertation enabling this work to be completed adequatly and accuracy.Thanks Dr Lagbami Khanssa for giving great support to this research. Furthermore, the guidance and opinions provided to me are countless. My sincere acknowledgment goes to the external examiners and the committee members for their serious opinions and appropriate critical analysis.

Furthermore, I extend my appreciation to all academic staff for their support in completing this work. I have nothing to pay for all but Allah will pay for them. My heartfelt greating to all my family members,especially my daughter Shamsa and my wife for their patience and sacrifice when by being far away from home. Finally, I dedicate this dissertation to my late lovely mother Mis Tatu Rashid and my father Mr Harubu Maneno Pandu in honour of their tireless encouragement efforts and prayers.

Abstract

Title of Dissertation: To assess the factors causing congestion: A case of Dar es Salaam port.

Degree: Master of Science

Port congestion is one of the major of many ports around the world. This problem hinders efficient trade facilitation and economic development. However, because of the increase of international trade, ships are bigger in size and volume which becomes more challenging to many ports around the world. Furthermore, many ports were not developed to handle and store a lot of cargo at the port area and the supporting infrastructure such as rail and road are not able to meet the required demand of timely cargo handling.

The Port of Dar es Salaam is located in Tanzania and is established by the Tanzania Ports Authorities Act of 2004. It is the main Port of the United Republic of Tanzania, handling cargoes from landlocked countries and lake regions,including Zambia, Malawi, Burundi, Democratic Republic of Congo and Rwanda

The main aim of the research is to find out the factors causing congestion in the Port of Dar es Salaam. Its focus to investigate challenges facing port stakeholders and to provide solutions for this problem. Thirty(32) respondents were given questionnaires and three of them did not respond. Various stakeholders were involved such as Tanzania Shipping Agencies Cooperation (TASAC), Tanzania Port Authority (TPA), Tanzania Railways Cooperation (TRC), Tanzania Revenue Authority (TRA), Ministry of Works, Transport and Communication (MWTC) and freight forwarders, customers.

The findings of this study have shown that the Port of Dar es Salaam is facing several challenges including documentation procedures, unskilled manpower, poor policy, use of information, communication and information systems, insufficient equipment, bureaucracy, port infrastructure, poor management planning, and the insufficient port area.

There are some recommendations from research that are provided to the government and port authority to implement in order to improve the efficiency and minimize the port congestion at Dar es Salaam Port so as to make it more productive and efficient.

KEYWORDS: Assessment, port, port of Dar es Salaam, factors, congestion

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UNCTAD United Nations Conference on Trade and Development LIST OF FIGURES x

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LIST OF ABBREVIATION

TASAC	Tanzania Shipping Agencies Corporation
GDP	Gross Domestic Products
DWT	Deadweight Tonnage
TICT	Tanzania International Container Terminal
DRC	De Republic Of Congo
TRA	Tanzania Revenue Authority
TRC	Tanzania Railways Corporations
MOT	Ministry Of Transport
ICT	Information Communication Technology
TEUs	Twenty Equivalent Units
TCA	Transaction Cost Analysis
SPSS	Statistical Package for Social Science
USD	United States Dollars
ICDs	Internal Container Depot
UNCTAD	United Nations Conference on Trade and Development

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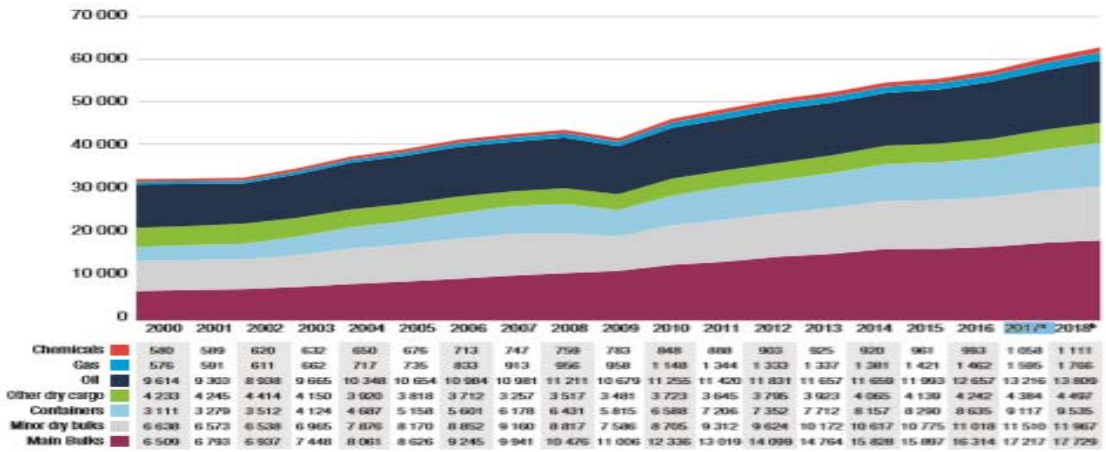
CHAPTER ONE

1.0 Background

Shipping is the key element in international carriage of goods, thus International trade is highly depending on shipping as a means of moving cargo from one territory to another. Currently around eighty (80%) percent of the world volume of international trade in goods carried by sea is transported by ships and the percentage is even higher in most developing countries (UNCTAD, 2018). The development of international trade has created high demand of shipping which has led to new ship design to accommodate different types of cargo and transport them faster over a long distance with minimal cost per tonnage (Haralambides, 2007).

According to Haralambides (2007), the shipping industry has been classified into two main categories; the first is the bulk market that deals with the transportation of cargoes, including coal, grains,iron, and oil. The second part is the liner market that deals with semi-final and final products, including manufacturing outputs, textiles and computers.(see figure 1.1).

Figure 1. 1: Shows World seaborne Cargo



Source: UNCTAD, 2018

The increase of international trade and shipping also goes hand in hand with the development of sea ports for efficient loading and unloading of cargo from ships. Ports must operate in an efficient way by having enough space to accommodate ships, berths, modern technological handling equipment, enough skilled manpower, storage facilities, good infrastructure and efficient handling documentation process. According to Tangzon (1989) the efficiency of a port is crucial in the nation in order to achieve competitive advantages, it is expressed by way of providing good services that are expected by the customer and shipowners.

The Port of Dar es Salaam is located in Tanzania and is established by the Tanzania Ports Authorities Act of 2004. It is the main Port of the United Republic of Tanzania, handling cargo from landlocked countries and lake regions, including Zambia, Malawi, Burundi, Democratic Republic of Congo and Rwanda (See figure 1.2)

Figure 1. 2: Countries served by Port of Dar es Salaam.

Source: www.alamy.com

The port is located in a very good geographical position to receive ships from Europe, America, Australia, the Middle East and the Far East. Currently the port handles about 16 million tons of cargoe per year (TPA Handbook, 2019-20).The figure 1.3 show the location of Dar es Salaam port.

Figure 1. 3: Photo of the Port of Dar es Salaam

Sources: TPA Handbook 2019

Honke et al.,(2017), Dar es Salaam Port is operated by two private operators, Hutchison Port Holding in a joint venture with Tanzania International Container Terminal Service Limited (TICTS) and the Business group of Tanzania. However, Tanzania Container Terminal Service Limited are operating the largest part of the Container yard for storage (See figure 1.4 Container terminal).

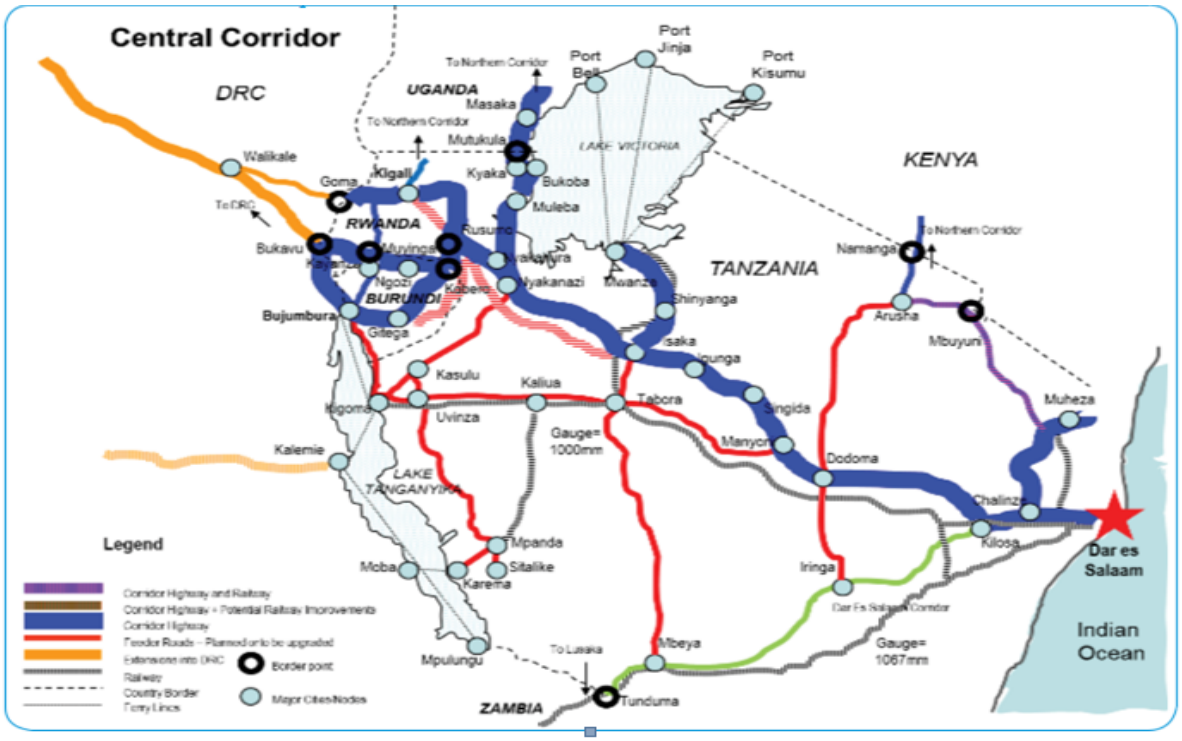
Figure 1. 4: Container Terminal

Sources: Tanzania port handbook, 2019-2020

The port is connected with railway lines to through the Central railway Line which is managed by Tanzania Railways Corporation (TRC) and the Tanzania Zambia Railways Line jointly managed by Tanzania and Zambia through Tanzania Zambia Railways Authority (TAZARA).

According to Wood (2004), TAZARA is track gauge railway line with a total length of 1,860 kilometers from Dar es Salaam Tanzania to Kapirimposhi Zambia. The Central Railway line started from Dar es Salaam City to Tabora region. In theTabora region there are several links; one link goes to Kigoma region in Lake Tanganyika, the second link goes to Mwanza region in Lake Victoria. Furthermore, the northern link starts from the Dar es Salaam path through the Moshi and Arusha regions connecting with Kenya and another part connected to theTanga region to the port of Tanga (See figure 1.5)

Figure 1. 5: Tanzania Rail and Port linkages



Source: Central Corridor Transport Observatory Report, 2017

However, the efficiency of the port especially on cargo handling is improving but not very much effective and thus creating a backlog of cargo which lead to port congestion. Port Congestion is a situation where ships on entrance use more time on the channel while waiting to berth (Somuyiwa at al., (2015). Ships queue more at the channels and the outside bar waiting to get space into the terminal for berth. The waiting time is calculated using service time of the vessels which is one way of measuring port efficiency. This is caused by the fact that there is more arrival of cargo than the ability of port to handle, store and remove them from port space.

