CONGESTION AT TEMA PORT: A STUDY OF CARGO FLOW FROM SHIP TO INLAND TRANSPORT

BY

DOE JERRY DELA
(10236265/00000884)

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DECLARATION

I Jerry Dela Doe 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 Professor Max Assimeng and Mrs. Felicity Ankoma-Sey. Neither this work nor part of it has been presented anywhere for a degree.

Signature of Student: .................................................................

JERRY DELA DOE

Signature of Supervisor: .................................................................

PROFESSOR MAX ASSIMENG

Signature of Supervisor: .................................................................

FELICITY ANKOMA-SEY(MRS)

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ABBREVIATIONS

CEPS - Customs Excise and Preventive Service
DIC - Destination Inspection Company
GIFF - Ghana Institute of Freight Forwarders
FCVR - Final Classification and Valuation Report
FDI - Foreign Direct Investment
GPHA - Ghana Ports and Harbours Authority
IDF - Import Declaration Form
IMO - International Maritime Organization
SOLAS - Safety Of Life At Sea
VAN - Vehicle Appointment Notice
TCT - Tema Container Terminal
ACS - African Coastal Services
MCT - Maersk Container Terminal
FCL - Full Container Load
LCL - Less than Container Load.
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ABSTRACT

Maritime transport has become a safe and secure mode of transporting cargo the world over. Maritime transport apart from the above advantages is also a cost effective way of moving cargo. This is so because this mode of transport takes advantage of economy of scale, as a result of the volume of cargo that is transported on a single voyage. About 98% of world trade by volume is transported by this mode (A.E.Branch: 1994). In Ghana, 85% of international trade is transported by sea through our Ports (B.Owusu Mensah: 2002).

The existence of a Port makes all these activities very possible. Indeed, the Port is also a servant of trade which is usually international in nature. As a result, the Port must be a conducive place to conduct business. Any activity that impacts negatively on the Port will eventually render the Port unproductive and the rippling effect runs thus through the entire transport system.

The problems include increasing cost of transacting container freight business at the Port, long cargo dwell times and difficulty in locating import containers at the Port Terminal. Another problem also emanates from the fact that the Port is not adjusting effectively to cope with the changing trends even though container traffic continues to grow.

Congestion is one of such conditions that has the potential of impacting negatively on the Port and therefore the entire transport system. The objectives of the research were to find the possible causes of congestion by studying cargo movement from ship to inland transport and to make recommendations towards lessening congestion at the Port of Tema.
The multi method was used in collecting primary data. These included in-depth interviews and questionnaires, both closed and open ended questions formed part of the questionnaire. This was done among people with interest in the shipping business in Ghana, since the main focus was the Port of Tema, Ghana. These included Ghana Ports and Harbors Authority, Ghana Institute of Freight Forwarders and Shipping Agencies. Interviewers guide was used to guide the interview process. Also, brief reports from these institutions formed part of the data collected. Further, published works, periodicals, journals and relevant information from the news media at large were used in this study.

The study reveals that congestion at the Port of Tema was noticeable in all three phases of cargo transfer. The stages are transfers from Ship to Quay, Quay to Terminal and then from Terminal to Inland Transport. At the first stage, the main constraints were the inadequate berthing facilities that resulted in the long and expensive delays at anchorage. These delays cost Shipping lines as much as $15,000 to $20,000 per day. Waiting periods at anchorage were about a week on the average. At the last stage of cargo transfer involving movement from Port Terminal to Inland bound transport, the procedures were cumbersome, many import containers stayed in the Port for months and in some cases years before being cleared or auctioned by CEPS.

In general, the congestion situation at the Port of Tema became a problem during the upsurge in the transit trade involving the neighboring land locked countries in West Africa, as a result of the Ivorian Political crises. The situation caused an increase in the volumes of cargo that came through the Port of Tema. Some of the causes of congestion at the delivery stage included Customs Procedure 63%, Lack of Storage Facilities 15%, Lack of Handling Equipment 19% and Poor Routing Plan 3%.
Subsequently, the research recommends that the identified bottlenecks within the cargo flow from Ship to Inland Transport be effectively dealt with to rescue the Port from the effects of congestion. Major recommendations included the need to standardize CEPS procedures regarding imports and transit to make them more efficient and the establishment of a congestion committee to review such conditions periodically. In addition, the development of a multimodal transport infrastructure is also highly recommended and further research on the subject also recommended.
CHAPTER ONE
INTRODUCTION

1.1 BACKGROUND

The Port of Tema is situated on the Greenwich Meridian, latitude 5.4 degrees north of the equator and located about 30km east of Accra, the capital of Ghana. The Port has a total land area of 3,904,754 meters square and an enclosed area of 1,659,249 meters square (E.Gyebi-Donkor:2006).

The Port is the interface between the sea and land that has Harbour with facilities for vessels to moor, load or discharge cargo. For the Port to be congested, suggest that space has become limited usually due to various port activities. This condition is usually characterized by long delays. The Director General of the Ghana Ports and Harbors Authority indicated that at present, 85% of Ghana’s world trade is transported by sea through our Ports (B.Owusu-Mensah :2002) and the total of world trade transported by sea stands at 98% in terms of volume (A.E.Branch:1994).

Ports exist to promote international trade. International trade increases competition and prevents the monopolistic control of the home market by local manufacturers. Further, it also provides a stimulus for economic growth, technological development and raises living standards of people. In total, it provides wealth to the economy and extends opportunities to exchange ideas and develop the infrastructure of a country or region and its resources (A.E.Branch:1994). Ports also serve as cross points in the transport chain, where goods are transferred from one mode to the other. As a result, it is very important that the conditions at the Ports are looked at critically as it impacts negatively or otherwise on the efficiency of the Port, it further goes a long way to affect the economic developments.

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1 E. GYEBI DONKOR: Tema Port Newsletter: May – August 2006 Vol. 1No.2. 16.
of the respective countries.

