THE ROLE OF MERIDIAN PORT SERVICES (MPS) IN REDUCING CONGESTION AT THE PORT OF TEMA

BY

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JULY, 2012
DECLARATION

I Stephen Benson Cobbinah hereby declare that except for references to other people's work which have been duly acknowledged, this dissertation is a result of my own research carried out under the supervision of Dr. Kwadwo Kwabia and Mr. S. O. K. Yeboah. No part of this work has been presented anywhere for a degree.

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Supervisor's Signature: ................................. 27th June 2013

Mr. Stephen O. K. Yeboah
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ABSTRACT

As international trade grows the volume of cargo handled at ports also increases as sea transport has been seen to be one of the cheapest among the various means of transport. According to Prof. Alan Branch (1994) 98% of world trade is transported by sea. Currently very large container vessels are being built to take advantage of the huge volumes of cargo that are being produce by the Asia tigers to other parts of the world. Ghana has been getting it fair share of this volume of cargo that are being transport by sea.

The Ports serves as the interface between the sea and the land where cargo from vessels can be discharged or loaded for onward transfer to their place of delivery. The Port of Tema according to the Ghana Ports handbook (2010/11) handled over 70% of Ghana’s seaborne trade in the year 2010. This shows that if any negative activity affects the Port it will have a consequential effect on the whole economy of the state.

Congestion which is define by Professor Patrick M. Alderton as perceived insufficient port capacity to cope with traffic arriving at the Port is one of the conditions that have negative effect on the operations of the Port. The research sought to identify the causes of congestion at the port of Tema, to assess the contribution of Meridian Port Services (MPS) towards reduction of congestion at the port of Tema to make recommendations to help in reducing the level of congestion at the port.

The study was an exploratory one which looked at the role of Meridian Port Services in reducing congestion at the Port of Tema. The research employed both qualitative and quantitative approaches in the data collection and analyses of responses. Both primary and secondary sources were used to gather data for the research. The primary sources of data were questionnaires and
interviews. The questionnaires were administered to both freight forwarders and shipping agents whilst an official of Meridian Port Services interviewed. The secondary sources of data were magazines, reports, port hand books among others. The simple random sampling method of data collection was used in the questionnaire administration.

Out of the research it was revealed that there was congestion at the Port of Tema and this was due to bureaucracies in documentation, inadequate port handling equipment and delays on the part of shipper/freight forwarders. Low productivity, time wasting, high ship turnaround time were some of the effects of congestion identified in the studies. Some of the shipping companies were charging congestion surcharge of US$ 100 and US$ per teu which does not augur well with the shipper/importer. The surcharge imposed on shippers is used by the shipping line to defray part of the cost incurred as a result of congestion.

It was also revealed in the study that MPS was efficient in their operations and that is due to the fact that they have a high berth productivity rate (average 31 mph), have modern operational equipment and have dedicated and well trained staff who were working tirelessly to make sure every bottleneck in the terminal operations is minimised.

Majority of respondents preferred the use of the scan for examination of containers but contemplated that long queues at the scan sometimes made them requested for physical examination of containers. It is therefore strongly recommended that additional scanning machines should be installed at the Port to reduce the pressure on the existing scan which adds ups to the congestion at the port.
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<td>Ghana Institute of Freight Forwarders</td>
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<td>GPHA</td>
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<td>Inland Container Depot</td>
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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

The Tema port covers a land area of 3.9 million square metres and is flanked by an industrial city. Within the port’s environs are Inland Clearance Depots (ICDs), Warehouses, Transport and haulage companies and related service centres. The port of Tema has 12 berths with draughts ranging from 8.0 to 11.5m with additional dedicated oil jetty and the Valco berth. The port has 77200m$^2$ of paved area for the storage of containers, steel products and other conventional cargo. The closed storage area, which is about 25,049m$^2$ (2.51 hectares), consists of six (6) sheds with a total storage capacity of 50,000 tonnes of cargo (GHANA PORTS$^1$). The port of Tema handles approximately 70% of Ghana's seaborne freight traffic. It also serves to some extent as a gateway for the landlocked countries of Mali, Niger and Burkina Faso (MPS$^2$).

A port is a facility for receiving ships and transferring cargo to and from them. They are usually situated at the edge of an ocean or sea, river or lake. Ports often have cargo-handling equipment such as cranes and forklifts for use in loading and unloading of ships, which may be provided by private interests or public bodies (Wikipedia: 2012)$^3$.

Containerization has gradually become a dominant method of moving cargo the world over since its introduction in the 1960s and so has investment in container terminals. Container terminals form a central part of the transport infrastructure and its development leads to the overall

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$^1$ www.ghanaports.gov.gh
$^2$ www.mps-gh.com
$^3$ en.wikipedia.org
development of the port system. Since the introduction of the first internationally-standardised container in the 1960s, container trade has grown rapidly to reach an estimated 143 million in TEU and 1.24 billion in tonnage, comprising over 70% of the value of world international seaborne trade (UNCTAD: 2008). It has dramatically reduced the transport cost of international trade (Qianwen Liu: 2010). With the benefits derived from containerization the Tema port has also positioned itself to take advantage of it by opening the way for the operation of container terminals within and around the port.

A port is said to be congested when there is inadequate space to accommodate ships or cargo due to various port activities. Port congestion is characterized by backlogs and long delays, high cost of doing business and many other negative effects.

As international trade grows the volume of cargo handled at ports also increases as sea transport has been seen to be the cheapest among the various means of transport. According to Prof. Alan Branch (1994), 98% of world trade is transported by sea. The then director General of the Ghana Ports and Harbours Authority indicated that at present 85% of Ghana’s world trade is transported by sea through our Ports (B. Owusu Mensah: 2002). Over 70% of Ghana’s seaborne trade is handled by the Port of Tema (Ghana Ports 2010/11).

While ports have always been important nodes in the logistics system, globalization of production has sharpened the need for ports to be value adders in the supply chain, and has given ports a unique opportunity to become value-adding entities. A port is the interface between

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5 Qianwen Liu (2010): Efficiency Analysis of Container Ports and Terminals
8 GHANA PORTS HANDBOOK 2010/2011
intercontinental transport and a place in the hinterland being considered for production, assembly, or final distribution. Port capability and efficiency can greatly influence the decision for locating a plant or distribution center, and often determine whether a local producer can compete globally or regionally with other producers. The challenge is for ports to relate to the needs of their customers and assist them in improving their competitive positions by providing low-cost and efficient port services (World Bank: 2007).^9

Globalisation is defined by the Longman Dictionary of Contemporary English (2007)^10 as the process of making something such as a business operate in a lot of different countries all around the world. Globalisation therefore refers to the tendency of productive activities, goods, ideas, practices and technologies to move beyond domestic and national markets to other markets around the globe, thereby allowing them to become interconnected with different markets.

The Port of Tema plays a major role in the socio-economic development of Ghana. This means that the seaports are a major gateway through which Ghana export and import goods. With Ghana government’s vision of becoming the gateway to the West African sub-region, the Tema port has also set for itself the vision of becoming a preferred port in the sub-region (www.ghanaports.gov.gh).^11 For the gateway project to materialize, measures have been put in place such as the deepening of berths, extension of quay and procurement of gantry cranes for container handling, installation of X-Ray scanners and the development of new container terminals. The gateway project has the aim of reducing the cost of doing business at the port and also to facilitate trade.

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^9 World Bank(2007): Port Reform Tool Kit, Module 2
^11 www.ghanaport.gov.org
Congestion has negative effects on both ports and their national economies. According to the European Association for Forwarding, Transport, Logistic and Custom Services (CLECAT: 2006), the two most obvious effects of congestion certainly are delays and costs.

Because of congestion at ports “severe pains have been inflicted on businesses especially in the following areas of high and compounding interest charges on funds used for importation by firms of which bulk of the funds were from the banks. As a result, many factories have been forced to close shop as their raw materials were held up in the ports; putting thousands of jobs at risk, and production cycle of many manufacturing firms have suffered severe disruptions. (Bolaji Akintola: 2011) Also, importers are burdened with huge demurrage charges.

Congestion also leads to high ship turn around time as vessels will have to wait at anchorage till there is available space at the harbor to accommodate them. This creates additional costs for shipping companies who in turn push these costs unto importers in the form of levies such as congestion surcharge. Congestion at the container terminal will automatically lead to congestion at the port itself as inadequate terminal space for container storage which is as a result of high container dwell time means storing a lot of containers at the ship side which will also affect other port activities.

1.2 STATEMENT OF THE PROBLEM

The arrival of Meridian Port Services (MPS) at the Tema Port led to the injection of further resources into the operations of the port but congestion still continues to be a problem to the stakeholders of port. Congestion at the port has led to an increased cost of doing business around

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12 CLECAt (2006): Congestion Overview and Consequences for Logistics
13 BOLAJI AKINTOLA (2011): Port Congestion: Stakeholders Blame Customs, NDLEA
Tema and other parts of the country and importers are consistently complaining of delays in clearing their cargo. The trend of containerization in the maritime trade has been an ever increasing one which means the MPS container terminal has to position itself well enough to be able to handle the increasing volumes of containers being expected at the port.

1.3 RESEARCH OBJECTIVES

The main objective for this research is for academic purposes and to find out the level of congestion at the MPS terminal. The following are the specific objectives:

i. to identify the causes of congestion at the port of Tema.

ii. to assess the contribution of Meridian Port Services (MPS) towards reduction of congestion at the port of Tema.

iii. to make recommendations to help in reducing the level of congestion at the port.

1.4 RESEARCH QUESTIONS

Within the context of the problem statement of the study and objectives above, this research will seek to answer the following questions;

1. What are the causes of congestion at the port of Tema?

2. What are the effects of congestion on port operations?

3. Has the operations of Meridian Port Services (MPS) had any effect on congestion at the port?
4. What are the measures put in place to reduce congestion in order to improve productivity of Tema port?

1.5 METHODOLOGY

This section discusses how the fieldwork was organized and the methods that were used in collecting the relevant data for the study. It discusses the sources of data were employed for the analysis to achieve the objectives set above.

1.6 JUSTIFICATION OF THE STUDY

The study is of much importance because it will add to existing knowledge on port congestion which will serve as a source of information for fighting the congestion phenomenon.

Also, the study will help identify the loop-holes in the port operations that lead to congestion and identify ways and means of curbing them and this will help reduce vessel waiting time thereby making the port a preferred port for shipping lines in the light of increase volumes in international trade. Container dwell time at the terminals will be reduced.

Furthermore, it will lead to improvement in the economy since warehouses, factories, etc will have their raw materials on time for production, and there wouldn’t be the need for shipping lines to levy shippers for the time lost (congestion surcharge and demurrage) due to congestion which is in turn pushed onto the prices of goods and services.
1.7 SCOPE OF THE STUDY

The scope of the study will be the harbour areas of Tema and it will look at container flow from ship to the MPS container terminals through to the land transport nodes. This will help to identify the causes of congestion within the logistics chain involved in the process of container movement from the ship to the importer.

1.8 LIMITATIONS OF THE STUDY

The unavailability of some respondents and the unwillingness of others to co-operate due to their personal reasons and time factor are the limitations that were encountered in gathering data for this research.