The port is one of the sources of economic growth of Tanzania because of generating high revenue. However, instead of being given considerable importance, the port is still suffering from problems of serious cargo clearance and therefore creating the port congestion (Raba land et al, 2012). Therefore, there is a need for assessment of the factors causing port congestion .

1.1 Statement of the problem

Port congestion is one of the serious problems of many ports around the world. This problem hinders efficient trade facilitation and economic development. However, because of the increase of international trade, ships are bigger in size and volume which becomes more challenging to many ports around the world. Furthermore, many ports were not developed to handle and store a lot of cargo at the port area and the supporting infrastructure such as rail and road are not able to meet the required demand of timely cargo handling.

Port is a major part of the shipping industry, ships depends on ports for loading and unloading of cargo. Therefore efficiency of ports does quite affect the whole shipping industry. From the development of international trade and technological change in ships constructions, modern ports should focus to develop and expand the port area and invest in modern equipment and other infrastructures, in order to meet the increased cargo volume of ships. Ports should invest on advanced equipment for cargo handling and expand the port area and work with skilled manpower. Currently, Dar es Salaam Port has problems with the number of a berth, time for loading and unloading from ships, cargo handling equipment, and documentation procedures. Currently at Dar es Salaam Port, cargo handling or ship dwell time takes an average of seven days (The Central Corridor Transport Observatory Report, 2017). From the current situation; there is a need for analysis of challenges and factors creating the congestion at the Port of Dar es Salaam which is the aim of this research work.

Factors causing port congestion are many and consequently creating a confusing situation on how they can be appropriately/diligently addressed. In the absence of specific studies that seek to assess the factors causing congestion in Dar es Salaam port, this research study aims to rank the most relevant factors which are more likely to need immediate attention by the port stakeholders

1.2 Objective of the research

The principal objective of the study is to assess the factors causing the port congestion in Dar es Salaam port.

1.3 Specific Research Objectives

- To identify the level of congestion in the Port of Dar es Salaam
- To find the speed of cargo deliveries in relation to port congestion.
- To determine procedures in documentation in the port in relations to the congestion and come up with measures to overcome the congestion.

1.4 Research Questions

- What is the congestion level of in the port Dar es Salaam.
- What is the speed of cargo deliveries in the port of Dar es Salaam
- What are the documentation procedures

1.5 Significance of the Study

Findings and recommendations will contribute existing to the pool of knowledge concerning port congestion, particularly on factors causing congestion and the mitigation measures. Furthermore, the results of this study will help stakeholders in Tanzanian port business to find

out solution to curb congestions.This study will help to formulate strategic planning for port improvement and facilitate trade to drive economic development

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter consists of conceptual definitions of different terms, reviewing of supporting process or theoretical analysis, port simulation model, empirical studies and conceptual framework. However, it provides details of port congestion, and also shows significance context of the existing approaches. Furthermore, the study is based on reviewed books, reports, journals, and scientific papers. To accomplish the above aim, this chapter will provide a general overview of port congestion. However, before to develop further this chapter, some conceptual definitions helping to understand the research subject are given.

2.1 Conceptual Definitions

A ship: is built depending on the functions and design to achieve certain purposes **(**Cay, 2016). Most are built for pleasure, transportation, racing, war, research and rescue. On the commercial side of shipping especially cargo transportation, the most situation preferred is when the ships is efficiently meeting the turnaround time at ports. A commercial cargo ship is inclined to accommodate more cargo and load and unload timely and efficiently. However, in order to accommodate more cargo, the storage part of the ship is more preferred than any other part and is considered as large as possible in ship design. Additionally, cargo might lead to a higher center of gravity; it decreases the ship's stability propulsion.

The terminals: Is the area where by ships discharging and loading the coarg. In the terminal there are equipment used to handling cargo and discharging cargo like cranes, forklift and truck Rodrigues et al., (2009).

The port authority: According to Verhoeven's (2010) definition the port using the term port governance, has two levels and can be notable: these were the governance of the port and governance of the port authority. The EU Commission community(2001) defines the port authority as the entity, which whether or not in conjunction with other activities, its objective under national law or regulation, the administration and management of the port infrastructures, and the coordination and control of the activities of the different operators present in the port

The Gateway seaport is very important in the shipping industry; it connects the movement of cargo from trucks and rail to ship and from ship to rail and truck. However, port management needs to maintain a gateway for improving loading and discharging cargoes (Wan et al, 2013).

The Seaport is the place whereby ships may load and discharging cargo. However, must have enough berth and equipment for smoothly transferring cargoes from shore or ship to offshore. Therefore,it is very important in economic growth, trading links, transportation and gateway for trade (Aderton et al, 2013).

Dwell time is the total time taken for containers waiting for loading and discharging the cargo in the port area (Ottjes et al.2007).In the port of Dar es Salaam, the container was handled by Tanzania International Container service and Dar es Salaam port (Port handbook, 2019-2020). However, the average dwell time for containers handled by TICS was fluctuated. For example: (See table 4.1).

Table 2. 1: Average containers dwell time for TICS

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	**AVG**
2008	24.0	27.0	26.0	23.0	24.0	26.0	25.0	25.0	26.0	29.0	24.0	26.0	**25.42**
2009	20.0	17.0	21.0	25.0	25.0	22.0	18.0	19.0	16.0	15.0	15.0	13.0	**18.83**
2010	14.0	12.0	13.0	13.0	14.0	13.0	15.0	13.0	13.0	15.0	16.0	16.0	**13.92**
2011	15.0	13.0	11.0	11.0	12.0	10.	10.0	11.0	11.0	11.0	11.0	12.0	**11.5**
2012	9.0	10.0	8.0	10.0	10.0	11.0	11.0	9.0	9.0	10.0	9.0	9.0	**9.58**
2013	12.0	11.0	9.0	10.0	11.0	8.0	8.0	8.0	8.0	8.0	10.0	9.0	**9.33**
2014	11.0	11.0	10.0	11.0	10.0	9.0	10.0	10.0	9.0	8.0	9.0	11.0	**9.92**
2015	12.0	11.0	11.0	10.0	12.0	10.0	8.4	10.3	9.9	9.5	10.3	10.3	**10.39**
2016	7.9	7.2	7.5	7.2	7.0	9.1	11.1	9.7	11.0	10.3	10.5	11.0	**9.13**
2017	11.5	12.0	13.9	6.0	12.6	11.4	11.7	11.4	14.9	14.3	11.8	12.3	**11.98**

Source: Central Corridor Transport Observatory Report, 2017

In the Dar es Salaam port, the average container dwell time fluctuates in different years. However, this depends on ships that arrives at the port. For example (See table 4.2)

Table 2. 2 : Average container dwell time for Dar es Salaam port

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	**AVG**
2013	14.9	12.9	17.9	10.6	9.2	8.9	8.3	9.4	13.2	11.9	9.4	8.6	**11.27**
2014	14.2	13.8	16.0	10.6	14.1	9.3	7.1	11.2	9.4	9.6	6.9	8.0	**10.85**
2015	7.1	7.1	5.6	5.7	5.2	6.7	5.8	6.8	5.0	10.8	10.9	9.9	**7.21**
2016	7.6	6.3	5.2	4.0	5.1	5.3	5.6	8.0	8.2	8.8	11.3	8.0	**6.95**
2017	8.1	8.1	9.2	7.8	6.9	8.4	7.3	8.9	12.1	12.5	13.8	11.5	**9.55**

Source: Central Corridor Transport Observatory Report, 2017

2.2 Review of supporting theories or theoretical analysis

2.2.0 Queuing theory on port congestion

The applications of Queuing theory of congestion in the port was made by Oyatoe. In this theory, the problem of congestion in the port were done using the Queuing model. The Queuing Model is the systematic approach of port planning used by the port management to control the movement of cargo(Oyote et al.2011. However, the model was used by management in the port for handling the vessel in the berth based on the principle of “First come, First served”. Furthermore, the model reduces ship turnaround time and time for loading and discharging in the port. This model applies information technology and system of computer in dividing berths, cranes and vessels (Adebayo et al, 2006). The study of using the same simulation model in the port, it creates the application of current port operation systems

in statistical computerized and advanced systems. Furthermore, the study focuses on assessing congestion challenges in the port of Dar es Salaam.

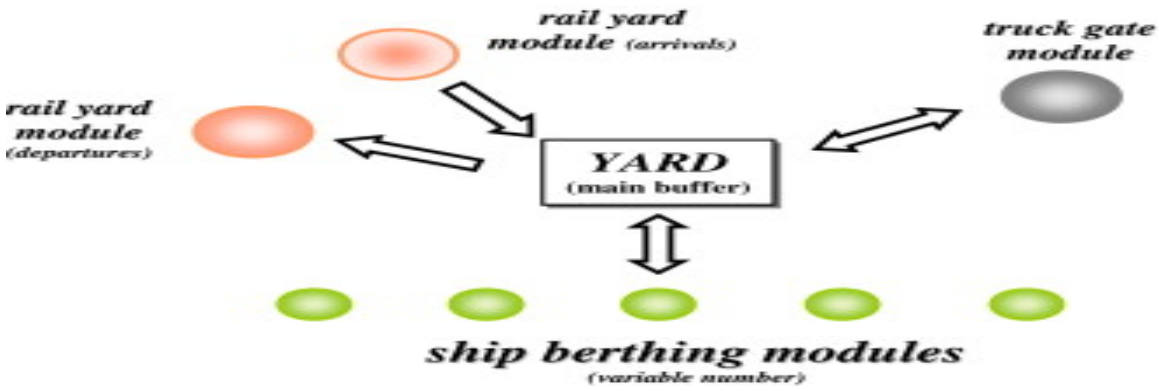
In addition, the simulation model in the port involves, port terminal, capacity systems, allocations of cranes, berth application, and ship operations (Kia,2002). In this study, all stakeholders involved in the port shall establish a better solution to the problem of congestion in the port of Dar es Salaam.

2.2.1 Simulation Model

In 1970, the number of containers was increasing in order to facilitate the transportation of goods all over the world. However,containerization was 70% of general cargo and had a capacity of 8,000TEUs[1].Thus, this creates the vessels to become bigger in order to meet the demand of the containers. Besides, it was required to change the port size for the increase of traffic which led to the problem of congestion that had a negative impact on economies (Parole et al., 2005)

Thomas et al., (1989) argue that to achieve global productivity, the companies that managed terminals could need to optimize operations of container flow such as hourly container handled, turnaround time and the proper arrangement of transport models systems such as trains, vessels and trucks (see figure 2.1).

Figure 2. 1: Maritime container Terminal simulation models



Sources: Yun,1999.

According to Yun et al., (1999) the express simulation was a special tool used for planning and analysis port operations. However, simulation provides vision concern difficult port operations were by analytical models not capture exactly. Furthermore, was an actual to analyze container terminal system.

Kia(2002) highlight significant of port simulation model for computerized statistical system which are advanced and current operation system. In which the port of Dar es Salaam put into consideration since it has effect on port congestion covering stacking area, berth utilization and crane allocation.

2.3 Empirical Studies

Yeo at al. (2013) researched on the “evaluation of maritime traffic congestion of north harbor in Busan Port”. Cargoes increased and maintained high profits but suffered due to serious problems of congestion. However, the study shows there were not enough terminals to handle calling vessels. It uses simulation language programs. Therefore, findings shows low space of the terminal. Thus, the best way of removing congestion is to expand terminal size with modern equipment.

Another study on analyzing and measuring the capacity of the terminal in the Dar es Salaam (John Layaa, 2014) shows that congestion could be caused due to a poor infrastructure in the port. However, the stakeholders interviewed for the study stated some other factors for the port congestion. For example, underutilization of port terminals and long waiting time for a ship. In conclusion, the study recommended the port management to increase the number of the berth to accommodate more cargo.