Congestion is the accumulation of vessel at a Port to the extent that vessels arriving to load or discharge are obliged to wait at anchorage for a vacant berth (A-Z of Shipping)\(^5\). At the Port terminal, congestion arises when Port capacity is insufficient to cope with traffic levels (G.Anim:2006)\(^6\). Delays are typical characteristics of such conditions. Inherent in congestion is a negative effect that makes the Port unproductive and a very expensive place to conduct business.

Productivity is defined as the efficiency with which production is undertaken (Oxford: 2004)\(^7\). In the Port environment, productivity is a performance indicator commonly used in container handling. It is a relative measure of output of machine or labour per hour. Thus the number of containers transferred by the gantry crane per hour(A-Z of Shipping)\(^8\).

There is the need for the Port of Tema to be accessible and efficient to enhance international trade. The factors of accessibility and efficiency cannot be overlooked. If the Port functions well, then efficiency will be high, productivity will increase and prices would reduce as trader's overhead cost would be brought to an acceptable minimum. The Port exists as an integral part of international trade and transport. This explains the fact that the general efficiency of the Port is crucial in sustaining and developing trade (E.Martey:2006)\(^9\).

Already, vessels spend a lot of unproductive time in the Port of Tema, sometimes over two weeks usually due to congestion at berth and the slow rate of cargo discharge and loading. Vessels anchor for about a week at the anchorage whilst waiting for a vacant berth and another week on the

\(^8\) www.ponl.com: A-Z of Shipping Terms.
average is also spent discharging and loading of vessels (Port Newsletter:2006).\textsuperscript{10}

The situation can be controlled if the factors creating congestion are addressed and monitored. In the year 2005, ships spent an average of about 5 days to discharge and load at the Port of Tema. This is usually after ships have spent about a week or more at the anchorage (Port Newsletter:2006).\textsuperscript{11}

One of the main aims of the Ghana Gateway Project is to reduce the cost of doing business at the Port and also to facilitate trade. This may not become a reality if the level of congestion is not reduced, especially when the transit trade between Ghana and the landlocked countries such as Burkina Faso, Mali and Niger continues to increase. From a modest figure of 1% share of the transit trade in 1999, Ghana’s share has now increased to 29% of the regional landlocked transit traffic as at the end of 2005 (O.Cudjoe:2006:42).\textsuperscript{12}

Thus, within the last seven years, Ghana’s share of the transit trade increased from 29,689 tonnes to 1,122,097 tonnes in 2005. This represents a growth rate of 3,779% (O.Cudjoe:2006:42).\textsuperscript{13} Before the political unrest in neighboring Ivory Coast, the landlocked countries depended mostly on Abidjan and Lome Ports for their transit business. But for the political instability in Ivory Coast, Ghana would not have benefited significantly from the sub-regional transit trade. One begins to wonder if the cargo throughput at the Tema Port would not be affected when the political situation in the Ivory Coast returns to normal.

It is important that activities around the Port which is central to Ghana’s international business are properly organized and well maintained to facilitate trade on the global market. Unfortunately though,
this is not the case, the problems of congestion and delays in clearance do not allow easy movement of cargo to and from the Port of Tema. For sometime now, sluggish movement of cargoes has been a feature of our Ports (E.Gyebi-Donkoh: 2006)^14. If the storage facilities or space within the Port and its immediate environment are managed efficiently, cargo handling activities properly organized and coordinated, the Port will be a better place to do business. In most cases however, the approach to container stacking for example appears to be unplanned, resulting in a lot of unnecessary and unproductive movements of cargo.

In most cases, Freight Forwarders roam the length and breadth of the Tema Port to trace containers for their clients. Containers are moved so many times before finally exiting the Port to their final destination. Loading of general cargoes such as steel products along the main access roads within the Port also leaves much to be desired. This activity affects the easy flow of traffic along these roads thereby creating vehicular traffic congestion. Certain procedures of the Ghana Customs, Excise and Preventive Service such as physical examination of containerized cargo have all succeeded in worsening the problem of congestion at the Port of Tema. This activity defeats the very aim of the container revolution which is meant to make movement of such cargoes fast, convenient, safe and cost effective.

The problem of congestion makes the cost of doing business at the Port very expensive and uncompetitive thereby making it unattractive. If the situation goes unchecked, our export commodities will become expensive and possibly lose their competitive edge on the international market. Ghanaian imports through the Port will become expensive for the consumer as a result of the expensive nature of the transportation component.

The Europe West Africa Trade Agreement (EWATA) is a conference comprising of 9 major shipping lines which operate in West Africa (E.Martey:2006). This conference controls over 40% of liner trade in Ghana. An amount of EUR 225 and EUR 450 for 20" and 40" respectively has been imposed on the Tema Port as a congestion surcharge. This amount forms part of the freight payable by the shipper. This congestion surcharge may be reviewed upwards or downwards depending on the congestion condition at the affected Ports (Otal: 2006). This amount is beside the increasing local administrative charges that importers are already complaining about.

1.2 STATEMENT OF PROBLEM

Consistently, the cost of transacting container freight business at the Port is increasing and this has become a source of worry to many who patronize the services of the Port. Cargo dwell time has become unacceptably long and unfavorable to the importing community due to the many delays associated with cargo delivery from the Port. This includes the difficulty in locating import containers at the Port Terminal. Further is the perceived inability of the Port to adjust effectively to cope with the growing container traffic.

1.3 RESEARCH OBJECTIVES

The main objective of the study is for academic purposes and to find out what the congestion situation is at the Port of Tema. Specific objectives include:

i. to find out the possible causes of congestion at the Port by studying cargo movement from Ship to Inland Transport.

ii. to make recommendations towards lessening the congestion situation.

1.4 METHODOLOGY

The study was a field research, both survey and direct observation methods were used. The main tools used in gathering data included in-depth interviews and questionnaires, both closed and open ended questions were asked. This was done among people with interest in the shipping business in Ghana, since the main focus was the Port of Tema, Ghana. These included the Ghana Ports and Harbors Authority, Ghana Institute of Freight Forwarders, and the Shipping Agencies of Antrak, Delmas, and Maersk Ghana Limited. Interviewer’s guide was used to guide the interview process.