1.9 ORGANISATION OF THE STUDY

The study is divided into five chapters. Chapter one comprises the background of the study, statement of the problem, research objectives, and research questions, significance of the study, scope and organization of the study. Chapter Two will discuss the relevant literature related to the study. Chapter Three will describe the methodology used in the study. This will include the study design, population and sampling procedures, sources of data and data analysis. Chapter Four will present the results and discussions of the field data. The final chapter, chapter five will look at the summary of key findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW
2.0 INTRODUCTION

This chapter describes the context for the essay. It presents an overview of Port congestion in general and assesses the stages involved in the transfer of containers from the ship to quay, from quay to Port terminal and from the terminal to land transport mode. A review of both theoretical and empirical studies in ports and terminal congestion is done.

2.1 PORT CONGESTION

The term 'port congestion' is best explained when broken into two parts, a 'port' and 'congestion'. According to Prof. Alderton, a port is a town with a harbour and facilities for a ship/shore interface and customs facilities (Alderton, 2005). Congestion is defined as 'a state of overcrowding in a street or other area, making movement slow or difficult' (Microsoft Encarta, 2010). Port congestion is therefore defined by Alderton 'as insufficient port capacity to cope with traffic arriving at the Port. He further explains that this phenomenon is not a new problem and can occur at any port if there is a sudden upsurge in demand or hold-up in the port such as a strike.

Port congestion in an exaggerated form has become an all too common phenomenon at the ports of some less developed countries (LDC's) and there are fears that in some places, it has changed from being epidemic and has assumed endemic proportions' (Hilling 1976 as cited in Doe 2007).

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15 MICROSOFT CORPORATION (2010). Microsoft Encarta
According to USAID (2005)\textsuperscript{17}, shipping volumes has been rising in Africa more rapidly than the global average. Consequently Africa is facing the kind of congestion that India, United States and much of Europe has faced. This congestion undermines Africa’s export competitiveness by increasing direct costs (port congestion penalties or surcharges) and indirect cost (inventory and idle ships and truck) in Ghana for instance, the port of Tema suffered until recently from low berth productivity because of lack of gantry cranes. Increasing container volumes force carriers to wait several hours for berths and in turn imposed congestion surcharge on shippers.

For this work, port congestion may be defined as the inadequacy of port capacity to cope with ship/cargo traffic to and from the port resulting in delays in working the vessel, handling and delivering cargoes beyond reasonable periods.

According to CLEC\textsuperscript{18} CAT (2006) “congestion can be divided into two types: - Occasional congestion, which occurs because of unpredictable reasons, such as a sudden disruption of infrastructure or peak traffic; and Structural congestion, which is of a perennial nature and stems either from ill-adapted infrastructure, insufficient for the level of traffic within the physical and environmental constraints, or due to a lack of technical compatibility. Administrative procedures or handling problems (Customs and security procedures) are others causes of congestion.

CLECAT further mentions that places plagued by structural congestion are bottlenecks. Whereas by definition occasional congestion can only be dealt with when it occurs, by taking measures to minimize its duration and effects, structural congestion must be tackled in a more comprehensive manner. Structural congestion requires a concentration of efforts in order to solve the problem,

\textsuperscript{17} USAID (2005)
\textsuperscript{18} CLEC\textsuperscript{18} CAT (2006). Congestion Overview and consequences for logistics. www.clecat.org
and prevent it from escalating. Occasional congestion can be mitigated by high resilience and
great flexibility”

Dr. Coltof (1999)\(^\text{19}\) in his book Port Organization and Management in Developing Countries
indicated that port congestion is a situation that prevails in most African, Asian and developing
countries. To be able to appreciate the congestion phenomenon, it is important that the stages
involved in the movement of containerized cargo from ship to destination be studied. This
includes crane productivity at the berth, absorbing capacity of the immediate port storage
facilities, transfer and storage capacity and facilities of the terminals for medium storage time
and then receipt and delivery practices.

According to Nester Galley, the Director General of Ghana Ports and Harbours Authority, wrong
declaration and description of goods delay clearing of CEPS. This leads to clients having to do
post entry. Also importers are to send Final Classification and Valuation Report (FCVR) to
CEPS 21 days before their cargo arrives but they normally do not do that on time and this also
causes delay which is a major cause of congestion at the port of Tema. (TV3, News 360, 25\(^\text{th}\)
September, 2011)\(^\text{20}\)

In 2002, the then Director General of the Ghana Ports and Harbours Authority Ben Owusu
Mensah mentioned that the problem of congestion was mainly due to the fact that the port was
being used as a storage facility rather than a transit place for cargo. He also observed that
government legislation allows cargo to stay for 60 days before being confiscated to the state.

\(^19\) DR. H. COLTOF (1999) Port Organisation and Management in Developing Countries

This compounds the situation of congestion at the port (B. Owusu Mensah: 2002)\textsuperscript{21}. M. Kojo Boafo explained the causes of port congestion in the table below as summed up by the Baltic and International Maritime Conference (BIMCO) who were represented on the UNCTAD working group. (Mark Kojo Boafo, 2010)\textsuperscript{22}

\begin{table}[h]
\centering
\caption{Summary of Major Causes of Port Congestion.}
\begin{tabular}{|l|l|}
\hline
Major causes of Port congestion & Identified Potential factors \\
\hline
& \begin{itemize}
  \item Construction of new berths without backup areas, port access
  \item Inadequacy of inland transport both in capacity and efficiency
\end{itemize} \\
\hline
\end{tabular}
\end{table}

\textsuperscript{21} BEN OWUSU MENSAH: West Africa Magazine. 2002. 15
\textsuperscript{22} M. KOJO BOAFO (2010), The Impact Of Port Congestion Surcharges- The Case of Ghana. http://review.ghanashippersauthority.org
| Planning                                                                 | • Improvements by rebuilding wharves without providing for accommodation of expanding traffic volumes  
|                                                                         | • Failure to keep traffic forecast updates to reflect changes in the pace of major economic developments |
| Labour                                                                 | • Poor labour relations  
|                                                                         | • Inefficient deployment of labour  
|                                                                         | • Lack of training for dock workers |
| Co-ordination                                                           | • Lack of co-operation between different private and government organisations working in the port.  
|                                                                         | • Inadequate consultation between the port authority and users of the port in respect of operations and developments |
| Traffic                                                                 | • Too many ships operating on certain routes and consequently calling for small tonnages and making inefficient use of berths  
|                                                                         | • Packing and cargo presentation unsuitable for efficient handling at the port  
|                                                                         | • Consignees without adequate resources to take cargo |
| Operations                                                              | • Inappropriate policies which lead to transit facilities being used for long term storage where space is inadequate  
|                                                                         | • Lack of inland or port warehousing facilities causing cargo to remain too long in the port transit facilities  
|                                                                         | • Lack of finance for modern port handling equipment |
| Maintenance                                                              | • Absence of proper maintenance of equipment  
|                                                                         | • Lack of qualified maintenance personnel  
|                                                                         | • Lack of adequate stocks of spare parts  
|                                                                         | • Insufficient standardization of equipment type |
| Clearance Procedure                                                     | • Late arrival of documents  
|                                                                         | • Faulty documents  
|                                                                         | • Outmoded documentation requirements and processing methods |
| Others                                                                  | • Activities carried out in the port area not related to cargo handling  
|                                                                         | • Poor planning such as over booking of cargo  
|                                                                         | • Slow stripping operations  
|                                                                         | • Resistance to change in management style |

Source: [http://review.ghanashippersauthority.org/2010/one/Port_Congestion.html](http://review.ghanashippersauthority.org/2010/one/Port_Congestion.html)

Thomas Ward indicated that port capacity is about velocity. That is the faster freight moves, the more port facilities can handle on a fixed resource base. Further, the existing facilities should be put to efficient and effective use. This would prevent time consuming, expensive and new difficult developments. It is not out of place for one to assume that the size of the Port cannot be
easily expanded; therefore Port operations should be targeted at facilitating quick movement of freight. The acquisition of capital for infrastructural development has always been a difficult task, in successful cases however, many harsh and unacceptable conditions have been attached to these funds by lenders.

Port capacity can be described in terms of velocity, which simply means distance travelled per unit time. The analogy here is that if freight leaves the Port at the same rate it comes in, then congestion would be brought under firm control. At sea container freight moves at about 25 knots. A distance of 6300 miles from Hong Kong to Los Angeles in the United States of America can be covered in 11 or 12 days. It takes three days to discharge. The container would stay for an average of 5 days at the terminal. It will take another day to transport the container across Los Angeles, a distance of about 50 miles. At this point the average velocity of freight will drop to about 0.25 knots or 1% of its velocity of freight at sea. (Thomas Ward: 2006)

Waiting time is especially harmful to liner shipping because it disrupts the schedule at other ports and generates considerable idling expenses. Typical waiting times in other ports around the world are two to four hours, and port surcharges are applied to ports experiencing congestion. In the Port of Tema, vessels wait at anchorage for about 192 hours (8 days) (Field work 2012). It takes about another 7 days for the vessel to be discharge and loaded, not to talk about the many days required to clear import containers from the port. A report issued by Nestle Ghana Limited at a workshop on trade facilitation in Ghana, indicated that between April and July 2005, the company could not export because of congestion at the Port of Tema (Nestle Ghana: 2005).

Lack of adequate facilities and infrastructure at the ports have militated against ports operations

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23 THOMAS WARD: Port Congestion Relief: 2006
24 NESTLE GHANA LIMITED: Workshop on Trade Facilitation in Ghana, Challenges at the Ports: 17-19 Oct 2005
with regard to inter-feeder transfer of cargo and services, cargo storage, cargo consolidation and cargo manipulation as well as cargo packaging and processing. Congestion at container terminals, vessels traffic and delays in cargo flow are borne by this challenge in the operations of the ports (Clement Asuliwonno: 2011). The problem of congestion can be dealt with seriously if we can improve dwell time for containerized cargo at the Port of Tema (Port Newsletter: 2006).

2.2 SHIP TO QUAY TRANSFER

Ideally, the ship operator would want to see an empty berth to ensure that there are no delays for his ship upon arrival. The Port Operator on the other hand would like to reduce his capital outlay and have only one berth for example and a long queue of ships to ensure the berth is always in use and earning (Alderton:1999). The type of equipment used at the Port has an influence on the performance of the port.

There is a vast variety of container handling equipment, but they can be classified into two main groups: quay crane and yard handling system. On the quayside, containers are transported between ship and shore and container quay cranes are the main equipment used for ship loading and unloading. It can be either mounted on the ship (ship-mounted cranes) for example, derricks, ship-mounted jib cranes and ship-mounted gantry cranes, or located on the quay, ship-to-shore (STS) cranes; the latter is widely used in container ports and terminals. Examples of shore cranes include portal gantry cranes, multipurpose, jib and mobile cranes (Qianwen Liu: 2010).

Numerous factors affect the crane cycle or productivity. Among these are crane type and  

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25 CLEMENT ASULIWONNO: Improving Port Efficiency And Custom Operations In Ghana: (2011)
28 QIANWEN LIU (2010): Efficiency Analysis of Container Ports and Terminals
specification, vessel design and construction, container stowage locations, container size and type, container releasing and securing as well as container collection and transfer. The use of the ship's lifting gear is generally less productive than the shore cranes (Jan Boelhouwer: 1999)^29. In most advanced Ports such as Rotterdam, cargo handling is undertaken with highly automated state of the art cranes which load or discharge about 30 containers per hour. Robot stacking cranes dot the container yard and truckers move in and out of the terminal quickly (Bookman: 1996)^30. In other to avoid delays at this stage of the container transfer process it is advisable to keep equipment in good condition and to train the equipment operators well enough to achieve the best out of them.