In the same vein of ideas, another study on information systems applications in enhancing port logistics performance in the port of Dar es Salaam (Mlimbila et al, 2018) used questionnaires and quantitative methods in data collections comes up with the conclusion that the applications of information systems decrease tracking and shipping costs, helping in good delivery, increasing trade volumes and remove organizational capability. The study also came with some recommendations to improve the ports, including the improvement of the applications of information system to the employee working in the port

Several others studies aiming to the same objectives have been conducted. For example, a study on analysis of port terminal performance in the port of Dar es Salaam (Isaac,2013). Concluded that high waiting time for ships, low space for storage, ship delays and slow delivering of cargoes are the most relevant factors for congestion in the port of Tanzania. The recommendations included the improvement of the port, increase the terminal size and resource utilization.

Jiang et al. (2017) researched on “Internalization of port congestion strategic efficiency behind shipping liner delay and implication for terminals”. They used theoretical mode of knock-on effects. The study shows that liner operates in congested terminals operation increased. However, the findings show that the arranged terminal profit maximization was higher than the charge at social optimal terminals.

A study on expansions, congestion and spatial competitions for container import in the port of the USA (Fan et al.2012) in which it was used network flow intermodal mode in analyzing congestion, found that port congestion was formed in different ways and creates big challenges in increasing traffic divert and cost in the port. The study came with some recommendations to improve the ports. The recommendations included the expansion of port and port terminals. These reduce congestion costs, ships and costumer time.

An additional study on challenges influencing the establishment of the dry port (Kovacs et al.2008) shows the relationship between the dry port and the seaport terminals as the solution to reducing congestion. The study uses face to face interviews, in addition to web pages, reports, and documents as secondary sources of data. Based on it, it has been concluded that the environment, infrastructure, and land use were the major challenges in the implementation of dry ports. The study came with some recommendations to improve these dry ports. The recommendations included the proper design of regulation that involves the private and public sector and providing advanced systems in intermodal terminal.

Another study was conducted by Yeo et al. (2004) on “Analysis of Chines container port using analytic hierarchy process”. According to the study findings, identifying some challenges in the port, including inefficient operations, administration bureaucracy, poor service and others items.

Also, another study on analyzing congestion problems was conducted in Nigeria at Port of Tin Can Island (Oyatoe et al., 2011) shows that was a little berth for handling cargoes in the port.However, the researcher interviewed port stakeholders and found some factors that cause port congestion. The study found other factors such as poor handling equipment, poor infrastructures, un trained staff, non-skilled labor, cargo clearance procedures and non 24 hours working (Claudio et al., 2019).

A study on the significance of congestion of port on logistics and supply chains to some African ports such as Darban, Nigeria and Mombasa was conducted by Gidado (2015) used perception and secondary information from the port stockholders. The study found that most of these ports were suffering from port capacity, friendly regulation, improper planning and inefficiency of the port. Furthermore,the study came with some recommendations in order to improve these ports. The recommendations included the improvement of port regulations, the efficiency and capacity of ports and proper planning.

Guan (2009) conducted a study on the “analysis of Marine Container Terminal gate congestion truck waiting cost and systems optimization”. However, the methodology applicable to model Maritime Container terminal gate congestion problems was the mixture of operation study techniques with the economic analysis. Furthermore,it has seen that the growth of the container volume with a high cost of fuel,causing truck cost provided could be marked. Thus, gate congestion has been a big challenge to the environment.

Song & Anderson (2018) conducted a study on governance for port congestion mitigation. To examine the port congestion mitigation from governance,the study used transaction cost analysis. Transaction cost analysis was most used in academic disciplines and it includes organization theory, economics, sociology, business and marketing. During the study, theoretical analysis reveals three challenges of TCA such as specificity assets, uncertainty and frequency. Findings on the study, show some factors on, ports and shipping routes such as maritime networks, delays of ships and the delay in routes legs. Furthermore, the study provides some recommendations to solve the problems, thus proving that optimization by appointment was the better way to improve efficiency, improve productivity and container volume.

The research of “A Simulation Framework for Optimizing Truck Congestions in Marine Terminals” was conducted at a port in Iran. However, the main objective of the study was to

reduce both, turn around time of the truck and congestions of truck at the gate of the port. The study assesses the truck entrance patterns, weighbridges pattern services and truck arrival pattern. Furthermore,the study used Taylor II simulation software to integrate all the functions needed for the study.Additionally, after inspecting the pattern of waiting time and queue histogram, three solutions showed better result (Kiani et al., 2010)

2.4 Conceptual framework

Based on the literature review above mentioned, the congestion in the port depends on several factors. It includes the improper documentation of cargo clearance, numbers of berths for ships to load and unload the cargoes, efficiencies of the equipment, the availability of equipment, improper port infrastructure systems, skilled manpower, improper management planning and bureaucracy. Therefore, this research study aims to assess these factors and comes with better solution to overcome these problems within the port areas.

2.5 Research gap

Research gaps, empirical reviews , theoretical review, reports , journal articles are expressed in the literature reviews. However, In this study, was difficult to run interviews to the port stakeholders. The port stakeholders fear to provide information on port operation due to secret reason and sad. Tanzania amends statistics Acts (No 3) in 2018. The Acts said that is a criminal offense to provide data without permission from National bureau statistics. The person who provide invalidation data, he/she is in offense and will be punished by providing fine of 600$ or three years imprisonment.

CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction

This chapter consists of description of various ways which were used to collect and analyze data. The description in this chapter includes the research approach, design,area, population, sample size, sampling procedure and techniques, data collection methods, secondary data, primary data, interviews, measurement and analysis of data, observation and questionnaires.

3.1 Research approach

It includes qualitative and quantitative approaches. Keenan (2018) expressed the qualitative approach as the collecting of data quantitatively, or data was observed rather than numerically measured. Hen (2012) explains the quantitative approach as techniques that provide stage by stage to protects the interpretations and application of data. However, the study looked patterns, structures and orders between particular groups of respondents. Furthermore, the study looks to provide a clear understanding of a particular event, organization,and population. Thus, the aim was to learn how much a group operates in a particular setting. Additionally, the quantitative approach has different advantages because it answers questions, understands languages by using SPSS to analyze data and not lose statistical underpinning.

The qualitative data, however, is used to assess subjectively, behaviors, opinions, and attitudes of getting enough information. However, quantitative analysis is applicable to achieve an idea that needs data in quantity form, examples and numbers during the study. Furthermore, the main reason by the researcher for using quantitative and qualitative are those data which analyzed described. Hence, these two methods were better to be used by the person who required reviewing it.

3.2 Research design

Jonas (2007) researched design as a systematic analysis where the main aim is knowledge or in the picture of structures,composition,configurations,man made things, systems, purpose and value. However, the research design was divided into three parts namely;

(a) Praxeology design deals with processes and practices of design,

(b) Phenomenology design which is the study of configurations and forms of items and,

(c) Epistemology design which dealing with methods of knowing (Archer, 1980).

Furthermore, research design was of the descriptive research type. However, this type was important because, first it was scientific,and second was used descriptive information for certain problems.

3.3 Area of study

The research was conducted in Dar es Salaam port. Dar es Salaam port which is the largest port in Tanzania compared to other ports like Tanga, Mtwara, Mwanza and Bukoba. In addition, this Port was very important for the growth of the economy of GDP of the country and hence the landlocked countries like Zambia, Congo DRC, Rwanda, Burundi, Uganda, Zimbabwe, and Malawi depend on this port. Thus, taking this area for study is easier for data collections and provides better solutions for management to improve port efficiency.

3.4 Study Population

Wienlaw (2019) defined population as a whole group of people or thing that the researcher used to study. Proposed organizations in this study includes, TPA, TRA, MOT, TRC, TASAC, Customers and freight forwarders, TPA – 5 employees, TASAC – 7 employees, TRC – 3 employees, TRA – 3 employees, MOT – 5 employees, Freight forwarders – 3 and 3 customers. Thus, this made a total of 32 respondents who were receiving questionnaires and twenty - seven who only responded

3.5 Sample size

Steven (2009) defined size as a total number of investigations that are required for calculating approximation of populations.In this study the researcher used 32 respondents who were purposively selected as the sample for this study, from a sampling frame of 100 people. The Cochran formula for obtaining sample size was used to determine the number of respondents that were sampled for this study.

$$\mathbf{n = \frac{(Z^2) * P * Q}{E^2}}$$

Therefore,

n represent sample size

P represents sampling frame set at 3%

Q is equivalent to '1-**P**'

E represents precision specification, which is 0.05 for this study

Z is the Z value for alpha of 10%, which is 1.645

Substituting;

$$n = \frac{1.645^2 * 003 * 0.97}{0.05^2}$$

n=32

Therefore; in this research study the sample size used was 32.

According to the study, 32 questionnaires were distributed online to the respondents from different port stakeholders as represented in the table 4.3 below:

Table 3. 1: **Sample study**

Serial number	**Office/ Organization**	**Size of sample**	**Sample size in %**
1	TASAC	7	23
2	MOT	5	16
3	TPA	5	16
4	TRC	3	9
5	TRA	3	9
6	FRF	3	9
7	TICTS	3	9
8	CUSTOMERS	3	9
Total		32	100

Sources: Own source, 2019.

3.6 Sampling procedures and techniques

Wienclaw (2019) defines sampling as the chosen number of objects or individuals in a given population such that the chosen group consists of the behavior obtained in the entire group. However, it was crucial that the result applicable in the sample may represent a big population and non-systematically in introductions of bias. Furthermore,the sample was to help the researcher to draw clear observations.

However, there were two methods of sampling which are non-probability and probability sampling. Thus,non-probability sampling was used in this study. Furthermore, it was adopted when the elements in a given population were not known as subject for the purpose of the survey (Sekaran, 2003) .Furthermore, non-probability sampling allowed the researcher to be judged in a sample and select the right one for the important data.

3.7 Data collection methods

According to Hahn (2018) express data collection as involves procedures by which the researcher, scholars and scientific use (what?) to get information for testing the arguments and hypothesis. However, there are different models of getting data. This includes interviews, surveys, experiments and observations. Furthermore, researcher analyzes the data and advance arguments. Thus, the study could follow guidelines on ethics and accuracy.

3.8 Secondary data

According to (Hoax et al. (2005) secondary data was defined as those data which were already obtained by any person and would be maintained by statistical procedures to reuse for other research. However,sources of information that could be used may either be non published or published. Furthermore,the source of data could be taken from,journals,reports of different research, papers, books, operations offices, internet sources and media.

3.9 Primary data

According to (Hoax et al. (2005) primary data is the data gathered by the researcher from primary sources for certain purpose in order to achieve the objectives.These data are gathered through interviews, investigations, observations,surveys, oral histories and questionnaires. Furthermore, primary data was used most in academic, investigatory and journalistic situations (Mercadal, 2019).

3.9.1 Interviews

According to (Goddard et al.,(2006) interviews are a set of items which are used to get some information. However,in the interviews conducted for this study there were a chance to ask

different questions to respondents for the aim of getting more information. Furthermore,the researcher could conduct an interview to all port stakeholders.

3.9.2 Observations

According to (Suen et al.(2014) expressed observations as a wide term surrounding a big range of practices and techniques.However,the observed data was gathered by more than one tool such as papers and questionnaires. According to this method, the researcher may hear or see.However,the researcher could be able to perform and observe the activities conducted in port like, operation activities, documentations and rail operations within the port areas.