SAMPLING PROCEDURE

Most of the organizations selected for interviews were picked particularly because of their interest in the Port and the subject under study. Representatives from 3 shipping Agencies were selected for interviews from a population of 9. Among a population of about 888 Freight forwarders, a total of 80 questionnaires were administered and one interview conducted (GIFF:2007)\(^1\). Random Sampling method was used to select the sample among Freight Forwarders. Among GPHA and the Shipping Agencies, purposive sampling was used to select the sample.

1.5 JUSTIFICATION

As a developing country, Ghana cannot afford to allow the problem of congestion to rob her of the much needed benefits associated with maritime transport as the cheapest means of moving cargo. Additionally, coastal states also enjoy many advantages. Many economies the world over have seen tremendous transformation because of the importance they attached to their Ports.

The research will add to existing knowledge regarding Port congestion. Further, awareness would be created as to the causes and the negative effects of congestion and the need for an effective control

\(^{1}\)GHANA INSTITUTE OF FREIGHT FORWARDERS: Tema District Membership list 2007.
mechanism to be employed by policy makers.

Additionally, recommendations were made to assist policy makers in decision making and the possible facilitation of trade when this situation is brought under control. Ghana stands to lose a lot of revenue if the Port becomes uncompetitive and congestion remains unchecked. The cost of delays during discharge and loading of cargoes also affects the ship’s productivity. In shipping, it is known that the operator makes money only when the vessels are on the move (D.Aryee:2006)\(^9\). A ship’s stay in port is typically a cost based activity, as the longer it stays the more cost it incurs. As a result, shipping lines factor in the length of stay or turn around time of ships and general Port conditions before calling at Ports.

The congestion situation in neighboring Nigeria, has reached an alarming proportion, goods bound for Nigerian Ports especially Lagos are now dumped by shippers in neighboring countries to avoid payment of demurrage(R.Ugochukwu:2006)\(^9\).This situation resulted in a significant number of Nigeria bound cargoes being discharged at neighboring Ports. This activity the shipping agencies term “cut and run”, it becomes necessary so that the vessel can catch connecting vessels at hub Ports. It further allows the vessels to keep to their advertised schedules with minimum delays.

This situation can easily befall Tema Port and Ghana as a nation if we do not deal with the problem of congestion. The Nigerian situation should be a good example for Ghana. We must avoid this, hence the importance of this research.

### 1.6 SCOPE OF STUDY

The geographical scope of the study covered the main Port and Harbour areas of Tema. This excludes the Tema Fishing Harbour. The study looked at the transfer of cargo from Ship to Inland Transport.

\(^9\)D.ARYEE: Maritrade 2006.145.
That is, cargo transfers from Ship to Quay, Quay to Terminal, and then from Terminal to Inland Transport.

This approach allowed the problems that cause congestion to be located within the chain of logistics activities involved in the process of cargo movement from Ship to Inland Transport. The main cargo type under consideration was containerized cargo as well as container ships. The study covered the periods from 1996 to 2006.

1.7 LIMITATION OF STUDY

Some limitations of the study were the unavailability of some targeted respondents due to their busy work schedule and the unwillingness of others to co-operate due to various reasons. Also, the difficulty in accessing such information labeled as classified also presented a big challenge. Further, the many bureaucratic bottlenecks also brought about some degree of limitation in addition to the element of suspicion relating to the release and use of certain types of information. Indeed, the limitation of time was also vital as it also affected the magnitude of work that could be done.

1.8 SOURCES OF DATA

Primary data was gathered from the shipping community of Ghana. These included the Ghana Ports and Harbors Authority, Ghana Institute of Freight Forwarders, and Shipping Agencies. This was done mainly by way of interviews and questionnaires. The sources of secondary data were the libraries, internet, books, magazines and periodicals, news paper articles, quarterly and annual reports among others.

1.9 DATA ANALYSES

Data collected from the field of study were analyzed by the use of graphs, tables, and charts.
CHAPTER TWO

LITERATURE REVIEW

2.1 CONGESTION PHENOMENON

Congestion is the accumulation of vessel at a Port to the extent that vessels arriving to load or discharge are obliged to wait at anchorage for a vacant berth (A-Z of Shipping)\(^{20}\). At the Port terminal, congestion arises when Port capacity is insufficient to cope with traffic levels (G.Anim:2006)\(^{21}\). Congestion impacts negatively on the Ports, thereby making them unproductive and an expensive place to transact business.

The phenomenon of Port Congestion is not peculiar to Ghana alone, but is a situation that prevails in most African, Asian and developing countries (H. Coltof:1999:351)\(^{22}\). To be able to appreciate the situation of congestion, it is important that the movement of cargo is studied from ship to inland transport. This includes the gang or crane productivity at the berth, absorbing capacity of the intermediate Port storage facilities, transfer and storage capacity and facilities of the ware houses for medium storage time and then receipt and delivery practices.

As observed by Dr. H. Coltof, to be able to study the problem of congestion, it is important that the various stages of quay transfer are considered so that a meaningful study can be undertaken. He proposes three main approaches regarding cargo transfer;

a. Quay Port Storage System Destination
b. Quay Domestic Port Warehouse Destination
c. Quay Port Storage System Domestic Warehouse Destination

\(^{22}\) H.COLTOF: Port Organization and Management in Developing Countries,1999:351.
This study however considered the issues of congestion by studying cargo flow from:

Ship _____ Quay _____ Terminal _____ Inland transport,

i. Ship to Quay

ii. Quay to Terminal

iii. Terminal to Inland transport.

The Director General of the Ghana Port and Harbours Authority Ben Owusu-Mensah attributes the congestion problem mainly to the fact that the Port is being used as a storage facility rather than a transit place for cargo. He observes further, that government legislation allows cargo to stay for 60 days before being confiscated to the state. This worsens the situation of congestion (B.Owusu-Mensah:2002).23

In addition to these concerns, the difficulty associated with the release of cargo through Ghana Customs also contributes to the problem. These activities slow down the process of cargo release. As a result, cargo stays longer at the Port and this eventually creates congestion. Also, the lack of awareness regarding the control of congestion at all times has had a negative effect on the problem.