2.3 QUAY TO TERMINAL (PORT STORAGE) TRANSFER

The quay is a place where ships are moored for loading and unloading. Quay to Terminal transfer involves the movement of cargo from the Quay to Port Storage system where it is stored for a variable period of time. That is, containers discharged are transferred from the Quay to the Port container terminal for stacking before release and delivery onto inland bound transport. This stage involves the loading of container onto a trailer or chassis for onward transfer to the Port terminal.

Equipment employed at this includes Rail mounted Gantry cranes, Rubber Tyred Gantry cranes, Reach stacker, Straddle Carrier, Front End loaders, Overhead Bridge Cranes, Chassis. At the Port of Tema, Quay to Terminal transfer is done with Reach Stacker and Trailer Chassis which is sometimes slow because of vehicular traffic within the Port. On the yard side, containers are

transferred to land transport modes or are arranged to be loaded on to other ships. Two types of activities occur in the yard area: stacking of container and horizontal transport. Before containers are moved away they are stacked in the yard area. At the Port of Tema Containers are mostly loaded and unloaded at Berth 1 and 2 which are operated by the Meridian Port Services (MPS). MPS operates 3 STS cranes with twin lift spreaders, 2 Mobile Harbour Cranes with twin lift spreaders, 4 Rubber Tyred Gantry cranes, 4 Empty Handlers and 4 Forklifts 16 Reach Stackers and 25 terminal tractors which are used in the transfer of containers from the Quay to the Terminal (MPS: 2011). It is vital that equipments used in the transfer process are kept in top operating condition in order to maximize their productivity. To achieve this kind of performance, equipment down time must be kept at zero. This happens only when the maintenance team can boast of highly trained, skilled members and effective maintenance plan (North Carolina Ports: 2005). Again free flow of vehicular traffic makes this stage of the transfer process efficient.

2.4 TERMINAL TO DESTINATION

This is the stage where the containers are transferred to land transport nodes for onward transport to destination (Qianwen Liu: 2010)\(^\text{33}\) for onward carriage to the final destination. Before containers are moved away they are stacked in the yard area. Stacking equipment for containers includes Straddle Carriers, Rubber Tired Gantry Cranes (RTGs), Rail Mounted Gantry Cranes (RMGs), Reach stackers, and Stackers for Empty Containers. Stacking style at the Terminal has an influence on the tiers and number of containers the terminal can accommodate and the ease with which a container is located for transfer to inland bound transport mode. The absorbing capacity of the storage area defines the number of boxes the yard can contain.

At the Port of Tema, before a container will pass for this stage, the necessary documentation must have been done with the various agencies involved and all charges paid and mandatory levies paid. The various payments made include duties, taxes, levies, rent, administrative charges, demurrage and others. Key among the various agencies is the Customs Division of the Ghana Revenue Authority. The other institutions involved are Shipping Agencies, Destination Inspection Companies, the Ghana Standard Boards, Port Authorities and Freight Forwarders among others.

According to the Ghana Revenue Authority (2011)\(^\text{34}\) imports require the following documentation and procedure:

\[^{33}\text{QIANWEN LIU (2010): Efficiency Analysis of Container Ports and Terminals}\]
\[^{34}\text{GHANA REVENUE AUTHORITY (2011): Customs Guide: Hints to Passengers and traders}\]
**Import Requirements**

1. Original Bill of Lading

2. Invoice

3. Packing List

4. Final Classification and Valuation Report (FCVR)

5. Import Declaration Form (IDF) from the Ministry of Trade and Industry.

6. Tax Clearance certificate from the Domestic Tax Revenue Division issued in the name of the importer or 1% of CIF payment fee.

7. Tax Identification Number (TIN) from the Ghana Revenue Authority.

8. Permit or License from the appropriate Ministry/ Agency Department / as applicable for restricted goods.

9. Appropriate letter of Exemption from payment of duty and/or taxes as applicable.

**Procedure**

1. Submission of Import Declaration Form (IDF), Bill of Lading, Invoices and Packing List to the appropriate Destination Inspection Company for the issuance of a Final Classification and Valuation Report (FCVR)

2. Submission of application to appropriate Ministry/ Department/Agency for the relevant License/Permit/Exemption
3. Electronic submission of declaration (to Ghana Community Network)

4. Payment of Duties and Taxes at the designated Banks located at Longroom

5. Subject yourself and goods to Customs documentary and physical verification as may be determined

6. Release and/or further processing depending on regime.

The mentioned documents must be available and procedure followed before container is allowed to exit from the terminal.

2.5 CONTAINER TERMINALS

Containerization has changed every aspect of cargo movement and cargo-handling operations are no exception. The basic function of the cargo handler is to handle cargo between the terminal and the vessel. This function has not changed, but the manner in which it is accomplished and the equipment used have undergone a dramatic change. The basic function of a container terminal is the transfer and storage of containers. Terminal operators are accordingly concerned with maximizing operational productivity as containers are handled at the berth and in the marshaling yards, and efficiently utilizing available ground space. Container handling productivity is directly related to the transfer functions of a container terminal, including the number and movement rate of quayside container cranes, the use of yard equipment, and the productivity of workers employed in waterside, landside, and gate operations.

The efficient use of available ground space relates to the number of containers stored in a given area of the terminal. Improving the utilization of ground space typically reduces the operational
accessibility to containers; that is, ground space utilization and container accessibility are inversely related. The challenge is therefore to define container accessibility in relation to ground space utilization based on a terminal's operational targets and unique physical characteristics. (Le-Griffin and Melissa Murphy: 2006)\textsuperscript{35}

The productivity of a container terminal is influenced by a range of factors, only some of which can be controlled by terminal operators (DOWD at el, 1990)\textsuperscript{36}. Factors internal to the terminal and under the control of the operator include terminal configuration and layout, capital resources invested, and, to a certain extent, labor productivity. External factors beyond the control of operators include trade volumes, shipping patterns, and the ratio of import to export containers (which influences the number of empty containers handled at a terminal and the availability of container chassis). The size and type of ships accommodated by a terminal, as well as the landside capacities and performance of intermodal rail and highway systems, are additional external factors affecting the productivity of terminal operations.

\textsuperscript{35} LE-GRIFFIN AND MELISSA MURPHY (2006): Container Terminal Productivity; Experiences at The Port of Los Angeles and Long Beach
\textsuperscript{36} DOWD, T.J. AND LESCHINE, T.M. (1990): Container Terminal Productivity a Perspective.
TABLE 2.2 Common Productivity Measures of Container Terminals

<table>
<thead>
<tr>
<th>Element Of Terminal</th>
<th>Measure Of Productivity</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crane</td>
<td>Crane Utilization</td>
<td>TEUs/Year Per Crane</td>
</tr>
<tr>
<td></td>
<td>Crane Productivity</td>
<td>Moves Per Crane-Hour</td>
</tr>
<tr>
<td>Yard</td>
<td>Land Utilization</td>
<td>TEUs/Year Per Gross Acre</td>
</tr>
<tr>
<td></td>
<td>Storage Productivity</td>
<td>TEUs/Storage Acre</td>
</tr>
<tr>
<td>Gate</td>
<td>Gate Throughput</td>
<td>Container/Hours/Lane</td>
</tr>
<tr>
<td></td>
<td>Truck Turn Around Time</td>
<td>Truck Time In Terminal</td>
</tr>
<tr>
<td>Gang</td>
<td>Labour Productivity</td>
<td>No. Of Moves/Man Hour</td>
</tr>
</tbody>
</table>


When considering the layout of a container terminal, the operational problems would have to be considered, as a result, the actual layout of the terminal will depend on the equipment to be used. The layout and optimal shape of the terminal depends on whether a yard gantry crane, a straddle carrier, a front end loader or a chassis system is used. At the Port of Tema, MPS the main container terminal uses mainly the Reach Stacker in stacking laden containers and an empty handler in stacking empty containers. The Reach Stacker stacks full containers 5 high while empty containers are stacked 6 high with the empty container handlers. Below are features of some terminal operations systems.
TABLE 2.3 Improving Port Performance – Container Terminal Development

<table>
<thead>
<tr>
<th>System Features</th>
<th>Tractor/ Chassis System</th>
<th>Straddle Carrier</th>
<th>Yard Gantry Crane System</th>
<th>Front End Loading System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Utilization</td>
<td>Very Poor 185 TEU/hectare</td>
<td>Good 385TEU/hectare</td>
<td>Very Good 750TEU/hectare</td>
<td>Poor 275TEUS/hectare</td>
</tr>
<tr>
<td>Terminal Development Cost</td>
<td>Very Low: high quality surfacing not necessary</td>
<td>Medium: hard-wearing surface needed</td>
<td>High: high load bearing surface needed for crane wheels</td>
<td>High: heavy wear on terminal surface</td>
</tr>
<tr>
<td>Equipment Cost</td>
<td>High: large number of chassis required</td>
<td>Moderate: six straddle carriers per ship/shore crane</td>
<td>High</td>
<td>Moderate: cost effective for low throughputs</td>
</tr>
<tr>
<td>Equipment Maintenance Cost</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Manning Level 2 Crane Operation</td>
<td>High: 28 men but low skill</td>
<td>Low: 22 men high skilled required</td>
<td>High: 29 men medium high skilled required</td>
<td>Medium: 26 men medium skill required</td>
</tr>
<tr>
<td>Operating Factors</td>
<td>Good accessibility Simple Terminal Organization</td>
<td>High Flexibility Good Stacking</td>
<td>Good land use scope for automation</td>
<td>Versatile equipments</td>
</tr>
</tbody>
</table>

Source: UNCTAD (2009)

Each type of system has its own maneuvering and stacking characteristics, the number of containers allowed per row and the minimum distance between the rows are very important. At the Port of Tema, the Reach Stacker is the main equipment used in maneuvering and stacking operations. The Front End Loading System offers 275 TEUs/hectare which is considered poor as far as land utilization is concerned. The Straddle Carrier System holds 385TEUs/hectare, while the Gantry System also holds 750 TEUs/hectare.
Equipment manufacturer Kalmar apportions higher productivity for the various options being reviewed. The storage capacity of the reach stacker is approximately 500 TEUs per hectare with a 5 high stacking, the straddle carrier also has a storage capacity of approximately 500 – 700 TEUs per hectare with a maximum of a 4 high stack. Similarly, the rubber tyred gantry and the rail mounted gantry also have a storage capacities of 1000TEUs per hectare with a 8 high stacking of containers and 1100 TEUs per hectare respectively (Kalmar: 2007)\(^\text{37}\).

The Straddle Carrier and the Yard Gantry Crane System are the most efficient in land utilization as far as the various operating systems are concerned. The Straddle Carrier System holds 385 TEUs/hectare and the Yard Gantry Crane System also holds 750 TEUs/hectare.

2.6 **CARGO EXAMINATION**

For security and safety reasons and for the reason of revenue generation for the state, it is necessary to examine all cargo that passes through the corridors of a country before they will be allowed entry into the mainland. Certain cargoes are not allowed to be brought into the country without approval and for that matter measures are put in place to examine the cargo that come into the country.