3.9.3 Questionnaires

Questionnaires can be expressed as written questions in documents and distributed to respondents for answering and hence the researcher gets more information for achieving the objectives of the study. However the questionnaire might either be self-administered or administered to a group of people by drained management to explain the purpose of the study (Goddard at el., 2006). Furthermore, the questionnaire consists of open-ended questions, thus data collected from the study was analyzed for providing better understanding to the population or large group (Hahn, 2018)

3.10 Data analysis and Measurements

According to the study design that was used, the study allowed in-depth analysis in order to make it easy in the conclusion. However, the study gives a chance to create wide observations. Furthermore, the purpose of the study was to make an assessment of factors causing congestion.

3.10.1 Analysis of the data

According to Kte(2018) broadly data analysis includes an assessment of the data bodies, using a possible tool of array,in the aim of getting information on the data given for helping with the conclusions.According to the study,the data analyses used were qualitative and quantitative. In the qualitative method,the data qualitatively analyzed and the key idea was identified.In the

quantitative model in numerical data, the study used the excel program and the package of software SPSS for graphs, figures and tables.

CHAPTER FOUR

ANALYSIS OF DATA AND RESEARCH FINDINGS

4.0 Introduction

The findings are based on the research methodology study. This provides the explanation of respondents after answering objectives of study. The data collected from the questionnaire which was tabulated and analyzed.The findings were carefully discussed in order to assess the factors causing congestion and providing some recommendations.

4.1 Rate of the respondent's response

The researcher prepared one hundred questionnaires to respondents who were required to answer formatted questions.Thirty two (32) questionnaire were distributed, twenty seven (27) responded and five (5) respondents did not respond which makes for an 84 percent response rate.

4.2 Employment level and gender in the management of port

The study was based on the general information of respondents including gender, and academic qualifications, their employment position and the time period of their current employment. As an indication, 70.4% of respondents are males and 29.6% are female which shows that Port Dar es Salaam is mostly dominated by men. For the academic qualifications, employment levels, time period working in the current organisation which are very important for our study as it gives an idea about the management of Dar es Salaam port, the results are as follows:

The respondents were required to indicate their highest level of academic qualifications. The response is presented in the table 4.1

Table 4. 1 Academic qualifications

Qualification	Frequency	Percent
Certificate	1	3.7
Diploma	5	18.5
Degree	10	37.0
Post graduate Diploma	4	14.8
Master`s degree	7	25.9
PhD	0	0
Others	0	0
Total	27	100

According to table 4.1 above shows that 37 percent of the respondents have a Degree as their highest level of qualification, 25.9 percent had a Master`s degree as their highest level of academic qualification, 18.5 percent had diploma as their highest level of academic qualification, 14.8 percent had a post graduate diploma as their highest level of qualification while 3.7 percent of the respondents indicated certificate as their highest level of qualification and lastly no respondent had a Ph.D or others as their highest level of academic qualification. This implies the majority of the respondents had a degree as their highest level of academic qualification.

4.2.4 Respondent's employment levels

The respondents were again requested to indicate their employment position. The responses are presented on table 4.2

Table 4. 2: Level of employment position

Employment position	Frequency	Percentage
Senior management level	5	18.5
Administrator/Supervisor	4	14.8
Operations	7	25.9
Engineer or technician	3	11.1
Equipment driver	1	3.7
Truck driver	1	3.7
Marketing or commercial	1	3.6
Others (specify)	5	18.4
Total	27	100.0

The result fromTable 4.2 shows that 25.9 percent indicated operations as their current employment position, 18.5 percent are at the Senior management level as their current employment position, 18.5 percent of the respondents also indicated Other levels as their current employment position, 14.8 percent are Administrator/Supervisor as their current employment position, 11.1 percent are Engineer or technician as their current employment position, 3.7 percent of the respondents indicated Equipment driver as their current employment position, also 3.7 percent of the respondents indicated Truck driver as their current employment position and lastly 3.7 percent of the respondents also indicated Marketing or commercial as their current employment position. This implies that the majority of the respondents were in Operations positions.

4.2.5 Time period working in the current organisation

The respondents were requested to indicate how long they have been working at the current organization.The responses are presented in table 4.3

Table 4. 3: Time period of working in current organisation

Time period	Frequency	Percentage
1-5 years	12	44.4
6-10 years	10	37.0
11-15 years	2	7.4
16-20 years	3	11.1
Total	27	100.0

Table 4.3 shows that the majority of the respondents indicated that they have been working at the current organisation between 1-5 years as shown by 44.4 percent. Furthermore, 37 percent of the respondents indicated they have been working at the current organisation between 6-10 years, Also 11.1 percent indicated that they have been working at the current organisation between 16-20 years and lastly 7.4 percent have indicated that they have been working at the current organisation between 11-15 years. This implies that most of the respondents were working at their current organisation between 1-5 years.

4.26.The factors from port management levels

The study on management levels, show that there is a large number of male who are working in the port that is about 70.4%, but small the number of male that is equivalent to 29.4%, this means that there is enough manpower.

In academic qualifications, it shows that there is a large number of staff who have the degree holders, but no staff how to have a PhD holder. This is the big challenge in the operation in the port. The critical issues of port operations were not being solved in professionalism. Therefore, port management shall employee a staff who has a PhD holder in the shipping industry.

Employment position level, in the port there is a small number of truck drivers than senior management levels. Therefore, loading and discharging of cargo were in low tonnage and creates the challenge in the port.

Another challenge was the working conditions; the study shows that, most of the staff does not have enough working experience in the port. The port management in the year 2016 many staff removed due to some reasons such as corruption and theft. The budget of Tanzania 2016/2017 employs new staff to cover the situations.

4.27 The factors in the port operation

The study wants to know the factors that congestion in the port of Dar es Salaam in terms of operation**.**Therefore, these summarized as follows: 4.3 Documentation procedures used in the port

Here the respondents was requested to select scale from 1-4, 1= strongly disagree, 2= strongly disagree, 3= strongly agree and 4= very strongly agree) to level their agreement on the various statements/issues on documentation procedures used in the port in relation with congestion.

4.3.1 The use of information and communication technology

Here the respondents were requested to answer using the likert scale on the information and communication technology used by TPA creating congestion at Dar es Salaam port. Different responses from respondents were shown in table 4.4 as below:

Table 4. 4: Level of agreement on the use of ICT by TPA in relation with congestion

Level of agreement	Frequency	Percent	Cumulative Percent
Very Strongly Disagree	1	3.6	3.6
Strongly Disagree	6	22.4	26.0
Strongly Agree	18	66.7	92.6
Very Strongly Agree	2	7.3	100.0
Total	27	100	

From table 4.4 it is shown 66.6percent strongly agreed on the use of Information and Communication Technology by TPA causes congestion at the port, 22. 4 percent of the respondents strongly disagreed that the use of Information and Communication Technology by TPA causes congestion at the port, 7.3 percent very strongly agreed on the use of Information and Communication Technology by TPA causing congestion at the port and lastly 3. percent very strongly disagreed on the use of Information and Communication Technology by TPA causing congestion at the port. From the results of this table it is indicated that the majority of the respondents strongly agreed that the use of Information and Communication Technology by TPA creates congestion at the port.

4.3.2 Port and custom procedures

Here the respondents were requested to answer using the likert scale to whether if port and custom procedures used by TPA causes congestion at Dar es Salaam port and different responses from respondents were made as shown in table 4.5 below:

Table 4. 5: Level of agreement on the Port and custom procedures used by TPA in relation with congestion

Level of agreement	Frequency	Percent	Cumulative Percent
Very Strongly Disagree	1	3.7	3.7
Strongly Disagree	7	25.9	29.6
Strongly Agree	15	55.6	85.2
Very Strongly Agree	4	14.8	100.0
Total	27	100.0	

Table 4.5 shows that 55.6 percent of the respondents strongly agreed on the port and customs procedures used by TPA to cause congestion at Dar es Salaam port,25.9 percent of the respondents strongly disagreed on Port and custom procedures used by TPA to cause congestion at Dar es Salaam port, 14.8 percent of the respondents very strongly agreed on Port and custom procedures used by TPA to cause congestion at Dar es Salaam port and lastly 3.7percent of the respondents very strongly disagreed on Port and custom procedures used by TPA to cause congestion at Dar es Salaam port. This implies that the majority of the respondents strongly agreed on Port and custom procedures used by TPA to cause congestion at Dar es Salaam port.

4.3.3 Bureaucracy

Here the respondents were requested to answer using the likert scale to whether bureaucracy used by TPA causes congestion at Dar es Salaam port. Different responses from respondents were made as shown in table 4.6 below:

Table 4. 6: Level of agreement on the bureaucracy used by TPA in relation with congestion

Level of agreement	Frequency	Percent	Cumulative Percent
Very Strongly disagree	2	7.4	7.4
Strongly Disagree	4	14.8	22.2
Strongly Agree	18	66.7	88.9
Very Strongly agree	3	11.1	100.0
Total	27	100.0	

From Table 4.6 it is shown that 66.7 percent of the respondents strongly agreed on the fact that bureaucracy used by TPA causes congestion at Dar es Salaam port, 14.8 percent of the respondents strongly disagreed that the bureaucracy used by TPA causes congestion at Dar es Salaam port, 11.1 percent of the respondents strongly agreed that the bureaucracy used by TPA causes congestion at Dar es salaam port and lastly 7.4 percent of the respondents very strongly disagreed that the bureaucracy used by TPA causes congestion at Dar es Salaam port. This indicates that the majority of the respondents strongly agreed on the fact that bureaucracy used by TPA causes congestion at Dar es Salaam port.

4.4 Equipment used by TPA in relation with congestion

Here the respondents were requested to use a likert scale of 1-4 (1= strongly disagree, 2= strongly disagree, 3= strongly agree and 4= very strongly agree) to level their agreement on the various statements/issues on equipment used by TPA in relation with congestion.

4.4.1 Types of equipment

Here the respondents were requested to answer using the likert scale on whether types of equipment used by TPA causes congestion at Dar es Salaam port. Different responses from respondents were made as shown in table 4.7 below:

Table 4. 7: Level of agreement on the bureaucracy used by TPA in relation with congestion

Level of agreement	Frequency	Percent	Cumulative %
Very Strongly Disagree	7	25.9	25.9
Strongly Disagree	4	14.8	40.7
Strongly Agree	15	55.6	96.3
Very Strongly Agree	1	3.7	100.0
Total	27	100.0	

From Table 4.7 it is shown that 55.6 percent of the respondents strongly agreed that the types of equipment used by TPA causes congestion in Dar es Salaam port, 25.9 percent of the respondents very strongly disagreed that types of equipment used by TPA causes congestion in Dar es Salaam port, 14.8 percent of the respondents strongly disagreed that types of equipments used by TPA causes congestion in Dar es Salaam port and lastly 3.7 percent of the respondents very strongly agreed that the types of equipment used by TPA causes congestion in Dar es Salaam port. This implies that the majority of the respondents strongly agreed that the types of equipment used by TPA causes congestion in Dar es Salaam port.