Thomas Ward’s viewpoint is 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 better use. This would prevent time-consuming, expensive and difficult new developments. It is not out of place for one to assume that since the size of the Port cannot be increased easily, then 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 put is distance over 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 6,300 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 for discharge to be completed. The container would stay for an average of five 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 at sea. (Thomas Ward: 2006)²⁴.

In the case of Tema, vessels wait at the anchorage for about one week. It takes about another week for the vessel to discharge and load, 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 to July 2005, the company was unable to export because of congestion at the Port of Tema (Nestle: 2005)²⁵. 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)²⁶.

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. On the other hand also, the Port Operator 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)²⁷.

Container cargo transfer from Ship to Quay involves the use of the ship’s own gear or the use of a ship to shore crane. In full containerized trades, ships do not have their own lifting equipments. But for certain trades such as bulk or general cargo, some ships are fitted with either derricks or cranes for lifting purposes. Shore cranes include Portal Gantry, Multipurpose, Jib and Mobile cranes. Often mounted on vessels include Derricks, Ship-mounted jib cranes and Ship-mounted gantry cranes. Numerous factors affect the crane cycle or productivity. Among these are crane type and 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) 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 containers in and out of the terminal quickly (Bookman:1996).

A crane operator and a top lift operator combined for a staggering 139 moves in two and a half hours, for an average of 55.6 containers per hour - simply outstanding work, this was only a highlight in an all-around excellent performance. The vessel call involved 1,387 moves, completed by three cranes in 12 hours, at an average productivity of 39 moves per hour in the Port of Wilmington, North Carolina. For comparison, a recent report by the United Kingdom’s Department for Transport included this assessment: A Port consultant stated that 40 crane moves per hour are possible at some North American Ports compared with about 20 currently at Felixstowe (U.K.) and 30 at Rotterdam and Antwerp. Rotterdam, in the Netherlands, and Antwerp, in Belgium, are among the top container terminals in the world (News Release: 2005). The Port of Tema in 2005 introduced 3 Ship-to-Ship Cranes and 4 Rubber Tyred Gantry Cranes to help improve the container handling productivity at the

At the end of 2006, the gantry cranes at the Port of Tema were discharging about 26 containers per hour according to Port officials. Prior to the introduction of these cranes, a mobile crane and the ship’s own lifting gear were mainly used. These could allow only about 14 containers to be discharged in an hour.

The slow nature of cargo transfer from Ship to Quay increases the ship’s turn around time and this eventually affects the daily operating cost of the ship in Port. In 2005, the average turn around time for ships stood at 116.80 hours (Port Newsletter: 2006)\textsuperscript{31}. Some delays include those associated with commencement of discharging and discharged containers congesting the quay area. Competition has put intense pressure on ship owners to drive down cost; this has triggered the construction of larger vessels to benefit from economies of scale. Ports offering good turn around time for vessels would obviously attract more traffic.

2.3 QUAY TO TERMINAL TRANSFER

The quay is a solid, stationary landing place built of stone or iron. Ships are moored alongside for loading and unloading. Quay to Terminal transfer entails cargo movement from Quay to Port Storage Facility where it is stored for a variable period. Thus, cargo transfers from Quay to Port container terminal for stacking over a short period before release and delivery onto an inland bound transport. This stage of transfer involves the loading of container cargo onto a trailer or chassis for further transfer to the Port terminal.

Equipments employed at this stage include Rubber Tyred Gantry, Reach Stacker, Straddle Carrier,
Front End Loaders, Rail Mounted Gantry, Overhead Bridge Cranes and Trailer Chassis. At the Port of Tema, this stage of transfer is done with the Reach Stacker and Trailer Chassis. It must be added, that this mode of transfer was slow and vehicular traffic difficulties also impacted negatively at this stage. Upon the introduction of the Gantry Cranes at the Port of Tema, transfer from the crane to trailer chassis has improved though the vehicular traffic situation remains the same. Transfer at Quay 1 is however undertaken with a Mobile Crane, Ship’s Gear and the Reach Stacker. The Gantry Cranes operate only at Quay 2.

It is vital, that the cranes as well as the other equipments are kept in top operating conditions at all stages to maximize the productivity of the equipments. To achieve this kind of performance, crane down time for example, must be kept at zero. This happens only when the maintenance team can boast of highly trained, skilled members and effective maintenance plan (News Release: 2005). Vehicular traffic situation at the Port affects the transfer system, this calls for an efficient routing system to facilitate the easy movement of freight from the quay area.

2.4 TERMINAL TO INLAND TRANSPORT

This stage entails container transfer from Terminal to an inland bound transport for onward carriage to final destination. Equipments include Chassis, Straddle Carriers, Rubber Tyred Gantry (RTG), and Rail Mounted Gantry(RMG), Fork Lift Truck and Reach Stackers. Stacking style at the terminal can influence the number of tiers and the number of boxes the terminal can accommodate and also the ease with which a container is located. The absorbing capacity of the storage area defines the number of boxes the area can contain.

Numerous agencies operate at this stage at the Port of Tema, this stage incidentally involved payment

of taxes, levies, rent, demurrage and various other charges. Key among the various agencies was CEPS. The others are Freight Forwarders, Shipping Agents, Destination Inspection Companies, Port Authorities, and Standard Boards among others.

CEPS Procedure involves the various regimes put in place to regulate activities regarding the different Customs processes. Each regime determines what the requirements are as regards the processes. For example, the procedure pertaining to imports requires the following documentation and procedure:

- Original Bill of lading
- Attested Invoice
- Packing list
- Import Declaration Form (IDF)
- Final Classification and Valuation Report (FCVR)
- Tax Clearance Certificate (TCC)
- Tax Identification Number (TIN)
- Permits and Licenses as appropriate.

**PROCEDURE**

- Purchase IDF
- Submit IDF and other relevant documents to DIC (Destination Inspection Company)
- Obtain FCVR from DIC
- Submit declaration electronically to Ghana Customs Management System through GCNet (Ghana Community Network).
- Validation of declaration
- Payment of relevant duties at the designated banks
- Processing by compliance officer
- Proceed to cargo terminal for examination and release of goods.
The above documents must be available and procedure followed before container cargo is allowed to exit the Port (CEPS:2007).