The volume of business passing through the Port is increasing, so that if customs examine all containerized cargo within the Port, then there is the danger of congestion. If customs examinations are eliminated, it will go a long way to substantially reduce dock labour and will be accentuated by high-tech computerized cargo handling equipments (Allan E. Branch: 1994)\(^\text{38}\).


\(^{38}\) BRANCH ALLAN A. (1994): Export Practice and Management
In the Port of Charleston in the United States of America only about 1% of physical examination is conducted (Gylfi Palsson: 1997). Greater attention is rather given to the simplest way to release cargo, standardized custom procedures and at the same time not overlooking the examination aspect. With regards to technology, the use of the scan can go a long way to reduce the tendency of 100% physical examinations. Akinola Bolaji (2011) lamented that you create chaos by doing physical examination of all the goods that are inside each container that comes into the Port.

E. Gyebi-Donkor (2006) lamented it would be in our best interest as a nation to find a lasting solution to the congestion problem rather than shifting the problem to other terminals. If the situation is not dealt with, even if new terminals spring up, the congestion situation will still prevail because attitudes, procedures and processes remain unchanged. It is common believe that to implement change is a very difficult challenge. This has been one of the main hindrances to the effectiveness of the scan for examination purposes.

While cargo goes through the inspection process, CEPS would like to see just 20 percent of imports being highlighted for further inspection. And it wants 80 percent of these to go through X-ray scanners. Both of GPHA’s ports have a drive-in X-ray scanner operated by Ghana Customs Inspection Company that can look remotely into each imported container, while Tema has an additional drive-in scanner operated by GSL (GHANA PORTS: 2012/11). The container X-Ray Scanner at the Port of Tema has helped to eliminate the need for 100% physical examination of containers. A 20 foot container takes approximately 35 seconds to scan

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39 GYLFI PALSSON (1997): Containerised Maritime Trade Between West Africa and Europe
40 AKINOLA BOLAJI (2011): Port Congestion; Stakeholders Blame Customs, NDLEA
41 GYEBI DONKOR E (2006): Ghana Ports and Harbour is Twenty Years Old. Tema Port Newsletter Vol.1
42 GHANA PORTS HANDBOOK 2010/11
and a 40 foot container 55 seconds. The entire scanning process, including customs, Excise and Preventive Service (CEPS) documentation, normally takes not more than 15 minutes compared to physical examination of a single container that can take several hours (GHANA PORTS: 2010/11). Revenue generation in developing countries has been a problem therefore it would be necessary to do some random physical examination to serve as a check and also for the necessary revenue to be collected. Random physical examination would serve as a deterrent to certain irresponsible acts such as under invoicing, wrong description of cargo for the purpose of paying lower taxes. This is also possible because every commodity attracts a different tax percentage. Customs examinations could be reduced to about 5% of all cargo passing through the Port.

With regard to the high-tech computerized cargo handling equipments, it is worth noting that no matter how advanced the handling equipments are, their efficiency would have to be complemented by the other allied activities in the logistics chain. Cargo release or delivery involves various activities ranging from discharge of cargo from ship, transfer to Port storage facility and finally transfer to land transport nodes for carriage to final destination. For these reasons, effort should be made to have an integrated shipping industry involving Ghana Customs, Shipping Agents, Freight Forwarders, Port Authority, Destination Inspection Companies (DICs), Insurance Companies, Shippers (J. Dela Doe: 2007) and other stakeholders in the shipping industry.

2.7 PORT CONGESTION SURCHARGE

Shippers are often penalized as a result of ocean carriers imposing congestion surcharges on cargo moved through the congested ports. These vary according to the length of delays and the

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43 GHANA PORTS HANDBOOK 2010/11
overall response of the port authority/terminal operating company to deal with the problem (DREWRY SHIPPING: 2005).45

Port congestion surcharge is an additional charge that is added to the freight of cargo passing through a congested port. According to Mark Kojo Boafo (2010)46 due to equipment and efficiency problems faced by West African Ports, shipping lines adopted port surcharges, such as congestion surcharge on ports with congestion problems. Over the years shipping lines established tariff increases for "port congestion" and "restoration" rate within the framework of the Conference lines.

On 10th July, 2006 the congestion surcharge for the Tema Port was reviewed from EUR 50 per TEU in March 2006 to EUR 225 per TEU as a result of the level of congestion prevailing at the port (OTAL: 2006).47 On the 15th of October 2010 Mitsui O.S.K. Lines announced port congestion surcharge of USD 150 and USD 300 for 20 foot and 40 foot containers respectively from Asian/Indian Sub-continent to Callao, Peru (MOL: 2011)48.

Singapore-based ocean carrier APL applied a congestion surcharge on all containerized cargo shipped from the Middle East to the Port of Nhava Sheva (Jawaharlal Nehru), India’s largest container gateway. Starting July 15, 2011 the surcharge is $150 per 20-foot equivalent unit and $300 per 40-foot container due to serious port congestion at Nhava Sheva terminals. The move comes just after Orient Overseas Container Line, NYK Line and Hyundai Merchant Marine announced similar surcharges, also effective July 15, citing additional operational costs (THE

45 DREWRY SHIPPING: Global Port Congestion – No Quick Fix. www.porttechnology.org Sighted 2012
47 www.otal.com
Hapag-Lloyd on the 23rd of May 2011 announced that the current operational port conditions at Bandar Abbas are forcing Hapag-Lloyd to implement a congestion surcharge. Therefore all cargoes and container types from Asia and Oceania to Bandar Abbas will be subjected to the following surcharge on prepaid basis: USD 100 per TEU with effect from June 1, 2011 (Hapag-Lloyd: 2011). These charges which are imposed on the shippers are further redirected onto the final consumer of the product by the shippers.

Congestion comes up because of the very nature of maritime transport, where goods will always be delivered at a port and would have to be transferred to a final destination. Once we are able to control the relationship between cargo inflows into the Port and the rate of cargo delivery from port to final destination, then we will be on our way to neutralize the congestion problem plaguing us (Doe Dela J: 2007).

The most effective way to cut the logistics cost for West Africa is to improve current practices: to rationalize customs operations, weed out corruption, increase port efficiency and cut through the red tape. These would allow for a commercial and conducive environment to be created (Gylfi Palsson: 1997). As the volumes of world trade continues to soar up the volume of cargo passing through our seaports will also continue to increase and the Port of Tema is no exception.

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49 THE JOURNAL OF COMMERCE: APL Adds Congestion Surcharge On Freight To India.
www.joc.com/maritime2001


51 Doe Dela J(2007): Congestion at the Port of Tema, A study of cargo flow from ship to inland transport

52 GYLFI PALSSON (1997): Containerised Maritime Trade Between West Africa and Europe
CHAPTER THREE

PROFILE OF TEMA PORT, MERIDIAN PORT SERVICES AND METHODOLOGY

3.1 INTRODUCTION

In this chapter a brief history of the Port of Tema, Meridian Port Services and some of their features and general characteristics are given. The other part of the chapter presents the approach and methods used in undertaking the research, the various data sources, the survey instruments employed, the sampling procedure as well as data analysis in this chapter.

3.2 BRIEF HISTORY OF TEMA PORT

Tema Port, the bigger of two seaports of Ghana was commissioned in 1962 by the First President of the Republic of Ghana Osagyefo Dr. Kwame Nkrumah who was anxious to see the rapid industrialization of Ghana.

Sir William Halcrow and Partners of the United Kingdom, who were consultants to the government, recommended the need to develop the hydroelectric potential of the Volta River. With that in mind, the idea of establishing an aluminium smelting plant and the need for a deep water port in the Eastern part of the country was born. Apart from the above need it was realized that increasing trade and prosperity of the country demanded a deep water port to cope with the expected increase in traffic. Such a port would curtail the carriage of heavy cargo from Takoradi in the West over land to their destination in the East. Thus, Tema was chosen after several feasibility studies were conducted. Preliminary works on the Port began in 1952 and by 1958 the
first vessel with cargo docked at the port. The port was opened to regular traffic in 1962 (HALCROW: 2012)\textsuperscript{53}.

Tema was the name of a small village East of Accra, the Capital City. The site for the Port is a bay formerly used by the fishermen of Tema village on the open coast. It lies in south-eastern Ghana along the Gulf of Guinea (Atlantic Ocean). The Port of Tema is located 28 km east of Accra at 5°38′N and 0°01′E (GHANA PORTS: 2012)\textsuperscript{54}. The site was chosen because it possesses several advantages. First, it was closer to the capital city. It was therefore more suitable for cargo intended for Accra and its environs to pass there so as to relieve Takoradi port. Secondly, it was nearer to the Volta River for the hydroelectric project and the aluminium smelter to perform its functions efficiently. Thirdly, the bay had a comparatively steep shelving seabed of rock affording deep water close to land. As a result the amount of dredging during the harbour construction was kept to the minimum and there should not be much silting in the future. The fourth reason for the choice of Tema was its proximity to Shai Hills, the source of rocks suitable for building the breakwaters and other harbour works.

At the time of its commissioning in 1962, Tema port was considered to be Africa's largest man-made harbour. The port serves as a traffic junction, where goods are transshipped and transit cargo destined for the hinterlands including the landlocked countries of Burkina Faso, Mali and Niger are handled (Otal: 2009)\textsuperscript{55}.

\textsuperscript{53} http://www.halcrow.com/who-we-are/history/port-of-Tema-Ghana-1951-62

\textsuperscript{54} www.ghanaports.gov.gh

\textsuperscript{55} www.otal.com
3.3 GHANA PORTS AND HARBOURS AUTHORITY

In 1986 the Ghana Ports and Harbours Authority (GPHA) was established as a statutory corporation under PNDC Law 160. The GPHA became the legal successor of the then Ghana Cargo Handling Company, Ghana Ports Authority and Takoradi Lighterage Company. The law establishing the Authority sought to create a corporate body responsible for the operation, management and the administration of ports in Ghana. Below are the functions of the Authority as per the Act:

(1) The Authority shall plan, build, develop, manage, maintain, operate and control ports and in particular shall;

(a) provide in a port the facilities that are necessary for the efficient and proper operation of the ports;

(b) maintain the port facilities and extend and enlarge the facilities as the Authority considers fit;

(c) regulate the use of a port and of the port facilities;

(d) maintain and deepen as necessary the approaches to and the navigable waters within and outside the limits of a port, and maintain lighthouses and beacons and any other navigational service and aids as appear to it to be necessary;

(e) provide facilities for the transport, storage, warehousing, loading, unloading and sorting of goods passing through a port, and operate road haulage services for hire or reward;

(f) carry on the business of stevedoring, master porterage and lighterage services; and
(g) generally perform any other functions, which are necessary or incidental to its functions.

(2) Subject to this Act, the Authority shall carry on activities it considers necessary for the performance of its functions under this section and it may in addition:

(a) carry on the business of pilotage;

(b) supervise stevedoring, lighterage and container services, where these are provided by persons other than the Authority;

(c) operate tugs, dredgers and other craft for towerage, salvage, fire-prevention and protection of life;

(d) supply water to shipping and generate and supply electricity;

(e) license small ships to lie, ply for hire or otherwise be used within a port on the terms and conditions prescribed by the Authority;

(f) control the erection and use of wharves, groynes, stairs or stages in a port or its approaches;

(g) enter into an agreement with a person

   (i) for the supply, construction, manufacture, maintenance or repair by that person of property which the Authority may require for the efficient performance of its functions under this Act; and

   (ii) for the operation or provision of port facilities which the Authority by this Act, is empowered to operate or provide;

(h) appoint, license and regulate stevedores, and master porters to operate in the container terminals;

(i) establish pilotage districts, direct that pilotage is compulsory in a district, determine
the pilots including, Authority pilots to operate in the districts, license pilots for work in those districts and establish pilotage boards and specify their duties including the duty of inquiring into the conduct of pilots;

(j) within the limits fixed by the Minister prescribe rates, charges and dues for services provided by the Authority or specify the persons liable to pay the rates, charges and dues prescribed under section 75 (http://ghanalegal.com)\textsuperscript{56}.