4.4.2 Availability of equipment

Here the respondents were requested to answer using the likert scale on if the availability of equipment used by TPA causes congestion at Dar es Salaam port. Different response from respondents were made as shown in table 4.8 below:

Table 4. 8 : Level of agreement on the availability of equipment used by TPA in relation with congestion

Level of agreement	Frequency	Percent	Cumulative Percent
Very Strongly Disagree	5	18.5	18.5
Strongly Disagree	3	11.1	29.6
Strongly Agree	18	66.7	96.3
Very Strongly Agree	1	3.7	100.0
Total	27	100.0	

Table 4.8 shows that 66.7 percent of the respondents strongly agreed that the availability of the equipment used by TPA causes congestion in Dar es Salaam port.18.5 percent of the respondents very strongly disagreed that availability of equipment used by TPA causes congestion in Dar es Salaam port. 11.1 percent of the respondents strongly disagreed that the availability of equipments used by TPA causes congestion in Dar es Salaam port.Lastly the remaining 3.7 percent of the respondents strongly agreed that the availability of equipment used by TPA causes congestion in Dar es Salaam port. This implies that the majority of the respondents strongly agreed that availability of equipment used by TPA causes congestion in Dar es Salaam port as indicated by the highest percent value.

4.4.3 Efficiency of equipment

Here the respondents were required to answer using the likert scale on if the efficiency of equipment used by TPA causes congestion at Dar es Salaam port. Different responses from the respondents were made as shown in table 4.9 below:

Table 4. 9 : Level of agreement on the efficiency of equipment used by TPA in relation with congestion

Level of agreement	Frequency	Percent	Cumulative Percent
Very Strongly Disagree	3	11.1	11.1
Strongly Disagree	12	44.4	55.6
Strongly Agree	11	40.7	96.3
Very Strongly Agree	1	3.7	100.0
Total	27	100.0	

Table 4.9 above shows 44.4 percent of the respondents strongly disagreed that the efficiency of equipment used by TPA causes congestion in Dar es Salaam port. 40.7percent of the respondents strongly agreed that the efficiency of equipment used by TPA causes congestion in Dar es Salaam port. 11.1 percent of the respondents very strongly disagreed that the efficiency of equipment used by TPA causes congestion in Dar es Salaam port and the remaining 3.7 percent of the respondents strongly agreed that efficiency of equipment used by TPA causes congestion in Dar es Salaam port. This implies that majority of the respondents strongly disagreed that the efficiency of equipment used by TPA causes congestion in Dar es Salaam port.

4.5 Other factors that cause congestion in Dar es Salaam port

Here the respondents were required to use a likert scale of 1-5 (1= strongly disagree, 2=disagree, 3= neither disagree nor agree, 4= agree and 5= strongly agree) to level their agreement on the various statements/issues on other factors that cause congestion in Dar es Salaam port.

4.5.1 Lack of enough cargo handling equipment

Here the respondents were required to answer using the likert scale on if the lack of enough cargo handling equipment used by TPA causes congestion at Dar es salaam port.Different response from respondents were made as shown in table 4.10 below:

Table 4. 10: Level of agreement on the lack of enough cargo handling equipment at TPA in relation with congestion

Level of agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	3	11.1	11.1
Disagree	6	22.2	33.3
Neither disagree nor Agree	4	14.8	48.1
Agree	10	37.0	85.2
Strongly Agree	4	14.8	100.0
Total	27	100.0	

Table 4.10 shows that 37 percent of the respondents agreed that the lack of enough cargo handling equipment at TPA causes congestion in Dar es Salaam port. 22.2percent of the respondents disagreed that the lack of enough cargo handling equipment at TPA causes congestion in Dar es Salaam port while 14.8 percent of the respondents strongly agreed that the lack of enough cargo handling equipment at TPA causes congestion in Dar es Salaam port also 14.8 percent of the respondents neither disagreed nor agreed that the lack of enough cargo handling equipment at TPA causes congestion in Dar es Salaam port . Lastly 11.1 of percent of the respondents strongly disagreed that the lack of enough cargo handling equipment at TPA cause congestion in Dar es Salaam port. This implies that the majority of the respondents agreed that lack of enough cargo handling equipment at TPA causes congestion in Dar es Salaam port.

4.5.2 Lack of enough skilled manpower

Here the respondents were required to answer using the likert scale on if the lack of enough skilled manpower used by TPA causes congestion at Dar es Salaam port. Different response from respondents were made as shown in table 4.11 below:

Table 4. 11: Level of agreement on the lack of enough skilled manpower at TPA in relation with congestion

Level of agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	2	7.4	7.4
Disagree	15	55.6	63.0
Neither disagree nor Agree	6	22.2	85.2
Agree	3	11.1	96.3
Strongly Agree	1	3.7	100.0
Total	27	100.0	

From table 4.11 above it is shown that 55.6 percent of the respondents disagree that the lack of enough skilled manpower at TPA causes congestion in Dar es Salaam port, 22.7 percent of the respondents neither disagree nor agreed that the lack of enough skilled manpower at TPA cause congestion in Dar es Salaam port, 11.1 percent of the respondents neither agreed that the lack of enough skilled manpower at TPA causes congestion in Dar es Salaam port, 7.4 percent of the respondents neither strongly disagreed that the lack of enough skilled manpower at TPA causes congestion in Dar es Salaam port and lastly 3.7 percent of the respondents strongly agreed that the lack of enough skilled manpower at TPA causes congestion in Dar es Salaam port.This implies that the majority of the respondents disagreed that lack of enough skilled manpower at TPA causes congestion in Dar es Salaam port.

4.5.3 Small port size

Here the respondents were required to answer using the likert scale on if the small size of the port cause congestion at Dar es Salaam port. Different responses from respondents were made as shown in table 4.12 below:

Table 4. 12: Level of agreement on the small size of the port with congestion in Dar es Salaam port

Level of agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	1	3.7	3.7
Disagree	5	18.5	22.2
Neither disagree nor Agree	7	25.9	48.1
Agree	9	33.3	81.5
Strongly Agree	5	18.5	100.0
Total	27	100.0	

From table 4.12 it is shown that 33.3 percent of the respondents agreed that the small size of the port cause congestion in Dar es Salaam port, 25.9percent of the respondents neither disagree nor agree that the small size of the port cause congestion in Dar es Salaam port, 18.5 percent of the respondents strongly agreed that the small size of the port cause congestion in Dar es Salaam port, also 18.5 percent of the respondents disagreed that the small size of the port cause congestion in Dar es Salaam port and lastly 3.7 5 percent of the respondents strongly disagreed that the small size of the port causes congestion in Dar es Salaam port. This implies that the majority of the respondents agreed that the small size of the port cause congestion in Dar es Salaam port as indicated by the highest percent value.

4.5.4 Large number of the port users

Here the respondents were required to answer using the likert scale on if the large number of the port users cause congestion at Dar es Salaam port. Different responses from respondents were made as shown in table 4.13 below:

Table 4. 13: Level of agreement on the large number of port users in relation with the congestion in Dar es Salaam port

Level of agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	2	7.4	7.4
Disagree	8	29.6	37.0
Neither disagree nor Agree	6	22.2	59.3
Agree	10	37.0	96.3
Strongly Agree	1	3.7	100.0
Total	27	100.0	

As per results from table 4.13, thirty seven percent of the respondents agreed that the large number of the port users causes congestion in Dar es Salaam port. 29.6 percent of the respondents disagreed that large number of the port users cause congestion in Dar es Salaam port.1n addition 7.4 percent of the respondents strongly disagree that large number of the port users causes congestion in Dar es Salaam port and lasty 3.7 percent of the respondents strongly agreed that the large number of the port users cause congestion in Dar es Salaam port.

This indicates that most of the respondents agreed that the large number of the port users causes congestion in Dar es Salaam port.

4.5.5 Poor port management

Here the respondents were required to answer using the likert scale on if poor port management causes congestion at Dar es Salaam port. Different response from respondents were made as shown in table 4.14 below:

Table 4. 14: Level of agreement on the poor port management in relation with congestion in Dar es Salaam port

Level of agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	3	11.1	11.1
Disagree	6	22.2	33.3
Neither disagree nor Agree	9	33.3	66.7
Agree	5	18.5	85.2
Strongly Agree	4	14.8	100.0
Total	27	100.0	

The results from table 4.14 shows that 33.3 percent of the respondents neither disagree nor agree that Poor port management cause congestion in Dar es Salaam port. The table also shows that 22.2 percent of the respondents disagreed that poor port management cause congestion in Dar es Salaam port. 18.5 percent of the respondents agreed that poor port management cause congestion in Dar es Salaam port. 11.1 percent of the respondents strongly disagreed that poor port management cause congestion in Dar es Salaam port. The results from this table means that majority of the respondents neither disagree nor agreed that poor port management cause congestion in Dar es Salaam port.

4.5.6 Implementation on poor policy

Here the respondents were required to answer using the likert scale on if the poor policy implementation causes congestion at Dar es Salaam port. Different response from respondents were made as in table 4.15 below:

Table 4. 15: Level of agreement on the poor policy implementation relation in relation with congestion in Dar es Salaam port

Level of agreement	Frequency	Percent	Cumulative Percent
Strongly Disagree	3	11.1	11.1
Disagree	7	25.9	37.0
Neither disagree nor Agree	8	29.6	66.7
Agree	2	7.4	74.1
Strongly Agree	7	25.9	100.0
Total	27	100.0	

From the table 4.15 above 29.6 percent of the respondents neither disagree nor agreed that poor policy implementation causes congestion in Dar es Salaam port. 25.9 percent of the respondents disagreed that poor policy implementation cause congestion in Dar es Salaam port, 25.9 percent of the respondents strongly agreed that poor policy implementation causes congestion in Dar es Salaam port. 11.1 percent of the respondents strongly disagree that poor policy implementation causes congestion in Dar es Salaam port.Lastly only 7.4 percent of the respondents agreed that poor policy implementation causes congestion in Dar es Salaam port. This implies that majority of the respondents neither disagree nor agree that the poor policy implementation causes congestion in Dar es Salaam port as indicated by the highest percent.

4.6 Congestion strategies implemented by Dar es Salaam seaports managements

Here the respondents were asked to use a likert scale of 1-5 (1= Never, 2= Very rarely, 3= Rarely, 4= Frequently and 5= Very frequently) to level their agreement on the various statements/issues on congestion strategies which have been found to be useful in dealing with congestion issues in other seaports in the world implemented by Dar es Salaam seaports managements.

4.6.1 Application of appointment systems for ship arrival and departure

Here the respondents were required to use a likert scale to level their agreement on whether Dar es Salaam seaports management implement the use of appointment systems for ship arrival and departure as a congestion strategy in dealing with congestion issues at the port.Different responses from respondents were made as shown in Table 4.16 below:

Table 4. 16: Level of agreement on the use of appointment systems for ship arrivals and departures

Level of agreement	Frequency	Percent	Cumulative %
Never	3	11.1	11.1
Very rarely	1	3.7	14.8
Rarely	3	11.1	25.9
Frequently	15	55.6	81.5
Very frequently	5	18.5	100.0
Total	27	100.0	

According to the Table 4.16 above, there were different response made by the respondents on the use of the appointment systems for ship arrivals and departures as a congestion strategy implemented by Dar es Salaam seaports managements. 55.6 percent of the respondents

indicated that the Dar es Salaam seaports managements frequently implement the use of the appointment systems for ship arrival and departure as a congestion strategy, 18.5 percent of the respondents indicated that Dar es Salaam seaports managements very frequently implement the use of appointment systems for ship arrival and departure as a congestion strategy,11.1 percent of the respondents indicated that Dar es Salaam seaports managements rarely implement the use of appointment systems for ship arrival and departure as a congestion strategy,also 11.1 percent of the respondents indicated that Dar es Salaam seaports managements frequently implement the use of appointment systems for ship arrival and departure as a congestion strategy indicated that Dar es Salaam seaports managements never implement the use of appointment systems for ship arrival and departure as a congestion strategy and lastly 3.7 percent of the respondent indicated that Dar es Salaam seaports managements very rarely implement the use of appointment systems for ship arrival and departure as congestion strategy.This implies that the majority of the respondents agree that Dar es Salaam seaports managements frequently implement the use of the appointment systems for ship arrival and departure as congestion strategy.