2.5 CONTAINER TERMINALS

Container terminals are areas where (FCL) full and empty containers are received and/or delivered. Today, there are over 10 million containers in use and about one million new containers are built annually (Boelhouwer: 1999). A modern terminal is an industrial enterprise where a variety of activities take place at the same time: large machines traveling in all directions, equipment lifting and moving containers and vessels as well as vehicles arriving and departing. The main aim of these numerous activity is to transfer containers between inland and maritime transport, as quickly and efficiently as possible. The efficiency with which the terminal carries out its functions has significant impact on the speed, smoothness, efficiency and consequently the cost of transporting containers and cargo from shipper to consignee.

Recent research has shown that land productivity, that is the number of containers stowed per hectare at the terminal, varies in different regions. Typical figures for many Asian Ports show an average storage capacity of 470-230 TEUs / hectare and European Ports have figures ranging from 300-180 TEUs / hectare. In North American Ports also, 160 TEUs / hectare seems to be the average figure (Alderton:1999). At the Tema Container Terminal (TCT) in Ghana, a total of 327 TEUs are stacked per hectare of terminal space, this figure falls within the capacity of the Asian Ports. At full capacity, TCT can hold up to 1800 TEUs (TCT:2006). A high figure means that less land is required but almost certainly, containers must be stacked higher. High stacking probably means more unproductive lifting and moving of containers, such as when trucks arrive to pick up import containers.

Boelhouwer Jan: Port Management: 1999.
Information Department TCT: 2006.
When considering the basic layout of a container terminal, the operational problems would have to be considered, as a result, the actual layout of a terminal will depend on the equipments used. The layout and optimum 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 Tema Port, the terminal operations are done mainly with the Reach Stacker, whiles the general layout tends to support general cargo operations rather than containers, though the latter is the current trend in cargo movement. Below are features of some terminal operations systems.

**TABLE 2.1 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 385 TEU/hectare</td>
<td>Very Good 750 TEU/hectare</td>
<td>Poor 275 TEU/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 skill required</td>
<td>High: 29 men medium high skill 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

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 385 TEUs/hectare, as the Gantry System also holds 750 TEUs/hectare.
Equipment manufacturer Kalmar apportions higher productivity for the various equipment options being reviewed. The storage capacity of the reach stacker is approximately 500 TEU per hectare (max.5-high), the straddle carrier also has a storage capacity of approximately 500-700 TEU per hectare (max.4-high). Similarly, the Rubber Tired and Rail Mounted Gantry Cranes also have storage capacities of approximately 1000 TEU per hectare (max.8-high) and 1100 TEU per hectare respectively (KALMER: 2007)38.

At Terminal 10(Container Storage Area) in the Port of Tema, containers are stacked in rows of 9 with spaces of about 11 meters to allow the reach stacker travel and maneuver between the stacks. The Straddle Carrier and the Gantry Systems require lesser maneuvering pathway, this account for the efficiency in land utilization. Terminal 10 (Container Storage Area) holds about 18 stacks, with each stack containing 108 TEUs, at full capacity, the terminal 10 holds about 1944 TEUs.

Among the various operating systems, the Straddle Carrier and the Yard Gantry Systems are the most efficient in land utilization. The Straddle Carrier system holds 385 TEUs/hectare, as the Gantry System also holds 750 TEUs/hectare, these equipment options enhance better use of container storage space.

2.6 PHYSICAL EXAMINATIONS

The ability of the Port to generate traffic is seen as the Port’s ability to attract business or the volume of business that passes through the Port. Each call of a vessel to any Port for that matter is for the purpose of loading or off-loading or both depending on the contract of carriage or type of commodity.

The volume of business passing through the Port is increasing, so that if Customs examines all containerized cargoes 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 (A.E. Branch: 1994)\(^{39}\).

In the Port of Charleston in the United States, only about 1% of physical examination is conducted (G.Palsson:1997)\(^{40}\). 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. Regarding technology, the use of the scan can go a long way to reduce the tendency of a 100% physical examinations.

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 belief, 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. Currently, the scan is used for about 5% of the total containerized cargo going through the Port of Tema (E.Gyebi-Donkor:2006)\(^{41}\). Customs examination within the Port must be reduced or eliminated and the scan put to maximum use.

The Port of Lome in the Republic of Togo, has been using a Mobile X-ray scanning system since October 1, 2003. The scan is used to visualize the contents of a container in 2 or 3 minutes through a radioscopic image without the need for a physical examination. This facility allows clients to be provided with a good processing speed and efficiency. The scanner also has a daily capacity of

\(^{39}\) A.E. BRANCH: Export Practice and Management:1994:75


At the Port of Tema, the X-ray scanner, scans up to 20 containers per hour and up to 200 containers per working day (Ghana Ports: 2005-2006)\(^4\). Total elimination of physical examinations by C.E.P.S would not be a healthy approach, some amount of random physical examinations by C.E.P.S would be very necessary to serve as a check and also for the necessary revenue to be collected. In the developing economies, revenue generation has always been a problem; therefore there is the need for some level of physical examinations to be conducted. This would also serve as a deterrent to certain irresponsible acts, such as under invoicing and wrong descriptions for the purpose of paying lower duties. This is also possible because every commodity attracts a different tax percentage. Customs examinations could be reduced to about 10% of all containers going through the Port. This means that 1 out of every 10 containers will be physically examined.

With regard to the high-tech computerized cargo handling equipments, it is worth noting that no matter how advanced the handling equipments, 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 then finally transfer to inland transport for carriage to final destination. For these reasons, efforts should be made to have an integrated shipping industry involving Ghana Customs, Shipping Agents, Freight Forwarders, Port Authority, Destination Inspection Companies, Insurance Companies and Cargo Owners (Shippers).