3.4. MERIDIAN PORT SERVICES

To cater for the expected volume growth, the Ghana Ports & Harbours Authority (GPHA) embarked on a major port services upgrade programme beginning in 2002. Part of the plan included that the Port Authority makes the transition from operator to landlord Authority and the concession to build and operate the container terminal was put to private investors. In response, several Ghanaian and international companies submitted proposals. At the request of the Ministry of Ports and Harbours the bidders were asked to form a consortium. APM Terminals and Bollore Group submitted a bid in September 2002 and took the lead in forming the consortium, Meridian Port Services Limited (MPS) to further concession negotiations and to finally build and operate the terminal (MPS: 2011)\textsuperscript{57}.

Meridian Port Services Limited is a joint venture between Ghana Ports and Harbours Authority And Meridian Port Holdings Limited, which is in turn a joint venture with Bollore Group and APM Terminals as the two main shareholders.

\textsuperscript{56} http://ghanalegal.com/?id=3&grp=9&t=ghan-laws

\textsuperscript{57} www.mps-gh.com
Meridian Port Services Limited has been granted a concession to operate the Tema port container terminal for a period of 20-years. MPS will operate as a common user facility and will offer clients the premier productivity and efficiency in the sub-region.

The concessionaire is required to clear the concession area and construct approximately 165,000 m² of heavy duty paving plus, offices, gates, workshops and ancillary buildings. The concessionaire is also obliged to invest in container handling and other equipment and IT systems.

Site clearance and demolition was completed in June 2006 and civil construction works commenced in August 2006. The terminal was partially operational since the first of April 2007 when approximately two thirds of the container terminal yard was made available. The construction and finishing works were completed in February 2008. The completed container terminal consists of 277,000 m² of paved container storage and marshalling yard plus 574 meters of deepwater (11.5 meters) quay (MPS: 2011)⁵⁸.

MPS provides the following services; Container Terminal Operations, Stevedoring, Shorehandling and Storage and Delivery of containers.

Tema seaport has since April 2007 been operating partly as a landlord port. A Landlord port, according to (Alderton, 2005)⁵⁹ is where the state or the city owns the land and the port’s sea approaches and lease out the terminals to private stevedoring firms to operate. In the landlord port, the landlord provides the infrastructure and the tenant provides his own superstructure.

⁵⁸ www.mps-gh.com
⁵⁹ ALDERTON M. P (2005): Port Management and Operations
However, Tema Port under the administration of the GPHA currently undertakes some of the cargo handling and stevedoring operations.

3.4.1 BERTHS

The Port of Tema has twelve multi-purpose berths located on two quays. Eight of the berths have a length of 183 metres. Berths number 1, 2, 3 and 4 have the following lengths, 299, 275, 228 and 181 metres respectively. The depth of the Berths ranges from 8 metres on berth number 12 to 11.5 metres on berths number 1 and 2. There are also two specialized berths for the handling of alumina, pitch, coke and the latter for petroleum (Otal, 2009). The port access channel has a depth of 12.5 metres. MPS operates berth number 1 and 2.

3.4.2 EQUIPMENT INVENTORY OF TEMA PORT

Meridian Port Services (MPS), the operators of the container terminal in Tema port have the following port equipment for their operations. Three Ship to Shore (STS) gantry cranes with twin lift spreaders, two mobile harbour cranes with twin spreaders, four Rubber Tyred gantry cranes, sixteen 45 tonnes reach stackers, four 15 tonnes empty container handling equipment, twenty five Terminal tractors, thirty-three terminal chassis and twenty-three utility vehicles and forklift. The capacity of the stacking yard is 18,000 TEU slots and 300 reefer plugs (GHANA PORTS: 2010/11).

3.4.3 MPS CARGO RELEASE PROCEDURE

Below is the procedure involved in releasing cargo at the MPS terminal;

60 www.otal.com
61 GHANA PORTS HAND BOOK (2010/11)
• Import identified for Green Channel direct release.

• The client (or shipping line if the line is taking all terminal charges) applies to MPS pre-gate at Greenwich House.

• MPS Customer Service will validate Line Release, Customs Release and any other release and issue a terminal bill if consignee is paying charges.

• The client pays terminal charges at bank located at Greenwich House or bank of his choice.

• Once payment is verified MPS will issue a terminal truck Entry Permit. This entry permit has a 24 hour validity period.

• The client provides the Entry Permit to his designated trucker who then proceeds to the terminal within a maximum of 24 hours.

• At the Terminal Gate MPS will verify the validity of the Entry Permit and issue a Pick-up Ticket and a “BAT” card. The Pick-up Ticket will indicate the location in the Terminal where the container is stored or will be loaded to the truck.

• The Trucker prominently displays the BAT card in his windshield (this is the identifier for the terminal Crane-Driver) and drives to the location. At the location the pick-up ticket is handed to the Crane-Clerk who then instructs the terminal Crane-Driver to load the container to the truck.

• Once the container is loaded, the truck driver locks the twist-locks and proceeds to out-gate.
• At out-gate MPS Checker will carry out damage inspection and Gate-Clerk will print an EIR. Trucker signs EIR and retains one copy of EIR, MPS retains the other.
• Trucker then exits MPS terminal and proceeds to designated GPHA gate where GPHA release process will be followed (MPS: 2012)\textsuperscript{62}.

3.5 RESEARCH METHODOLOGY

This section presents the approach and methods used in undertaking the research. The various data sources, the survey instruments employed, the sampling procedure as well as data analysis are presented in this section.

3.5.1 STUDY DESIGN

The study was an exploratory one which looked at the role of Meridian Port Services in reducing congestion at the Port of Tema. The research employed both qualitative and quantitative approaches in the data collection and analyses of responses.

3.5.2 SAMPLING PROCEDURE

Sampling frame and size

The target population was drawn from the Port Community of Tema. The target population for the study was members of GIFF, officials of Shipping agencies as well as officials from MPS.

There were about 200 freight forwarding companies registered with the Tema District office of GIFF with each having an average staff strength of six (GIFF: 2012)\textsuperscript{63}. With this the total

\textsuperscript{62} www.mps-gh.com
estimated freight forwarders and clearing agents operating within the Tema harbour area was around 1200. Out of this number 120 people representing 10% were sampled for the questionnaire administration. In all 120 questionnaires were administered to respondents based on the probability sampling method. Under this the simple random sampling technique was used. The simple random sampling technique was used because the population was homogeneous and therefore the responses could be generalized. According to Kwabia (2006)\(^{64}\) a homogeneous population is one in which the elements which make up the population are identical, either by living together in a defined territory or having a common nationality. In this case the respondents are identical because they operate within the same port environment; go through the same customs procedures to undertake cargo delivery, the same documentary requirement and they operate with the same port facilities.

Out of the 120 questionnaires issued out the freight forwarders, only 103 were returned and out of this 13 were not completed.

Questionnaires were also administered to the Shipping agencies. There were a total of 14 Shipping Agencies operating in the Tema Port community. Out of this a total of 10 Agencies representing 71% of the population were selected based on the purposive sampling method (Kwabia: 2006)\(^{65}\). 20 questionnaires were administered, 2 to each organization within the sampled population and they were responded to by the operations officers and commercial managers and sales representatives. These Shipping agencies were selected based on the fact that

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\(^{63}\) GIFF Front desk (2012) Tema District office

\(^{64}\) KWABIA KWADWO (2006); Theory in Social Research, The Link Between Literature and observation

\(^{65}\) KWABIA KWADWO (2006); Theory in Social Research, The Link Between Literature and observation
they have operated at the Port of Tema for more than 2 years and it is therefore believed that they have more insight into the congestion phenomenon at the port.

One official of MPS was also interviewed. The main question that was asked was the measures put in place to eliminate congestion at the terminal.

3.5.3 PILOT STUDY

Pilot study was conducted in two of the Freight Forwarding Companies in the Tema port to pre-test the data collection methods and instruments. It was also used to test data processing and analyses procedures. In all ten respondents were interviewed and this comprised eight workers, one director and an operations manager. The responses were analysed manually. It was realised that some of the terms used should be changed to reflect port standards and to enable respondents understand the questionnaires better. The pilot study brought to light some of the problems likely to be encountered during the actual field work. Adjustments were therefore made to overcome them before the field survey itself. For instance, it became necessary to reduce the number of questions because many respondents complained of time spent in completing the questionnaire. Again some of the respondents asked that multiples choice questions dominate the questionnaire.

3.5.4 DATA COLLECTION TECHNIQUES AND INSTRUMENTS

Both primary and secondary data was sourced for the study. The secondary data mainly consisted of information from GPHA, MPS and several published and unpublished articles of seasoned authorities in the field of port development and transport and logistics expects. Structured questionnaires and interview guides were the main tools used in the research. In all
two sets of questionnaires were designed, one for Freight Forwarders and one for the Shipping Agents.

An interview guide was also designed for the official of MPS. All questionnaires employed in this study were 60 per cent open-ended and therefore most questions were not followed by any kind of specified choice which enabled responses to be recorded in full. This allowed respondents to express their thoughts freely and avoid being forced to adapt preconceived answers (Frankfort-Nachmias and Nachmias, 1996). Some of the questions were however closed ended where respondents were offered a set of answers from which to choose from. This was more convenient to most respondents although the major drawback here was that it introduced bias by forcing respondents to choose from given alternatives which might not have otherwise come to mind (Chardwick et al, 1984).

3.5.5 DATA PROCESSING AND ANALYSIS

Data collected from the study were edited, coded and analysed using Microsoft Excel. Analysis of field data involved describing, summarising and interpreting data obtained from each study unit. Cross tabulations and frequency distributions were obtained for this purpose. Answers to open-ended questions in the interview schedule were listed and later categorised. They were then coded and entered into the computer to generate frequencies and cross tabulations. The results of the computer analysis were presented in tables to make it possible to visualise the relationship between some of the variables.

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CHAPTER FOUR

RESEARCH FINDINGS AND ANALYSIS

4.0 INTRODUCTION

This chapter focuses on analysis of the data from the field of study which included responses from questionnaires and interviews. The first part of the presentation involves analyses of data gathered from questionnaire administered to freight forwarders, the second part also includes analysis of data gathered from questionnaire administered to staffs of shipping agencies and the third part involves responses to interview granted by an official of MPS.

The questionnaire was revolved around respondents view on congestion and whether or not MPS was capable of reducing congestion at the port of Tema.

4.1.0 DATA FROM QUESTIONNAIRE ADMINISTERED TO FREIGHT FORWARDERS

The questionnaire was the main tool used to gather primary data. It was administered to freight forwarders and shipping agencies. The questions asked included respondents background information, knowledge of the issue under consideration, perception and recommendations to port officials. Out of 120 questionnaires issued out only 104 were returned and out of this only 91 were fully completed. The analysis was therefore based on the 91 fully completed forms.