4.6.2 Adoption of new technologies in the cargo handling process

Here the respondents were required to use the likert scale to level their agreement on whether Dar es Salaam seaports managements implement on the adoption of the new technologies in cargo handling process as a congestion strategy in dealing with congestion issues at the port.Different responses from respondents were made as shown in Table 4.17 below:

Table 4. 17: Level of agreement on Application of the new technologies in cargo handling process

Level of agreement	Frequency	Percent	Cumulative Percent
Never	1	3.7	3.7
Very rarely	7	25.9	29.6
Rarely	4	14.8	44.4
Frequently	13	48.1	92.6
Very frequently	2	7.4	100.0
Total	27	100.0	

According toTable 4.17 above, there were different responses made by the respondents on the application of the new technologies in the cargo handling process as a congestion strategy implemented by Dar es Salaam seaports managements. 48.1 percent of the respondents indicated that Dar es Salaam seaports managements frequently implement the application of the new technologies in the cargo handling process as a congestion strategy in dealing with congestion issues, 25.9 percent of the respondents indicated that Dar es Salaam seaports managements very rarely implement the application of the new technologies in the cargo handling process as congestion strategy in dealing with congestion issues, 14.8 percent of the respondents indicated that Dar es Salaam seaports managements rarely implement the application of the new technologies in cargo handling process as a congestion strategy in dealing with congestion issues, 7.4 percent of the respondents indicated that Dar es Salaam seaports managements very frequently implement the application of the new technologies in

the cargo handling process as a congestion strategy in dealing with congestion issues and lastly 3.7 percent the respondents indicated that Dar es Salaam seaports managements never implement the adoption of new technologies in the cargo handling process as a congestion strategy in dealing with congestion issues.

This implies that the majority of the respondents agreed that Dar es Salaam seaports managements frequently implement the application of the new technologies in the cargo handling process as a congestion strategy in dealing with congestion issues.

4.6.3 Use of high management information systems

Here the respondents were required to use the likert scale to level their agreement on whether Dar es Salaam seaports management implement the use of management information systems as congestion strategy in dealing with congestion issues at the port. Different response from respondents were made as shown in the table 4.18 below:

Table 4. 18: Level of agreement on the use of the high management information systems

Level of agreement	Frequency	Percent	Cumulative Percent
Never	1	3.7	3.7
Very rarely	2	7.4	11.1
Rarely	9	33.3	44.4
Frequently	13	48.1	92.6
Very frequently	2	7.4	100.0
Total	27	100.0	

From table 4.18 above it is shown that there were different responses made by the respondents on the use of management information systems as a congestion strategy implemented by Dar es Salaam seaports managements.From this table 48.1 percent which is the highest percent of the respondents indicated that Dar es Salaam seaports managements frequently implement the use of management information systems as congestion strategy in dealing with congestion issues and followed by 33.3 percent of the respondents which indicates that Dar es Salaam seaports managements rarely implement the use of management information systems as a congestion strategy.

This implies that the majority of the respondents agreed that Dar es Salaam seaports managements frequently implement the use of management information systems as a congestion strategy in dealing with congestion issues.

4.6.4 Maximize loading capacity of truck and ships

Here the respondents were required to use the likert scale to level their agreement on whether the Dar es Salaam seaports managements implement on maximizing loading capacity of truck and ships as congestion strategy in dealing with congestion issues at the port. Different responses from the respondents were made as shown in Table 4.19 below:

Table 4. 19: Level of agreement on the Maximize loading capacity of truck and ships

Level of agreement	Frequency	Percent	Cumulative Percent
Never	1	3.7	3.7
Very rarely	2	7.4	11.1
Rarely	12	44.4	55.6
Frequently	8	29.6	85.2
Very frequently	4	14.8	100.0
Total	27	100.0	

As per table 4.19 above it is shown that different responses were made by the respondents on maximizing loading capacity of trucks and ships as congestion strategy implemented by Dar es Salaam seaports managements. 44.4 percent of the respondents indicated that Dar es Salaam seaports managements rarely implement on maximizing loading capacity of truck and ships as congestion strategy in dealing with congestion issues, followed by 29.6 percent of the respondents who indicated that Dar es Salaam seaports managements frequently implement the maximizing loading capacity of trucks and ships as a congestion strategy.

This implies that the majority of the respondents indicated that Dar es Salaam seaports managements rarely implement the maximizing loading capacity of truck and ships as a congestion strategy in dealing with congestion issues.

4.6.5 Increase of skilled staff

Here the respondents were required to use the likert scale to level their agreement on whether Dar es Salaam seaports managements will? implement increasing skilled staff as a congestion strategy in dealing with congestion issues at the port.Different responses from respondents were made as shown in the table 4.20 below:

Table 4. 20 : Level of agreement on the increase of skilled staff

Level of agreement	Frequency	Percent	Cumulative Percent
Never	2	7.4	7.4
Very rarely	5	18.5	25.9
Rarely	6	22.2	48.1
Frequently	9	33.3	81.5
Very frequently	5	18.5	100.0
Total	27	100.0	

Table 4.20 shows that different responses were made by the respondents on increasing skilled staff as a congestion strategy implemented by Dar es Salaam seaports managements. 33.3 percent which is the highest percent of the respondents indicated that Dar es Salaam seaports managements frequently implement on increasing skilled staffs as a congestion strategy in dealing with congestion issues,22.2 percent of the respondents indicated that Dar es Salaam seaports managements rarely implement the increasing of skilled staffs as congestion strategy in dealing with congestion issues, 18.5 percent indicated that Dar es Salaam seaports managements very frequently implement the increasing of skilled staffs as a congestion strategy in dealing with congestion issues, 18.5 percent indicated that Dar es Salaam seaports managements very rarely implement on increasing of skilled staffs as congestion strategy in dealing with congestion issues and lastly 7.4 percent of the respondents indicated that the Dar es Salaam seaports managements never implement the increasing skilled staff as a congestion strategy in dealing with congestion issues.

This implies that the majority of the respondents agreed that Dar es Salaam seaports managements frequently implement on increasing skilled staff as a congestion strategy in dealing with congestion issues.

4.6.6 Privatization of container handling processes

Here the respondents were required to use the likert scale to level their agreement on whether Dar es Salaam seaports management implement the privatization of container handling processes as a congestion strategy in dealing with congestion issues in the port. Different responses from respondents were made as shown in table 4.21 below:

Table 4. 21: Level of agreement on the privatization of container handling processes

Level of agreement	Frequency	Percent	Cumulative Percent
Never	5	18.5	18.5
Very rarely	2	7.4	25.9
Rarely	11	40.7	66.7
Frequently	8	29.6	96.3
Very frequently	1	3.7	100.0
Total	27	100.0	

From table 4.21 above it is shown that different responses were made by the respondents on the privatization of container handling processes as a congestion strategy implemented by Dar es Salaam seaports managements.40.7 percent indicate that Dar es Salaam seaports management rarely implement the privatization of container handling processes as a congestion strategy in dealing with congestion issues followed by 29.6 percent indicate that frequently Dar es Salaam seaports management implement the privatization of container handling processes as a congestion strategy.

The 18.5 percent indicate that Dar es Salaam seaports management never implement the privatization of container handling processes as congestion strategy in dealing with congestion issues, 7.4 percent of the respondents indicated that Dar es Salaam seaports

management very rarely implement on privatization of container handling processes as congestion strategy .

Lastly 3.7 percent of the respondents indicated that Dar es Salaam seaports management very frequently implement the privatization of container handling processes as a congestion strategy in dealing with congestion issues.

This implies that majority of the respondents agreed that Dar es Salaam seaports management rarely implement on privatization of container handling processes as congestion strategy in dealing with congestion issues.

4.6.7 Availability of powerful policies useful in decongestion process

Here the respondents were required to use a likert scale to level their agreement on whether Dar es Salaam seaports management implement the availability of powerful policies useful in the decongestion process as a congestion strategy in dealing with congestion issues in the port. Different response from respondents were made as shown in table 4.22 below:

Table 4. 22: Level of agreement on the formation of powerful policies useful in the decongestion process

Level of agreement	Frequency	Percent	Cumulative Percent
Never	1	3.7	3.7
Very rarely	1	3.7	7.4
Rarely	9	33.3	40.7
Frequently	14	51.9	92.6
Very frequently	2	7.4	100.0
Total	27	100.0	

As per table 4.22 above, different responses were made by the respondents on the formation of powerful policies useful in the decongestion process as a congestion strategy implemented

by Dar es Salaam seaports managements. 51.9 percent of the respondents indicated that Dar es Salaam seaports managements frequently implement the formation of powerful policies useful in the decongestion process as a congestion strategy in dealing with congestion issues, 33.3 percent of the respondents indicated that Dar es Salaam seaports managements rarely implemented a formation of powerful policies useful in the decongestion process as a congestion strategy in dealing with congestion issues, 7.4 percent of the respondents indicated that Dar es Salaam seaports managements very frequently implement the formation of powerful policies useful in the decongestion process as a congestion strategy in dealing with congestion issues, 3.7 percent of the respondents indicated that

Dar es Salaam seaports managements never implement the formation of powerful policies useful in the decongestion process as a congestion strategy in dealing with congestion issues and lastly 3.7 percent of the respondents also indicated that Dar es Salaam seaports managements very rarely implement the formation of powerful policies useful in the decongestion process as a congestion strategy in dealing with congestion issues. This implies that the majority of the respondents agreed that the Dar es Salaam seaports managements frequently implements a formation of powerful policies useful in the decongestion process as congestion strategy in dealing with congestion issues.

4.6.8 Reduce bureaucracy in the clearing process

Here the respondents were required to use a likert scale to level their agreement on whether Dar es Salaam seaports managements implement on reducing bureaucracy in the clearing process as a congestion strategy in dealing with congestion issues in the port. Different responses from respondents were made as shown in the table 4.23 below:

Table 4. 23: Level of agreement on reducing bureaucracy in the clearing process

Level of agreement	Frequency	Percent	Cumulative Percent
Never	3	11.1	11.1
Very rarely	1	3.7	14.8
Rarely	7	25.9	40.7
Frequently	14	51.9	92.6
Very frequently	2	7.4	100.0
Total	27	100.0	

According to table 4.23 above, different responses were made by the respondents on reducing bureaucracy in the clearing process as a congestion strategy implemented by Dar es Salaam seaports managements. 51.9 percent of the respondents indicated that Dar es Salaam seaports managements frequently implemented on reducing bureaucracy in the clearing process as a congestion strategy in dealing with congestion issues, 25.9 percent of the respondents indicated that Dar es Salaam seaports managements rarely implement on reducing bureaucracy in the clearing process as a congestion strategy in dealing with congestion issues,11.1 percent of the respondents indicated that Dar es Salaam seaports managements never implemented on reducing bureaucracy in the clearing process.

As a congestion strategy in dealing with congestion issues, 7.4 percent of the respondents indicated that Dar es Salaam seaports management very frequently implemented on reducing bureaucracy in the clearing process as congestion strategy in dealing with congestion issues and last 3.7 percent of the respondents indicated that Dar es Salaam seaports managements very rarely implemented reducing bureaucracy in the clearing process as a congestion strategy in dealing with congestion issues. This implies that the majority of the respondents agreed on the fact that Dar es Salaam seaports managements frequently implement on reducing bureaucracy in the clearing process as a congestion strategy in dealing with congestion issues.