2.7 PORT DEVELOPMENTS

Maritime reforms and development of infrastructure can help accelerate integration in the total logistics chain. The collective responsibilities must therefore be aimed at getting the cargo to the

consignee in a good condition and on time (D.Aryee:2006:145). The freight market has fueled a trend towards larger and faster ships. These ships make precise, timely and efficient Port connections in order to achieve maximum cost effectiveness and competitiveness. The survival of a general cargo Port depends on its ability to receive and transfer goods as quickly as possible (Charles Bookman: 1996).

To remain the choice for ships calling the West African sub region, the Port of Tema must rise up to the challenge of receiving cargo from larger and faster ships. The Port should be able to compensate for the speed and size of the new generation ships by improving upon its operational activities to avoid congestion. It is worth noting, that there are some import containers that have stayed in the Port of Tema for about five years. The reasons for this includes high C.E.P.S tariffs, high G.P.H.A terminal handling charges and rent as well as high shipping line charges due to demurrage. These situations and many more have resulted in acute congestion at the Tema Port (E.Gyebi-Donkor:2006).

Port congestion is described by many as a 'buzz phrase' in the maritime industry. This is supported by the fact that any time you open a trade journal that covers the maritime community, there are articles on relieving Port congestion (Thomas Ward:2006).

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 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.

The extension and deepening of the draft at Quay 2 at the Port of Tema has given rise to berthing of larger container vessels. These vessels are obviously carrying large numbers of containers, together with the slow rate of cargo delivery and other factors have contributed to the incessant congestion at the Port of Tema (E. Martey: 2006)\(^{48}\). The extension of Quay 2 at the Port of Tema, should have given rise to corresponding strategies aimed at improving the allied activities such as cargo handling, customs procedures and freight forwarding activities, among others. The Ports of North Carolina have initiated a $130-million expansion program, to meet anticipated demands for additional capacity, these include four new 100-ft gauge container cranes and seven rubber-tire gantry cranes to double throughput capacity over the next five years.

Maritime transportation is a logistics chain that requires all the integrated activities to complement each other. The logistics chain is the process of moving or distributing goods through all the elements of the logistics chain originating from the supply source and moving to the manufacture, assembling or processing stage and terminating at the distribution point. The length of chain elements will depend on the product and the market environment. It is at this point that the logistics chain becomes complete (A.E. Branch: 1995)\(^{49}\).

In attempting to solve a problem within the chain, it is needful that the entire chain is dealt with. This approach will allow all the other segments to be considered simultaneously, so that each element of the transport chain is capable of taking up the strain as neighboring links are improved (Thomas Ward: 2006)\(^{50}\).

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\(^{50}\) THOMAS WARD: Port Congestion Relief: www.dnjmharris.com: 2006.2.
2.8 PORT CONGESTION SURCHARGES

As a result of congestion, surcharges are imposed on all Ports considered to be congested. These charges become part of the cost of shipments of goods to and from such congested Ports. On the 10th of July, 2006, these surcharges were reviewed by the Europe West Africa Trade Agreement (EWATA). The details are as shown below:

<table>
<thead>
<tr>
<th>Port</th>
<th>20&quot; Container</th>
<th>40&quot; Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUANDA</td>
<td>EUR 300</td>
<td>EUR 600</td>
</tr>
<tr>
<td>LAGOS APAPA</td>
<td>EUR 850</td>
<td>EUR 1700</td>
</tr>
<tr>
<td>DAKAR</td>
<td>EUR 100</td>
<td>EUR 200</td>
</tr>
<tr>
<td>COTONOU</td>
<td>EUR 175</td>
<td>EUR 350</td>
</tr>
<tr>
<td>TEMA</td>
<td>EUR 225</td>
<td>EUR 450</td>
</tr>
</tbody>
</table>

According to the same source, the congestion surcharge for the Port of Tema had increased from EUR 50 and EUR 100 in March, 2006 to EUR 225 and EUR 450 for 20" and 40" containers respectively as at 10th July, 2006 (OTAL:2006)51.

As the Ghana Port and Harbours Authority tries to make the Port of Tema vibrant and efficient, the issue of congestion must be watched carefully. The surcharges are paid by the importers or consignees; this cost is further passed on to the consumer as it is eventually added to the final cost of the commodity on the open market.

The Port of Tema is embarking on a project known as the Gateway Project (Ghana Ports:2005-2006)52. The main objective is to make the Port of Tema a cost effective place to do business. Ports compete in a very open market place. Shippers choose from a range of logistics paths and shipping lines respond

to shippers' needs by shifting vessel patterns between competing Ports in a given market range (Thomas Ward:2006)\textsuperscript{53}. 

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)\textsuperscript{54}. A lot can also be achieved if workers in the Port community are made to have a sense of responsibility and awareness towards the activities that result in congestion.

General information regarding projects, trends and day to day Port activities must be made available to Port users. The efficiency of the Port depends very much on the performance of the users of Port facilities or frontline agencies that operate within the Port environment. The Ghana Port and Harbours Authority is faced with a lot of challenges. At the core is the fast pace of traffic growth, which has brought about the need for increased investments in Port infrastructure so as to avoid congestion (E.Gyebi-Donkor:2006)\textsuperscript{55}. Infrastructural development is a capital intensive venture and requires long term commitment from the investor.

The increase in traffic at the Port of Tema, is a positive news and a sign of growth in terms of cargo throughput. During traffic forecasting, some indicators will show the possibility of traffic growth. One begins to question, why we treat the issue of traffic growth as an emergency. Traffic generated by a Port is seen as the ability of the Port to attract business or the amount of business that goes through the Port. This is usually referred to as cargo throughput. Each call of a vessel at the Port is for the purpose of loading or discharging of cargo, or both depending on the contract of carriage. In a charter party

\textsuperscript{54} GYLFI PALSSON: Containerised Maritime Trade Between West Africa and Europe.1. 
\textsuperscript{55} GYEBI-DONKOR ESTHER: GPHA is Twenty Years Old: The Success Story: www.ghanaianchronicle.com. 
situation, the Port of Tema could be the loading or discharge Port. In a liner situation, for example, cargo may be discharged and another loaded at the Port of Tema. In the oil trade, oil is usually moved from origin to destination, it is said that oil travels in one direction only.