4.1.1 SOCIO-DEMOGRAPHIC IDENTIFICATION OF RESPONDENTS

GENDER

Out of the 91 freight forwarders who responded to the questionnaire, 70 representing 77 percent were males whiles the remaining 21 representing 23 percent were females.
AGE GROUP

Out of the 91 freight forwarders who responded to the questionnaire 31 percent were between 18 – 27 years, 38 percent were between 28 – 37 years, 31 percent were between 38 – 47 years

TABLE 4.1 Age Distribution of Respondents

<table>
<thead>
<tr>
<th>AGE</th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 - 27</td>
<td>28</td>
<td>31%</td>
</tr>
<tr>
<td>28 - 37</td>
<td>35</td>
<td>38%</td>
</tr>
<tr>
<td>38 - 47</td>
<td>28</td>
<td>31%</td>
</tr>
<tr>
<td>48 - 57</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>58 Plus</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>91</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field work (2012)

EDUCATIONAL BACKGROUND

Educational levels included those with JSS, SSS, Tertiary and other qualifications. Those with tertiary background included those who had University and Polytechnic levels of education. The other included those with diplomas, certificates and those belonging to professional bodies such as GIFF certificate holders, Institute of Chattered Shipbrokers, Association of Certified Chartered Accountants and many others.

28 of the freight forwarders representing 31 percent were SSS graduates, 49 respondents representing 54 percent fell within the tertiary bracket whiles while the remaining 14 representing 15 percent were within the others.
The question was to find out the number of years respondents had worked in the shipping industry which also shows how experienced the respondents are in the industry.

Table 4.2 Job experience

<table>
<thead>
<tr>
<th>EXPERIENCE (in years)</th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 3</td>
<td>28</td>
<td>31%</td>
</tr>
<tr>
<td>4 - 6</td>
<td>35</td>
<td>38%</td>
</tr>
<tr>
<td>7 - 9</td>
<td>14</td>
<td>15%</td>
</tr>
<tr>
<td>10 PLUS</td>
<td>14</td>
<td>15%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>91</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field work (2012)
JOB TITLES OF RESPONDENTS

The job title of respondents ranged from clearing officer, field clerk, operation officers, administrative officers, operation managers, and general managers.

Table 4.3 Job titles of respondents

<table>
<thead>
<tr>
<th>POSITION</th>
<th>NO. RESPONDENTS</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLEARING OFFICER</td>
<td>21</td>
<td>23%</td>
</tr>
<tr>
<td>FIELD CLERK</td>
<td>29</td>
<td>32%</td>
</tr>
<tr>
<td>OPERATIONS MANAGER</td>
<td>11</td>
<td>12%</td>
</tr>
<tr>
<td>ADMINISTRATIVE OFFICER</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>OPERATIONS OFFICER</td>
<td>24</td>
<td>26%</td>
</tr>
<tr>
<td>GENERAL MANAGER</td>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>91</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field work (2012)

As evidenced in table 4.3 above, 23% were clearing officers, 32% were field clerk, 12% were operations managers, 1% were administrative officers, 26% were operations officers whilst 5% were general managers.

4.1.2 KNOWLEDGE, EXPERIENCE AND RECOMMENDATIONS

These sought to get responses pertaining to congestion at the Tema Port and whether or not Meridian Port Services is able to control congestion at the Port. It also sought to get recommendations from respondents as to how best the congestion phenomenon could be talked.
PORT CONGESTION

Respondents were asked to define what port congestion is and below summarized answers were given in response to the question.

a) More containers than the required space at the port
b) Inadequate space at the port
c) Too many containers in the port
d) Overcrowding of containers at the port
e) Long stay of vessels at anchorage
f) Delays in transferring containers from the Port to inland container terminals
g) Difficulty in locating containers within the Port
h) Too many containers queuing at the Scan to be scanned
i) Difficulty in evacuating containers to and from the port.

IS THE PORT OF TEMA CONGESTED?

The question was a multiple choice question with respondent required to choose one. It sought to determine whether or not respondents perceived the Tema Port as a congested port.

In response all the respondents responded in the affirmative that the Port of Tema was congested at the time of the research.

This means that all the characteristics used to define congestion above pertains at the Tema Port.
MAIN CAUSES OF CONGESTION AT THE PORT OF TEMA

In an answer to this question which was a multiple choice question with four possible answers with which respondents could choose more than one answer 34% selected Bureaucracies in documentation as the main cause of congestion, 31% of respondents selected inadequate handling equipment as the main cause, 24% selected delays on the part of importers and agents whilst the 10% of respondents selected others specifying delays on the part of customs officials with respect to physical inspection, delays from security agencies at the Port and inadequate scanners at the Port.

FIGURE 4.2 Main causes of congestion at the Port of Tema

Source; Field work (2012)

ARE THE DELAYS IN CARGO MOVEMENT FROM MPS TO INLAND TRANSPORT MODE?

In response to the above question 77 respondents representing 85% responded yes while the remaining 14 representing 15% responded no. With the 85% being the majority saying there are
delays in transferring containers from MPS to inland transport mode I can emphatically say that there is actually delays in transferring containers from the terminal to outside the port.

This stage involves such agencies as CEPS, DICs, Shipping Agencies, Freight Forwarders, Port Authorities, Standard Board and other regulatory agencies.

FIGURE 4.3 Delays in cargo movement from MPS to inland transport mode.

![Pie chart showing 85% yes and 15% no]

Source: Field work (2012)

CAUSES OF THE DELAYS IN TRANSFERRING CARGO TO INLAND TRANSPORT

This question which was a follow up to the preceding question sought to identify why some respondent would perceive delays to be in the process of transferring containers from MPS to inland transport mode.
As evident in Figure 4.4 above, 7% of respondents chose customs procedure as the reason for the delay in transferring cargo from MPS to inland transport mode, 15% chose inadequate storage facilities outside the port terminal, 48% being the majority selected inadequate handling equipment, and the remaining 30% of the respondents selected difficulty in locating container at the terminal as the cause of the delays. No of the respondents mentioned activities from shippers / importers as the cause of the delay in transferring full containers from MPS to inland transport mode.

**WHAT IS THE EFFECT OF CONGESTION ON THE PRODUCTIVITY OF THE PORT IN TERMS OF OPERATIONAL EFFICIENCY**

In response to this question several answers emerged some of which are summarised below;

a) Low productivity
b) Extra cost to the importer

c) Wasting of agents time

d) Time wasting and low productivity

e) Loss of revenue

IS MPS EFFICIENT IN THEIR OPERATIONS?

Respondents were asked whether they perceive MPS to be efficient with regards to fighting congestion. The following answers emerged.

FIGURE 4.5 Operational efficiency

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
</tr>
<tr>
<td>69%</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>20%</td>
</tr>
<tr>
<td>CAN'T TELL</td>
</tr>
<tr>
<td>11%</td>
</tr>
</tbody>
</table>

Source: Field work 92012)

Over half of the respondents admitted that MPS is efficient as far as cargo control is concerned. That is 69% said MPS is efficient in its operation, 20% said they are not efficient and 11% said they could not tell whether MPS is efficient or not.

When asked the reason for their answers above, those who said MPS is efficient gave below reasons:

a) Discharge large volumes as compared to GPHA
b) Have modern operational equipment

c) Without MPS the congestion situation at the Port would be worse

d) Quick delivery of cargo

e) High discharging and loading rate

On the other hand, those who responded in the negative gave below reasons for their answer;

a) Containers are stack in the MPS terminal more than they should be

b) Difficulty in locating import containers

c) Lack of adequate operational equipment

**MPS ABILITY TO CONTROL CONGESTION**

When asked whether they think MPS is able to control congestion at the Port below answers emerged.

**FIGURE 4.6 Ability to control congestion**

Source: Field work (2012)
31% of respondents responded in the affirmative that MPS is able to control congestion, 54% responded negative while 15% said they could not tell whether or not MPS is able to control congestion at the Port.

On their part, those who responded in the affirmative gave below among others as the reasons for them saying MPS is able to control congestion;

a) Has a higher berth productivity rate (average 31 mph)
b) Has modern operational equipment
c) Has dedicated and well trained staff
d) Performs better than GPHA

On their part, those who responded no had below summarised reasons for their answers;

a) Inadequate handling equipment
b) Every year there is congestion and MPS alone cannot eliminate it
c) Can only do that if the bureaucracies at the port is eliminated
d) A lot of containers always in the port due to delays

RECOMMENDATION FOR MORE CONCESSIONS TO THE PRIVATE SECTOR

When respondents were asked whether or not they will recommend for more concessions at the port to be given to the private sector operate at the Tema Port all the respondents responded in the affirmative. Below summarised answers were given as the reason for their response.

a) They private sector always performs better
b) That will bring about competition which will means each performing at his best
c) Will bring about increased productivity

d) They can invest more into the port operations

**AVGVERAGE NUMBER OF DAYS USED IN CLEARING CARGO**

The average number of days spent in clearing cargo at the port would allow the fact to be established as to whether cargo dwell time at the Port is longer or not and to also know if there are indeed delays in clearing cargo at the Port of Tema.

On the average 33% of freight forwarders admitted using 4 days to clear containerised cargo. 23% also used 3 days clear cargo, 19% used 5 days whiles 10% and 15% used 6 days and 7 days respectively in clearing containerised cargo.

**FIGURE 4.7 Average numbers of days spent in clearing cargo at the Port**

Source: Field work (2012)

**PREFERRED METHOD OF CONTAINERISED CARGO INPECTION**

Respondents were asked the kind of cargo inspection they prefer.
69% of freight forwarders said they prefer using the scan for their examination attributing it to the fact that the scan is more faster than the physical examination whiles the remaining 31% preferred physical examination base on the fact that a lot of containers queue outside the scan to be examined.

**POLICY ON OVERSTAYED CARGO**

The Port of Tema has in place a policy that regulates how long import cargo is allowed to remain in the port without confiscation by authorities. At present the number of days allowed is sixty after which the cargo is confiscated and auctioned by the state after customs has notified the respective consignees.

All the respondents admitted there was a policy on overstayed containerised cargo at the Port and they knew the details of the policy. In spite of the policy, sources at the Port confirmed that some containers have been there for more than 3 years.
EFFECTS OF CONGESTION ON THE IMPORTER / SHIPPER

This was to identify what effects congestion has on the importer. In responses all respondents mentioned that congestion makes them pay demurrage on containers as they are not always able to clear their containers within the free days granted them by the shipping lines.

UPDATES ON PORT CURRENT PORT CONDITIONS

Respondents were asked whether they get updates on current port conditions, especially developments at the port. The following outcomes emerged

FIGURE 4.9 Updates on current port happenings

Source: Field work (2012)

Only 39 representing 43% of respondents admitted they get regular update on port developments. 57% being the majority did not have any information on current developments at the Port. This is a bad revelation as information dissemination can also help in the fight against congestion.

When asked how they get the information, 23% said they get it through GIFF, 33% did so through colleagues, 21% through GPHA magazines and newsletters whiles 15% and 8% did so through MPS newsletters and the internet respectively.
## 4.2 Data from Questionnaire Administered to Shippping Agencies

The question administered to the shipping agencies sought to know the background of the respondents, the experience in the shipping industry, their knowledge of the congestion situation at the Port and their recommendations to both MPS and the Ghana Ports and Harbour Authority.