4.6.9 Expansion of the roads to reduce truck traffic to and from the port

Here the respondents were required to use a likert scale to level their agreement on whether Dar es Salaam seaports managements implement on expansion of roads to reduce truck traffic to and from the port as a congestion strategy in dealing with congestion issues in the port. Different responses from respondents were made as shown in table 4.24 below:

Table 4. 24: Level of agreement on increase or widening roads to reduce truck traffic towards and from the port

Level of agreement	Frequency	Percent	Cumulative Percent
Never	1	3.7	3.7
Very rarely	5	18.5	22.2
Rarely	6	22.2	44.4
Frequently	10	37.0	81.5
Very frequently	5	18.5	100.0
Total	27	100.0	

According table 4.24 above, different responses were made by the respondents on increasing or widening roads to reduce truck traffic to and from the port as a congestion strategy implemented by Dar es Salaam seaports managements. 37 percent of the respondents indicated that Dar es Salaam seaports managements frequently implement on expansion of the roads to reduce truck traffic towards and from the port as a congestion strategy in dealing with congestion issues, 22.2 percent of the respondents indicated that Dar es Salaam seaports managements rarely implemented on expansion of roads to reduce truck traffic to and from the port.

As a congestion strategy in dealing with congestion issues, 18.5 percent of the respondents indicated that Dar es Salaam seaports managements very frequently implemented on expansion of the roads to reduce truck traffic to and from the port as a congestion strategy in dealing with congestion issues, 18.5 percent of the respondents also indicated that Dar es Salaam seaports managements very rarely implemented on expansion of the roads to reduce truck traffic to and from the port as a congestion strategy in dealing with congestion issues and les than 3.7 percent of the respondents indicated that Dar es Salaam seaports managements never implements on expansion of the roads to reduce truck traffic to and from the port as a congestion strategy in dealing with congestion issues.

This implies that the majority of the respondents agreed that Dar es Salaam seaports managements frequently implements on expanding the roads to reduce truck traffic to and from the port as a congestion strategy in dealing with congestion issues.

4.6.10 Increase the efficiency of the railway shipping system

Here the respondents were required to use a likert scale to level their agreement on whether Dar es Salaam seaports managements implement on increasing the efficiency of the shipping railway system as a congestion strategy in dealing with congestion issues at the port. Different response from respondents were made as shown in table 4.25 below:

Table 4. 25: Level of agreement on increase the efficiency of the railway shipping system

Level of agreement	Frequency	Percent	Cumulative Percent
Never	4	14.8	14.8
Very rarely	1	3.7	18.5
Rarely	8	29.6	48.1
Frequently	12	44.4	92.6
Very frequently	2	7.4	100.0
Total	27	100.0	

From table 4.25 above, different responses were made by the respondents on increasing the efficiency of the shipping railway system as congestion strategy implemented by Dar es Salaam seaports managements. 44.4 percent of the respondents indicated that Dar es Salaam seaports managements frequently implement on increasing the efficiency of the shipping railway system as congestion strategy in dealing with congestion issues, 29.6 percent of the respondents indicated that Dar es Salaam seaports managements rarely implement on increasing the efficiency of the shipping railway system as congestion strategy in dealing with congestion issues, 14.8 percent of the respondents indicated that Dar es Salaam seaports managements never implemented on increasing the efficiency of the shipping railway system as congestion strategy in dealing with congestion issues.

The 7.4 percent of the respondents indicated that Dar es Salaam seaports managements very frequently implement on increasing the efficiency of the shipping railway system as congestion strategy in dealing with congestion issues and lastly 3.7 percent of the respondents indicated that Dar es Salaam seaports managements very rarely implement on increasing the efficiency of the shipping railway system as congestion strategy in dealing with congestion issues. This implies that the majority of the respondents agreed on the fact that that Dar es

Salaam seaports managements frequently implement on increasing the efficiency of the shipping railway system as congestion strategy in dealing with congestion issues.

4.6.11 Increase the efficiency or speed of the crane

Here the respondents were required to use a likert scale to level their agreement on whether Dar es Salaam seaports managements implement on increasing the efficiency of speed of the crane as a congestion strategy in dealing with congestion issues at the port. Different responses from respondents were made as shown in table 4.26 below:

Table 4. 26: Level of agreement on increasing the efficiency or speed of the crane

Level of agreement	Frequency	Percent	Cumulative Percent
Never	1	3.7	3.7
Very rarely	6	22.2	25.9
Rarely	11	40.7	66.7
Frequently	5	18.5	85.2
Very frequently	4	14.8	100.0
Total	27	100.0	

Table 4.26 above shows that different responses were made by the respondents on increasing the efficiency of speed of the crane as a congestion strategy implemented by Dar es Salaam seaports managements. 40.7 percent of the respondents indicated that Dar es Salaam seaports managements rarely implement on increasing the efficiency of speed of the crane as a congestion strategy in dealing with congestion issues, 22.2 percent of the respondents indicated that Dar es Salaam seaports managements very rarely implement on increasing the efficiency of speed of the crane as a congestion strategy in dealing with congestion issues.

The 18.5 percent of the respondents indicated that Dar es Salaam seaports managements frequently implement on increasing the efficiency of speed of the crane as a congestion strategy in dealing with congestion issues, 14.8 percent of the respondents indicated that Dar es Salaam seaports managements very frequently implement on increasing the efficiency of speed of the crane as a congestion strategy in dealing with congestion issues and les than 3.7 percent of the respondents indicated that Dar es Salaam seaports management has never implemented on increasing the efficiency of speed of the crane as a congestion strategy in dealing with congestion issues. This implies that the majority of the respondents agreed that Dar es Salaam seaports managements rarely implement on increasing the efficiency of speed of the crane as a congestion strategy in dealing with congestion issues.

4.6.12 Expand the size of the terminals

Here the respondents were required to use a likert scale to level their agreement on whether Dar es Salaam seaports managements implement on expanding the size of the terminals as a congestion strategy in dealing with congestion issues at the port. Different responses from respondents were made in table 4.27

Table 4. 27: Level of agreement on expanding the size of the terminals

Level of agreement	Frequency	Percentage	Cumulative in Percentage
Never	1	3.7	3.7
Very rarely	6	22.2	25.9
Rarely	8	29.6	55.6
Frequently	7	25.9	81.5
Very frequently	5	18.5	100.0
Total	27	100.0	

Table 4.27 above shows that different responses were made by the respondents on expanding the size of the terminals as congestion strategy implemented by Dar es Salaam seaports managements. 29.6 percent of the respondents indicated that Dar es Salaam seaports managements rarely implement on expanding the size of the terminals as a congestion strategy in dealing with congestion issues followed by 25.9 percent of the respondents who indicated that frequently Dar es Salaam seaports managements implement on expanding the size of the terminals as a congestion strategy. 22.2 percent of the respondents indicated that Dar es Salaam seaports management very rarely implement on expanding the size of the terminals as congestion strategy, 18.5 percent of the respondents indicated that Dar es Salaam seaports managements very frequently implemented on expanding the size of the terminals as a congestion strategy and lastly 3.7 percent of the respondents indicated that Dar es Salaam seaports managements never implemented on expanding the size of the terminals as congestion strategy.

This implies that the majority of the respondents indicated that Dar es Salaam seaports managements rarely implement on expanding the size of the terminals as a congestion strategy in dealing with congestion issues.

4.6.13 Monitoring transit

Here the respondents were required to use a likert scale to level their agreement on whether Dar es Salaam seaports managements implement on monitoring transit as a congestion strategy in dealing with congestion issues at the port. Different responses from respondents were made as shown in table 4.28 below

Table 4. 28: Agreement on Monitoring transit

Level of agreement	Frequency	Percentage	Percent in cumulative
Never	1	3.7	3.7
Very rarely	3	11.1	14.8
Rarely	9	33.3	48.1
Frequently	10	37.0	85.2
Very frequently	4	14.8	100.0
Total	27	100.0	

Table 4.28 above shows that different responses were made by the respondents on monitoring transit as a congestion strategy implemented by Dar es Salaam seaports managements. 37 percent of the respondents indicated that Dar es Salaam seaports managements frequently implement on monitoring transit as a congestion strategy in dealing with congestion issues, 33.3 percent indicated that Dar es Salaam seaports managements rarely implement on monitoring transit as congestion strategy in dealing with congestion issues.

The 14.8 percent of the respondents indicated that Dar es Salaam seaports managements very frequently implemented on monitoring transit as a congestion strategy in dealing with congestion issues, 11.1 percent indicate that Dar es Salaam seaports management very rarely implemented on monitoring transit as a congestion strategy in dealing with congestion issues and lastly 3.7 percent of the respondents indicated that Dar es Salaam seaports managements never implemented on monitoring transit as a congestion strategy in dealing with congestion issues. This implies that the majority of the respondents indicated that Dar es Salaam seaports managements frequently implement on monitoring transit as congestion strategy in dealing with congestion issues.

4.7 Findings summary

The main reasons of the study were to assess the factors causing the congestion in the Port of Dar es Salaam Port of the United Republic of Tanzania. From the broad purpose of this study three specific objectives were stated as follows: to identify the level of port congestion in Dar es Salaam port, to examine the speed of cargo deliveries in relation to port congestion and to determine the documentation procedures in relation to port congestion and the appropriate measures to be taken in order to overcome the factors of port congestion.These three specific objectives were further narrowed down into three research questions to guide this study. In this study the research design used was descriptive research type and the findings were as follows:

The findings show that the application of information, communication and technology, custom procedures and bureaucracy used in the port creates congestion at the port. The findings of this study also show that the types of equipment, availability of the equipment and the efficiency of the equipment used in the port creates congestion. In addition, this study found that other factors that cause congestion at Dar es Salaam port were a lack of enough cargo handling equipment, the small size of the port and the big number of the port users. It was also found that the lack of enough skilled manpower, poor port management and poor policy implementation are not among the factors that cause congestion at Dar es Salaam port.

On the side of congestion strategies implemented by Dar es Salaam seaports managements, the study found that Dar es Salaam seaports managements frequently implement on the use of appointment systems for ship arrival and departure, adoption of new technologies in cargo handling process, use of high management information systems, increasing of skilled staff, formation of powerful policies useful in decongestion process,reduction in the bureaucracy in the clearing process, increasing/widening roads to reduce truck traffic towards and from the port, increasing the efficiency of the railway shipping system and monitoring transit as congestion strategies in dealing with congestion issues. It was also found that Dar es Salaam seaports managements rarely implement on maximizing the loading of capacity of trucks and

ships,the privatization of container handling processes,increasing the efficiency speed of the crane and expansions of the size of the terminals,as congestion strategies in dealing with congestion issues.

CHAPTER FIVE

CONCLUSION AND RECOMENDATIONS

5.0 Conclusion

The reasons of this study were to assess factors causing congestion at the Port of Dar es Salaam. The study particularly involved in investigating that hindering the operations of the port such as labor,equipment, policy, management, infrastructure, information, communication and technological systems and documentation and customers procedures.

According to the study, different methods of data collections were involved such as interviews, questionnaires, documents, books and observations. From the questionnaire, thirty (30) respondents were asked to answer the questions; twenty seven (27)responded and three (3) of them did not due to the secrecy aspect of sensitive of certain information of the organizations involved.

However, the port was important in the United Republic of Tanzania. It provides services to both internal and external customers, revenue generation, the transportation of cargo and goods and the employment of citizens. The Port should require working in an efficient and effective way in order to attract more customers, shipping lines and to compete with other ports like Mombasa port in Kenya which is nearby.