Though shipping is considered a reactive industry, Port congestion is one area the industry can be proactive. Shipping is said to be reactive because most of the International Maritime Organization (IMO) conventions have come about after major accidents or incidents. The Safety of Life at Sea (SOLAS) convention for example, came about because of an accident involving the passenger ship the Titanic in 1912. The convention contains standards relating to construction of ships, fire safety measures and life saving appliances among others. These rules and regulations are directed towards the safety of life at sea and the prevention of a similar accident in the future (Churchill: 1999)\(^{56}\).

Key indicators of an efficient Port can be summed up in terms of speed, cost effectiveness and seamless flow of cargo (E. Gyebi-Donkor: 2006)\(^ {37}\).

CHAPTER THREE
PROFILE OF TEMAA PORT AND RESEARCH METHODOLOGY

3.1 INTRODUCTION
This chapter contains the profile of Tema Port and the research methodology. The profile of the Port spells out some characteristics of the Port or the study area. Here, further attention is given to areas such as history of the Port, some features and general characteristics of the Port of Tema. The other portion of this chapter which is the methodology, also talks about the approach used in carrying out the research. These included sampling, data collection and analyses.

3.2 BRIEF HISTORY OF TEMAA
Tema was originally an obscure village occupied by farmers and fishermen who migrated from present day Nigeria. They settled along the Atlantic Ocean, where they could fish and used the marshy land for farming. These settlers were known for their gourd trades, which gave it the local name Tor(Gourd), man(Town). Hence the name Torman or Gourdtown. With the passage of time, interaction with people from other areas led to the name being corrupted into Tema as it is known today (Tema City Map)\textsuperscript{38}.

When government decided to replace the Accra Harbour in the 1950s because of its rocky nature, it decided to develop a new Port at Tema because of availability of land and the proximity of Tema to the Akosombo Power Station. The area also provided ample land for the planning and laying out of a city which could be used as a model for other cities in the country. In 1959, the people of Tema were relocated from their village to Tema New Town near the Fishing Harbour. This was to make way for the layout and construction of Tema Port which was built by the first president of Ghana.

\textsuperscript{38} TEMAA CITY MAP: 2006. 17.
Dr. Kwame Nkrumah in 1962, after Ghana gained independence in 1957 and obtained a republican status in 1960.

Tema is one of the 5 administrative districts that make up the Greater Accra Region. The township is made up of so many communities and still developing, it boasts of a well planned industrial and commercial area. Among the corporate bodies operating in Tema include G.P.H.A, Tema Oil Refinery, Uniliver, Aluworks, Ghacem, T.D.C., and G.T.P. The Port has led to significant growth of shipping and ancillary activities in the Port City of Tema.

The Port lies along the Gulf of Guinea and 18 miles east of Accra. It has water enclosed area of 1.7 million square meters and a total land area of 3.9 million square meters (Otal.)\(^5^9\) Currently, about 500,000 people live in Tema according to the year 2000 census. Un-officially however, it is believed the population could be about 1,000,000. This difference could probably be as a result of the large numbers of people living in Tema without permanent residential addresses such as those living in the abandoned Meridian Hotel building.

In 1986 G.P.H.A was established as a statutory corporation as a result of a merger of three state owned organizations namely the Ghana Ports Authority, Ghana Cargo Handling Company and the Takoradi Lighterage Company under P.N.D.C Law 160. The creation of G.P.H.A was to put in place a corporate body responsible for the operation, management and administration of the Ports. Its jurisdiction embodies Tema and Takoradi Ports. As a state owned organization, it falls under the Ministry of Ports Harbours and Railways. The Ministry has a mission to provide unhindered, barrier free access to Ghana from its frontiers, as well as facilitate easy access to all parts of the country(www.mphrgh.org)\(^6^0\).

\(^5^9\) www.otal.com.
\(^6^0\) www.mphrgh.org.
The ministry has a mission to ensure the provision of multi-modal, integrated, sustainable and environmentally responsible infrastructure and services that respond to the national and expanding global market needs. G.P.H.A has a Director General who is the head of the organization. The Director of Port is the head of the Port and reports to the Director General.

The strategic location of Tema Port has necessitated an approach that is known as the Gateway Project by the Port Authorities. The project seeks to make the Tema Port the preferred entry Port for goods entering the West African Sub-Region. As a result of its location, the Port serves the transit trade for the landlocked countries of Mali, Burkina Faso and Niger. It is only proper therefore that the Tema Port takes advantage of all the factors that give her a comparative advantage over her compatriots (Ghana Ports: 2005-2006).61

3.3 SERVICES AND INFRASTRUCTURE AT THE PORT

The Port of Tema has a good anchorage where vessels anchor and wait for a vacant berth. The area stretches from 1.5km to 4km ENE to SW. The depth of the area is between 9 meters to 18 meters with good holding ground. This facility allows vessels to anchor and wait so that vessels are not over crowded at the berthing area, it further allows for proper traffic management to be carried out. Also, tug boats, pilots and other resources are put to good use for the benefit of all.

The Port of Tema is a compulsory pilotage area that requires vessels calling at the Port to have on board a pilot. This is compulsory for all vessels more than 10mrt (Net Registered Tonnage) entering or leaving the Port or moving berth. A pilot is one who does not belong to the crew of a ship but who has control of the ship in a local Port where he has local knowledge of the conditions and environment of the Port.

Towage is compulsory within the Harbour. The Port operates 6 tugs. These join arriving vessels at the Harbour entrance and departing vessels alongside berths. The tugs assist in the maneuvering of the vessels entering, leaving or changing berths. All tugs are fitted with pumps and monitors for fire fighting.

A 24 hour watch is operated on VHF channels 14-16 and any other channel. The signal base can reach vessels within a distance of 70 miles. This enables the Port Authorities to communicate with vessels and send help or assistance where needed. During harmattan conditions, vessels can receive signals 200 miles from the Port. Sometimes, signals could be received as far as from as the Port of Lagos. There is also the availability of Global Maritime Distress Safety System (GMDSS).