### Gender

#### Figure 4.10 Gender of Respondents

Source: Field work (2012)
Out of the 20 respondents to the questionnaire, 16 representing 80 percent were males while the remaining 4 representing 20 percent were females.

AGE GROUP

20% of respondents were within the age group of 18 - 27, 40% were within 29 - 37, 20% fell within 38 - 47 and the remaining 20% were within the age range of 48 - 57. No of the respondents were above 58 years.

FIGURE 4.11 Age Group of respondents

Source: Field work (2012)

EDUCATIONAL BACKGROUND

All respondents had their education up to the tertiary level.

EXPERIENCE IN THE SHIPPING INDUSTRY

Out of the 20 respondents 20% experience in the shipping industry was within the range 1 – 5 year, 30% within 6 -10 years, 35% within 11 – 15 years and the remaining 15% were within the range of 16 -20 years.
FIGURE 4.12 Job experiences of respondents

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
</tr>
<tr>
<td>6-10</td>
</tr>
<tr>
<td>11-15</td>
</tr>
<tr>
<td>16-20</td>
</tr>
</tbody>
</table>

45% of respondents were operations officers, 10% were operations supervisors, 15% were sales executives, 10% and 20% were documentation managers and operations managers respectively.

FIGURE 4.13 Job positions of respondents

Source; Field work (2012)
PORT CONGESTION

In an attempt to answer the above question, below summarized answers were given by respondents.

a) Overcrowding of containers at the port
b) A lot of vessels waiting outside the port for lack of berthing space
c) Lack of space to accommodate containers
d) Overcrowding of containers at the port
e) Low turnaround time for vessels
f) Difficulty in locating containers within the Port
g) Difficulty in evacuating containers to and from the port because of inadequate handling equipment.

WHAT ARE THE EFFECTS OF PORT CONGESTION ON YOUR OPERATIONS

In an answer to this question respondents gave below among others as the effects of congestion on their operations.

a) Payment of high anchorage charges
b) Low ship turnaround time
c) Frustration to importers
d) Loss of transit business to other countries
e) Agency may lose its shipping line and customers
f) Payment of high demurrage for chartered vessels
IS THE PORT OF TEMA CONGESTED?

All respondents responded in the affirmative that the Port of Tema was congested at the time of the research.

LEVEL OF CONGESTION AT THE PORT

In an attempt to know the level of congestion at the Port of Tema, respondents were asked what the congestion situation at Port was at the time of the research. In response, 60% mentioned that the level of congestion at the port was high while the remaining 40% said it was medium.

FIGURE 4.14 Level of congestion at the Port of Tema

Source: Field work (2012)

These responses from respondents’ shows that the situation is bad and needs to be checked in order to be able to attract more shipping lines to the Port and to make the government’s dream of becoming a hub port come into fruition.

INDICATORS USED TO DETERMINE THE LEVEL OF CONGESTION

Respondents were asked what indicator they use to determine the level of congestion at the Port and below responses were given

a) When an agency’s vessel stay at anchorage for more than three days
b) When there is inadequate storage space for stacking containers

c) High ship turnaround time at the Port

d) High dwell time of containers

e) High berth occupancy rate

f) Too many trucks waiting to be loaded at the Port

**IS THERE A SURCHARGE ON THE PORT?**

With regards to this question, 60% of respondents responded in the affirmative while the remaining 40% responded in the negative.

**FIGURE 4.15 Responses for congestion surcharge**

![Graph showing 60% YES and 40% NO responses](image)

Source: Field work (2012)

In a follow up question to know the amount of money being charge as congestion figures given were in the range of US$ 100 – 150 per Twenty Footer Equivalent Unit (TEU).
WHY CONGESTION SURCHARGE IS IMPOSED ON THE SHIPPER

According to respondents’ congestion at the ports have negative repercussions on their operations and there the congestion surcharge is aimed at defraying some of the cost incurred at the ports as a result of congestion. Some of these costs include;

a) High anchorage fees
b) High cost of operations
c) Loss of revenue as the vessel remains idle in a port.

CAUSES OF CONGESTION AT THE PORT OF TEMA

The question which was a multiple choice question sought to know from shipping agents what in their view were the causes of congestion at the Tema Port. In response 31% selected Bureaucracies in documentation as the main cause of congestion, 48% of respondents selected inadequate handling equipment as the main cause, 8% selected delays on the part of importers and their agents whilst the remaining 10% of respondents selected others specifying delays in examination of import cargo, the need for additional scans to be installed at the port and vehicle traffic jam within the harbour areas.
MPS ABILITY TO CONTROL CONGESTION

All respondents mentioned that in their view MPS is capable to control congestion but unless the government and the port authority give them the necessary support.

When asked the reason for their answers 30% said the situation was worse but since MPS stated operation at the port it has been reduced a bit thought not stopped completely; 50% said they have a high loading and discharging rate (high gantry moves per hour), and the remaining 20% said they have modern port handling equipment.
NUMBER OF DAY VESSELS SPENDS AT ANCHORAGE

In an answer to a question asking the number of days agents vessels spend at anchorage on arrival, 25% said their vessels spend an average of 2 days before getting berth, 15% said 3 days on the average, another 25% said 5 days, 20% and 15% said 7 and 8 days on the average respectively. Some of the respondents however mention that sometimes their vessels do not wait at anchorage at all as they operate berthing window with the MPS terminal.

FIGURE 4.17 Number of day vessels spend at anchorage

![Bar Chart showing the number of days vessels spend at anchorage]

Source: Field work (2012)

IDEAL TIME FOR VESSELS AT PORT

This was to find out from respondents the ideal time they expect their vessels to spend at the port. That is time spent at anchorage waiting for berthing space and time spent working at berth.

50% of respondents said the ideal time for should be a maximum of 3 days, and the remaining 50% said it should be a maximum of 3 days.
They all mentioned the average time their vessels spent at berth at MPS as approximately 2 days.

**IS MPS EFFICIENT?**

All respondents answered in the affirmative that MPS is efficient and gave the following reasons for their answers.

a) The have high loading and discharging rate  
b) They report real time to the shipping lines  
c) They have a well trained staff  
d) There is free flow of trucks at their terminal making containers move faster from the port.

**ROLE OF MPS IN REDUCING CONGESTION**

As to what role respondent believe MPS should play in reducing congestion at the Port some of the respondents requested that they should enter into talks with GPHA leave the remaining berths at the Tema port to them, some also said they need to acquire more handling equipment.

4.3 INTERVIEW RESULTS

This section presents the result of interview conducted with an official of the Meridian Port Services (MPS).

4.3.1 LEVEL OF CONGESTION PRIOR TO START OF MPS OPERATIONS

The official stated that congestion was gradually becoming a problem at the Port of Tema. He mention that container throughput at the port was increasing gradually as more vessels were
arriving at the port to discharge and load containerised cargo. He said this was as a result of the fact that most vessels diverted their calls from Ivory Coast to Tema and Takoradi.

TABLE 4.5 Container traffic at Tema Port.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NO. OF CONTAINERS IN TEUS (000)</th>
<th>SHIP TURN AROUND TIME (IN HOURS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>167.00</td>
<td>58.91</td>
</tr>
<tr>
<td>2001</td>
<td>178.30</td>
<td>82.65</td>
</tr>
<tr>
<td>2002</td>
<td>223.40</td>
<td>83.12</td>
</tr>
<tr>
<td>2003</td>
<td>305.90</td>
<td>107.66</td>
</tr>
<tr>
<td>2004</td>
<td>354.70</td>
<td>115.36</td>
</tr>
<tr>
<td>2005</td>
<td>392.80</td>
<td>116.53</td>
</tr>
<tr>
<td>2006</td>
<td>425.40</td>
<td>102.23</td>
</tr>
<tr>
<td>2007</td>
<td>489.10</td>
<td>145.35</td>
</tr>
<tr>
<td>2008</td>
<td>555.00</td>
<td>117.88</td>
</tr>
<tr>
<td>2009</td>
<td>525.60</td>
<td>136.5</td>
</tr>
<tr>
<td>2010</td>
<td>590.01</td>
<td>91.31</td>
</tr>
</tbody>
</table>

Source: GPHA Magazine (2010/11)

He further mentioned that currently there is congestion at the port but they are working tirelessly to bring it under control. He mentioned the fact that most vessels arriving at the Port of Tema are gearless vessels and most of them are high draft so even when there are vacant berths at GPHA they still will wait for vacancy at MPS terminal to berth and this has been a major cause of the congestion situation at the Terminal.
The level of congestion at the Port currently is higher than before and this is due to the fact that vessel and container traffic at the port has increased tremendously without any correspondent increase in infrastructure. According to the shipping agencies, congestion deters them from doing business in certain ports. If it becomes necessary to call a congested port, then congestion surcharge becomes the panacea for the time and revenue lost at such a congested port.

4.3.2 DETERMINING THE LEVEL OF CONGESTION AT THE PORT.

The official mentioned that there are several indicators used to determining whether there is congestion at a port and how moderate or alarming it is. He said they used high berth occupancy with number of vessels waiting at anchorage to berth in their terminal as an indicator to determine the level of congestion at the Terminal. He mentioned that at the time of interview berth occupancy at the MPS terminal was 98% with berth productivity for vessels at 29.9 moves per hour. Average anchorage days for vessels were also 4.7 days. The official denied the fact that the congestion situation at the terminal was alarming as was being claimed by the freight forwarders.

4.3.3 MAIN CAUSES OF CONGESTION AT MPS

On the main causes of congestion at the MPS container terminal, the official mention documentation bureaucracies from the various authorities ranging from customs, the standards boards, the food and drugs board, the DICs and many others as, transit containers at the port also constitute to the causes of congestion the port. The customs regime concerning transit cargo at the Tema port involves long processes which makes containers stay at the terminal for longer periods adding up to the congestion situation. The process transit cargo passes through involves
ascertaining the value of the consignment for bond purposes, movement of truck from the port to inland destination. These processes take about more than 5 days to complete and loaded cargo stays in the port till the process is completed.

4.3.4 CHALLENGES IN THE FIGHT AGAINST CONGESTION

The MPS official mentioned delays on the part of importers and their freight forwarders as a major challenge in the fight against containers congestion at the port. He said the situation where freight forwarders failed to clear cargo on time made the inland container depots (ICD) congested thereby making it difficult to move discharged full container loads (FCL) from MPS stacking yard to the ICDs. He also mentioned vehicular traffic within the port environs as a major cause of container congestion at the Tema Port.

The operational processes of the port terminal involves allocating berth to vessels, discharging and loading of vessels, stacking discharged containers within the stacking yard and transferring the containers from the yard to inland transport mode. With all these stages, transfer of containers to inland destination seems to be the main challenge as far as congestion is concerned. This is because the stage involves numerous agencies which always cause delays in the operational cycle.