Furthermore, the port surffered with good services, handling equipment, use of information, communication and technological systems,the small area of the port,improper policies, skilled manpower, customs documentation procedures, infrastructure systems, and bureaucracy. Thus, these factors has led to losing customers, shipping lines, import and export trades, government revenue generation, efficiency and the overall performance of the port. Therefore, the government and Port management were required to take some measures to tackle these factors in order to help the Port to be operated more efficiently and effectively.

6.0 Recommendations of the study

According to the study, there are measures to be taken by the government of the United Republic of Tanzania and Tanzania Port Authority for the aim of reducing congestion and improving operations in the port and summarized as follows:

6.1 Providing training to workers

The Port management should require providing training workers in and out of the Country in order to increase performance and operations. However, by observing, there were some workers of the Tanzania port authority getting a chance to study at the World Maritime University in different areas of specializations, for the aim of improving the shipping industry. Therefore this may change the situation of the Dar es Salaam port.

6.2 Expansion of the port

The area of the port is small;the management of port would be required to increase the port size by increasing the terminal in order to reduce the dwell time for ships. However there were areas near to the port belonging to the Tanzania navy and Mwalimu Nyerere memorial academy, if possible the government of Tanzania can shift the navy and the college to another area in order to expand the port's size (See figure 1.3**).**

6.3 The information and communication technology system in the port

The study shows that the application of information, communication, and technology in the port was low. CT is most useful in documentation clearance and other operations in the port. The documentation procedure takes a long time and hence creates disturbance to customers. However, the port of Singapore authority uses ICT more efficiency. The Documentation process takes ten minutes only. Furthermore, the port management of Tanzania shall visit Singapore to learn how it could be done in the documentation process with the application of ICT. This can help them in cargo clearance, increase performance and productivity in the port.

6.7 Custom procedures and documentations

The top management of the Port shall provide better ways for the customs and documentation procedures because it takes a long time to clear the documentations compared with other international ports. A good example is the Port of Singapore Authority where the documentations and customs procedures took ten minutes,but in Dar es Salaam port took five days (See table 5.1)

Table 5. 1: Documentation procedures

Stages to Export	Days	Stages to Import	Days
Customs clearance & inspections	4	Customs clearance & inspections	5
Documents preparation	8	Documents preparation	13
Inland transportation & handling	2	Inland transportation & handling	1
Ports and terminal handling	4	Ports and terminal handling	7
Total	**18**	**Total**	**26**

Note: Some of these stages happen in parallel with,or prior to, the arrival of cargo so that average dwell time is not 26 days.
Source: http://openknowledge.worldbank.org/handle/10986/20997

Source: Port handbook 2019- 2020

6.8 Bureaucracy

According to the meeting held by the Head of State on Friday, June 7, 2017, in Dar es Salaam city to all businessmen, it was said that,bureaucracy, tax burden, and corruption are the key factors that lay down the port of Dar es Salaam's performance. There are some officials from the government who demand traders in helping without following procedures to help in documentation procedures and clearance in the port. However, the control auditing general report shows that there about sixty ships which were not recorded during loading and discharging cargoes and not paying the revenues The managements of the port should require removing bureaucracy to the customers. The best things were to improve the information technology systems in communications, documentations and procedures for customs, and this should be done electronically.

6.9 Efficiency of equipment

Port management should invest in modern equipment which can facilitate the smooth handling of cargoes and also avoid any incident that can occur during the operations.

6.9.0 Port management

Port management should have proper planning structures for the organizations, knowledge and skills of the shipping industry to ensure that all operations in the port were going well. However, they should go with technological change in future? generations of ports.

6.9.2 Policy implementations

The policy in the organization is very important; it provides clear directions in the working process.The management of the port should implement policy to their working area. However, the government of Tanzania should make sure that the port management implements the policy in the working areas.

6.9.3 Container handling process privatizations

The container terminals were privatized to private operators known as Tanzania international container terminal service in the 2000 year (Tanzania port handbook, 2019-2020). The main objectives of privatizing this terminal are to improve efficiency and productivity in cargo handling. Instead of privatizing the terminal, but the average dwell time for a ship for loading and discharging the cargo takes seven days (7). Therefore, this is a major problem in port operation. The operator has not enough space for storing cargo. The management of port shall provide another big area to overcome the situations.

6.9.4 Expansion of road for reduction of truck traffic

The Tanzania Government is improving roads from the port by expanding and construction of flyover at Nyerere Road and the Ubungo interchange at Mandera Road. However, the main reason was to reduce the trucks of traffic from Dar es Salaam Port (Bank of Tanzania, 2018).

6.9.5 Railway efficiency in shipping systems

According to the bank of Tanzania(2018)The Government of Tanzania wants to? rehabilitate the meter gauge rail from Dar es Salaam to Isaka in the Tabora region and construct new railway of seven hundred and two(702) kilometers to link with the branch of Rwanda and Burundi. This was to improve the transportation of cargo from the Port of Dar es Salaam to landlocked countries such as The Republic of Congo, Zambia, Rwanda and Burundi (Port handbook, 2019 – 20).

However, the Government of Tanzania is now constructing a new standard gauge rail (SGR) from Dar es Salaam to the Mwanza region of 1219km into five phases (See table 5.2). However, the project was approximate 1.773USD billion from its own funds (Bank of Tanzania, 2018).

Table 5. 2: Shows phases of SGR construction

S/n	From	To	Length of Rail in km
1	Dar es Salaam	Morogoro	300
2	Morogoro	Makutopora	422
3	Makutopora	Tabora	294
4	Tabora	Isaka	133
5	Isaka	Mwanza	60
Total			**1219**

Source: Bank of Tanzania, 2018.

Furthermore, another project is the rehabilitation of Dar es Salaam, Tanga and Moshi railway line, and constructions of 668 km rail from the Arusha region in the northern part of Tanzania to Mwanza to join with Musoma port in Lake Victoria (Bank of Tanzania, 2018).
Additionally, although these projects were on going,the Government of Tanzania should make sure that these projects could be completed in time.

6.9.6 Terminal size expansion

The terminals of Dar es Salaam port were expanded through the maritime gateway projects that involve deepening and expanding the berth and channels (Bank of Tanzania, 2018). However, port management should make sure that the project is finished in time.

The Government of Tanzania provides Tsh 336.7 billion for port expansion. The expansion involves jetties of 192m in length, that can handle ships weighing 45,000 to 60,000tonnes. However, another expansion involving the RoRo berth can accommodate 10,000 vehicles in one day instead of 2500 per day. Therefore,per year it will accommodate 200,000 vehicles instead of 90,000.Additionally,another project involves the construction of berth number three (3) that can receive high- class ships of fifteen (15) meters depth carrying a capacity of six thousand (6000) tones of containers, instead of two thousand and five hundred (2500) tonnes (See figure 5.1)

Figure 5. 1: Expansion of Port terminal

Source: Port Handbook, 2019

6.9.7 Recommendations for Further Research

The findings of this study are not exhaustive to improve port performance in all ports in Tanzania. Therefore, the following recommendation was made for further research:

i. This study limited itself at Dar es salaam port only. A nationwide study should be carried out to all ports in the country to establish the factors that cause congestion in different ports in the country.

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Appendix 1: Questionnaire and message to the respondents

Introduction

My name is Fadhili Harubu Maneno, a current student at the World Maritime University, a specialized university in maritime and ocean affairs, created by the International Maritime Organization (IMO). I am undertaking an MSc in Maritime Affairs with a specialization in (Shipping Management and Logistics). I am currently conducting a research study titled "**Assessment of factors causing congestion,**" a case study of Dar es Salaam Port in Tanzania.

The purpose of this research is to identify the causes of Port congestion at Dar es Salaam port. You have been selected as one of the respondents to this questionnaire. I, therefore humbly request that you complete the questionnaire provided below which includes both open-ended and closed-ended questions based on the research objectives.

Port stakeholders who are dealing with port operations such as, TPA staff, clearing and forwarding agencies, Tanzania Shipping Agency Corporation, senior stakeholders of railways, customers and staff of the Ministry of Transport are targeted for this questionnaire.

You can contact the researcher at:

Mobile No: +255 714 10 46 76, +46 73 700 63 57 or email address; w1802929@wmu.se

Thank you for agreeing to complete the questionnaire.

SECTION A: Respondent profiles

Department/ Section/ Institution …….....

Status of Gender (Tick on blacket below)

Male ( )

Female ( )

Age status (Tick on blackets below)

18-28 years ( )

29-39 years ( )

40-50 years ( )

51-61 years ( )

Qualification (Tick on bracket)

Certificate level ( )

Diploma level ( )

Degree level ( )

Postgraduate diploma ( )

Master's degree ( )

PhD ( )

Others (specify) ( )

Which level of staff

Senior management ( )

Supervisor/ Administrator ( )

Operation officer ( )

Technician or Engineer ( )

Clack of Documentation ( )

Equipment driver ( )

Driver of Truck ( )

Commercial or marketing ( )

Others (specify) ( )

What is the working at this organization?

1-5 years ( )

6-10 years ( )

11-15 years ( )

16-20 years ( )

21-25 years ( )

26-30 years ( )

SECTION B:

The aim of study want to know documentation procedure at TPA causing congestion. Please the put number on the variable,1= disagree strongly, 2= strongly disagree, 3= agree strongly and 4= agree very strongly

	Very Strongly disagree	Strongly Disagree	Strongly Agree	Very Strongly agree
Application of Information, communication systems(ICT)				
Customs and port procedures				
Bureaucracy				

Study want to know if equipment used by TPA causing congestion. Please put number you select to the variables 1= strongly disagree, 2= strongly disagree, 3= agree strongly and 4= agree very strongly

	Very Strongly disagree	Strongly Disagree	Strongly Agree	Very Strongly agree
Equipment types				
Availablity of equipment				
equipment efficiency				

Study aim to know if other factofs causing coungestion at Port of Dar es Salaam. Please put the number to a selected

	Strongly Disagree (1)	Disagree (2)	Neither disagree nor agree (3)	Agree (4)	Strongly Agree (5)
Lack of enough cargo handling equipment's					
Lack of enough skilled manpower					
Small size of the port					
Large number of the port users					
Poor management in the port					
Implementation of poor policy					

8. What are strategies used by Tanzania port authority to reduce congestion of cargo in the port

_____

_____

9. Aim of the study want to know if management of Tanzania port authority implement the strategies reduce congestion in the port. Please put vote to the selected variables

	Never (1)	Very rarely (2)	Rarely (3)	Frequently (4)	Very frequently (5)
Application of appointment systems for ship arrival and departure					
Application of new technologies in cargo handling process					
Application of management information systems					
loading capacity of truck and ships maximization					
Increase of skilled staffs					
container handling processes privatization					
Availability of powerful policies in decongestion process					
Reduction of bureaucracy in clearing process					

Expansion of roads to reduce Traffics of trucks from and toward in the port					
Growth of efficiency in the railway shipping system					
Increasing speed of crane and efficiency					
Terminal size expansion					
Transist mornitoring					

According to your opinion what should be done to reduce congestion of cargo in the port _____

Apendix 2: Interview questions

1. What factors causing congestion

2. At what level port congestion affects operation

3.How much time taken for containerized cargoes to be loaded in and taken out to the port

4.Which system of electronic data interchange used in the port to to help cargo clearance?

5.Which facilities applicable to unloading containerized and loading and cargo in the port

6. The policy which are framed, revising and implemented by Ministry of Transport helps TPA to address congestion problems

7. According to the challenges present in cargo documentation procedures in the port, what are measures taken to address this challenges.