4.3.5 PLANS WITH REGARDS TO THE CONTROL OF CONGESTION

With the plans put in place by MPS to control the congestion situation at the Port, the official mentioned that they have done a lot as far as infrastructure is concerned. He said they have a very strong maintenance team which always made sure their equipment’s are in good conditions all the time. He said a new Mobile Harbour Crane has been acquired and has now placed orders...
on an additional two Ship-to-Share (STS) and four Rubber Tyre Gantry (RTG) cranes; both for an estimated total investment outlay of $36 million. The MPS official mentioned that acquisition of these assets will not only boost the terminal’s throughput capacity up to one million TEU on both the quay and the yard, but also the technological advancement of the port’s operations. The STS cranes will enable MPS to handle larger vessels (47 metre outreach) with container twin-lift capacities (60 tonnes under the spreader) offering clients the premier berth productivity and efficiency of the sub-region. He said while the STS cranes will facilitate faster vessel operation, the RTG cranes will enable MPS to carry out its imports’ yard operation solely through the cranes, gradually discarding the usage of reach stackers. This will result in a safer operational environment and faster container handling in the yard, ultimately reducing port congestion.

With these measures put in place MPS has is no doubt doing a lot to increase their operational efficiency and to fight congestion at the port.
CHAPTER FIVE

RECOMMENDATIONS AND CONCLUSIONS

5.1 RECOMMENDATIONS

From the study it was revealed that transit containers that are left in the Port awaiting customs clearance before being trucked to the final destination are also part of the causes of congestion at the Port of Tema. It is therefore recommended that action on the construction of the Boankra Inland Port must be expedited so that all transit containers bound for the landlocked countries would be transferred there immediately they are discharged from the vessels for onward transfer to their final destinations. Also a rail must be linked from the Port to the Boankra Inland Depot once its construction is completed for easy transfer of containers to the Depot. Additional inland container depots must be constructed to ease the pressure on the existing depots. If the GPHA cannot fund this then the private sector can be invited to build and operate such facilities.

Also the study revealed that the customs procedure involved in releasing import cargo and transit cargo at the Port is very cumbersome and that delays the whole process of releasing cargo. The processing of documents for clearing cargo should be streamlined to ensure that the clearing process is made simple and easier for freight forwarders/shippers. Through this, these individuals would be able to conduct their business on time thus, saving them from unnecessary stress. In doing this, it would also be worthwhile if one stop centre is created where all stakeholders would be under one roof for easier transaction of business.
Again, additional scans must be installed at the Port for examination of cargo as there appear to be long queues at the existing scan facilities which adds up to the delay in the system causing the congestion at the Port. Physical examination at the Port must be completely eliminated from the system.

There is the need for the shippers' authority, CUBAG and GIFF to educate the importing community and freight forwarders on the need to start documentation on time before their cargo arrive at the Port so as to be able to take release of their consignments without any delays. The study showed that there is inadequate dissemination of information within the port community. It is therefore important that easy means of dissemination of information on current port conditions must be adopted such as the GPHA relaying information to the freight forwarders through GIFF and CUBAG.

The traffic situation at the Port gates and immediate environs must be looked at. The roads leading to the port must be expanded and additional exit points constructed for trucks moving discharged cargo from the port to the inland container depots. The damaged vehicle towing regulations must be enforced so that any spoiled truck along the roads within the port environs would be removed within a short time so as to avoid the current situation where damaged trucks are left on the roads unattended to thereby creating a lot of vehicular traffic making movement of cargo very difficult. This would makes movement of haulage trucks faster.

There is the need for the Port Authority to consider dredging berth number 3 to 12 to allowed vessels with high draft to access them rather than queuing at anchorage until there is a vacant berth at MPS whiles some of the berths will be lying idle at the GPHA. Also the GPHA needs to encourage stevedoring companies operating at the Port to invest in modern Port handling
equipment so that some of the vessels waiting at anchorage to berth at the MPS terminal will opt to berth at GPHA terminal.

The Ghana Ports and Harbours Authority must consider granting more concessions to the private sector for them to operate container terminals at the port as has been granted to MPS. As the volume of container trade increases globally it is obvious that the volumes of containerised cargo passing through the Port of Tema will continue to grow. If port capacity is not expanded to reflect the growing trend the congestion situation at the port will be worse.

Finally the Port Authority must be proactive in anticipating future occurrences so as to put in measure to counteract conditions that will lead to congestion at the Port. This can be done through regular review of port conditions so as to be able to anticipate future occurrences and plan towards that.

5.2 CONCLUSION

The desire to create a more efficient and competitive market based transport system has led to the involvement of the private sector in infrastructure investments. One such investors is the Meridian Port Services (MPS) who for the Ghana government’s vision of making Tema a gateway port to the West African Sub-region were granted a 20 year concession to build own and operate a dedicated container terminal at the Port of Tema.

Though MPS has injected a lot of resources into their operations since they were granted the concession, container congestion still continue to be a problem at the Port of Tema. The study
revealed that the Tema Port was congested at the time of the research even though a lot of reforms have taken place at the Port.

From the study it was revealed that MPS has played a major role in the fight against congestion at the Port and they continue to do so. Though they operate efficiently, they alone cannot curb the congestion phenomenon bedeviling the Port.

Each stakeholder operating at the Port has a role to play in the fight against congestion. The Port Authority and other container Terminal operators need to invest in modern container handling equipment; customs have to streamline their procedures to meet currently world standards the shipper and the freight forwarders also have a role to play in the fight against congestion at the Port.
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Appendix 1

INTERVIEW GUIDE

1. What was the level of congestion at the port before the beginning of your operations and now?
2. How do you determine the level of congestion at the Port (Indicators)?
3. What are the main causes of congestion at your terminal?
4. Which stage of your operational processes poses the most challenge as far as congestion control is concerned?
5. What plans do you have in place to control congestion?
6. What advice would you give to shippers and their agents who operate within your jurisdiction?
7. Do you have any advice to GPHA that can help your fight against container congestion at the port?
Appendix 2

QUESTIONNAIRE FOR FREIGHT FORWARDERS

THE ROLE OF MERIDIAN PORT SERVICES (MPS) IN REDUCING CONGESTION
AT THE PORT OF TEMA

Dear Respondent,

I am a Master of Arts student in Ports and Shipping Administration at the Regional Maritime University. I am undertaking a research entitled “The Role of Meridian Port Services (MPS) in reducing congestion at the port of Tema”. I would be very grateful if you could furnish me with answers to the following questions. Please note that the findings for this research are for academic purposes only and for that reason your identity will not be disclosed.

Thank you.

Socio–demographic identification of respondents

Please tick (✓) one

P1. What is your gender?
   a) Male  b) Female

P2. What is your age group?
   a) 18 – 27  b) 28 – 37  c) 38 – 47  d) 48 – 57  e) 58 – 67  f) 68 and above

P3. Educational background
   a) JSS  b) SSS  c) Tertiary  d) Others: Please indicate..........................

Knowledge, Experience and Recommendations

1. How long have you worked in the shipping industry? a) 1 – 3 yrs  b) 4 – 6 yrs
   c) 7 – 9 yrs  d) Above 10 yrs.

2. What is your position in the company?........................................................................
3. How long have you occupied your current position?

4. How long have you worked for this company?

5. What is port congestion?

6. Is the port of Tema congested?

7. What are the main causes of congestion at the Port of Tema? (You can choose more than one answer)
   a) Bureaucracies in documentation   b) Inadequate handling equipment at the port
   c) Delays on the part of importers / agents   d) Others. Please specify.

8a) Are there delays in cargo movement from MPS to inland transport mode?
   a) Yes   b) No

8b. If yes, what are the causes? a) Customs procedure   b) Inadequate storage facilities outside the port terminal   c) Inadequate handling equipment   d) Difficulty in locating container   e) Shippers Attitude

9. What is the effect of congestion on the productivity of the Port in terms of operational efficiency?

10a. Would you say MPS is efficient in its operations?
   a) Yes   b) No   c) Can’t tell

10b. Why?

11a. Do you think MPS is able to control congestion at the port?
   a) Yes   b) No   c) Can’t tell

11b. Why?

12. Would you recommend that more concessions be given to private operators to manage the port’s operations?   a) Yes   b) No

13. What is the reason for your answer in 12 above?
14. How many days do you spend in clearing containerized cargo at the Tema Port?

15. What method of cargo inspection do you advocate for?
   a) Physical examination    b) Scan

16. What is the reason for your answer in 15?

17. Is there a policy on overstayed cargo at the Tema Port?
   a) Yes    b) Now

18a. Do you know the details of the policy?
   a) Yes    b) No

18b. If yes, what are the details?

19. What is the effect of congestion on the importer/shipper?

20. Does congestion make you pay demurrage on containers?

21. Do you get regular updates on current port conditions?

22. If yes, where do you get this information from?

23. What suggestions do you have for the management of MPS with regards to the reduction of congestion at the port?

24. What advice do you have for the Ghana Ports and Harbours Authority (GPHA) with regards to the congestion situation at the port of Tema?
Appendix 3

QUESTIONNAIRE FOR SHIPPING AGENTS

THE ROLE OF MERIDIAN PORT SERVICES (MPS) IN REDUCING CONGESTION

AT THE PORT OF TEMEA

Dear Respondent,

I am a Master of Arts student in Ports and Shipping Administration at the Regional Maritime University. I am undertaking a research entitled ‘The Role of Meridian Port Services (MPS) in reducing congestion at the port of Tema’. I would be very grateful if you could furnish me with answers to the following questions. Please note that the findings for this research are for academic purpose only and for that reason your identity will not be disclosed.

Thank you.

Socio-demographic identification of respondents

Please tick (√) one

P1. What is your gender?
   a) Male  b) Female

P2. What is your age group?
   a) 18 – 27  b) 28 – 37  c) 38 – 47  d) 48 – 57  e) 58 – 67  f) 68 and above

P3. Educational background
   a) SSS  b) Tertiary  c) Others: Please indicate

Knowledge, Experience and Recommendations

1. How long have you worked in the shipping industry?

2. How long has your company operated in Tema?

3. What is your position in the company?
4. How long have you occupied your current position?

5. What is port congestion?

6. What are the effects of congestion on your operations at the port?
   a) 
   b) 
   c) 

7. Is the port of Tema congested? a) Yes   b) No

8. What is the average number of days your containers stay at the port of Tema?

9. What is the level of congestion at the Port of Tema?
   a) Low   b) Medium   c) high   d) others. Please specify.

10. What indicators do you use to determine the level of congestion at the Tema Port?
    a) 
    b) 
    c) 

11. Do you have a surcharge on the port of Tema as a result of congestion? a) Yes   b) No

12. If yes what is the amount?

13. Why are congestion surcharges sometimes imposed on cargo destined for Tema port?

14. What are the causes of congestion at the Port of Tema? (You can choose more than one)
   a) Bureaucracies in documentation   b) Inadequate handling equipment at the port
   c) Delays on the part of importers / agents. d) others. Please specify.
15a. Do you think MPS has been able to impact on congestion reduction since they were granted the concession to operate the Tema Port container terminal?

   a) Yes  
   b) No

15b. What is the reason for your answer in (15a) above?

   .................................................................................................................................

16. How many days do your vessels normally spend at anchorage before berthing at MPS?

17. What is the ideal time you expect your vessels to spend at the Port?

18. What is the average time usually spent by your vessels at berth?

19. Is MPS efficient in its operations? 

   A) Yes  
   b) No

20. What is the reason for your answer in 16a?

   .................................................................................................................................

21. What is the role of MPS with regards to the control of congestion at the port?

   .................................................................................................................................

22. Would you recommend that more concessions should be given to private operators to manage the port operations? 

   a) Yes  
   b) No

23. What suggestions do you have for the management of MPS towards congestion prevention at the Tema Port?

   .................................................................................................................................

24. What suggestions do you have for GPHA towards congestion prevention at the Tema Port?