The Port of Tema also provides ship repair facilities. This facility is provided within the Port by PSC Tema Shipyard Limited. It has a 100,000 DWT (dead weight tonnage) capacity, it is served by a 60 and a 20 tonne mobile cranes. The area measures 277.4 meters long and 4.5 meters wide with 8.2 meters of water on the level.

The Port of Tema has 14 berths with draught ranging from 7.2 meters to 11.5 meters(Ghana Ports:2005-2006). These berths are located on two quays with a frontage of 2000 meters. There is also a paved area for container storage and 5300 meters for conventional cargo. Additionally, there are two dedicated berths for handling aluminium pitch and coke whiles the other is for petroleum (Map of Tema:2006).

Both open and covered storage are available at the Port of Tema for cargo storage. This includes;

a. 18 hectares of paved area for container storage

b. 1.3 hectare import container freight station

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c. Over 50,000msq of open transit storage for conventional cargo and vehicles.
d. 264 plug-in points for refrigerated containers, these allow certain perishables to be preserved through cold storage.

There are two x-ray scanners at the Port that help CEPS to determine the contents of a container through scanning and without having to open the containers (Ghana Ports:2005-2006).

The Port of Tema became ISPS Code acquiescent at its introduction in July 1, 2004. ISPS is a security system that allows the Port to take proactive measures to check threats to security of ships, Port facilities and people at the Port. This came into being mainly because of the September 11, 2001 terrorist attacks on the United States of America.

The Ghana Port and Harbours Authority has in place a permanent committee with representatives from all the security agencies and stakeholders within the Port community to take care of security issues with regards to the ISPS code. The roles of Port users under the ISPS Code are as follows:

1. Acquire appropriate ID cards which should be visibly displayed at all times within port
2. Not engaging in nefarious activities
3. Not to board any vessel without authorization
4. Refrain from piracy and armed robbery against ships
5. Report suspicious characters and situations to the Port Security.

The global trend in shipping is dominated by containers, this is because containers allow cargo to be transported through the various modes of transport (Multimodal transport). These include rail, air, sea, road and inland waterways.

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Container throughput at the Port of Tema experienced steady increases over the last few years. In 1998, the Port handled 169,700 TEUs and in 2005, the Port handled 392,868 TEUs (Twenty Foot Equivalent Unit). It must be added, that the increase was as a result of the growth in transit traffic. The Port of Tema is attracting more shipping lines each year. Some of the shipping lines have existing services whiles others have transferred service from other Ports to the Port of Tema (Port Newsletter:2006).^5

3.4 RESEARCH METHODOLOGY

INTRODUCTION

This section describes the research approach. The main tools used in gathering primary data were in-depth interviews and questionnaires. Both closed and open ended questions formed part of the questionnaire. Within the Port community, groups such as Freight Forwarders, Shipping Agencies, CEPS, Stevedores, G.P.H.A, Banks, and Inspection companies can be identified. For the purposes of this study, respondents were drawn from Ghana Ports and Harbours Authority, Ghana Institute of Freight Forwarders, and the Shipping Agencies. Among the forwarders, respondents were drawn from the Secretariat and also from the Forwarding Companies. These were selected because their operations were directly related to the subject under review and were well placed to provide the necessary responses that were sought.

Interviews conducted among G.P.H.A Officials were used to assemble information regarding all three stages of cargo transfer. Here, the focus was on cargo transfer from Ship to Quay, from Quay to Port Terminal and then from Terminal to Inland Transport. The questionnaire was used in gathering information from Freight Forwarders. Questions asked centered on the last stage of cargo transfer which concerns cargo movement from Port Terminal to Inland Transport. One interview was also conducted among the Freight Forwarders with a respondent from the Secretariat.

3.5 SAMPLING PROCEDURE

The sample was drawn from the Port Community of Tema. Only selected members of the population were allowed to respond to questions. Among the shipping agencies, a total of 3 agencies were
selected based on the purposive sampling method (Kwabia: 2006). The population size was 9 and all were members of EWATA (Europe West Africa Trade Association), an association of shipping lines that operate along the Europe–West African route. The selected Shipping Agencies included Antrak Ghana Limited, Maersk Ghana Limited and SDV/Delmas Ghana limited.

There were about 148 Freight forwarding companies in the Tema District of the Forwarding Association, 9 Freight Forwarding companies were selected and a total of 80 questionnaires were administered. On the average, forwarding companies have staff strength of about 6 per company, estimated population was about 888. The sample size was 80 which was about 9.01% of the total population.

Among the freight forwarding companies, probability sampling method was used and the technique was simple random sampling. The survey method was used because responses could be generalized among the whole population and also because the population size was large. This was so because all Forwarding companies go through the same CEPS procedures or processes to undertake cargo delivery, documentary requirements are the same and all depend on the same Port facilities. Respondents included Managing Directors, Operations Officers, Sales/Commercial Officers, GCNET Operators and Delivery Officers.

Officials from G.P.H.A were the Port Operations Manager, the Export Shed Manager and an Official from Terminal Ten. Here sampling was done purposively, the Operations manager was selected because he was head of all the operations activities, which included container cargo transfers at all three stages. The Operations Manager was selected out of a population of about 7. Further, the Operations Manager was in the best position to respond to the questions concerning the subject under
study because of the scope of his work. From GPHA also, both the Terminal Ten Official and the Export Shed Manager were spoken to because of their rich experience in terminal operations. The Terminal Official was selected out of a population of about 10, and the Export Shed Manager also from a population of 8. From the GIFF Secretariat also, 1 informant was selected out of a population of 10.

3.6 DATA COLLECTION

The methods used in collecting data, consisted of both quantitative and qualitative methods. The qualitative method used was direct observation and that of the quantitative method was survey.

SURVEY METHOD

The survey method was used because the sample size was large and also because responses could be used to make generalization among the entire population. Questionnaires were used as the main tools for data collection under the survey method. These were used to elicit information on specific subjects from knowledgeable respondents who were mainly Freight Forwarders.

The questionnaire was made up of both open and closed ended questions. Open-ended questions allowed respondents to write down their own answers to the questions asked, these made way for different and unclassified responses and also enabled respondents to express their justification for their responses. Close ended questions allowed for responses to be analyzed without much difficulty as respondents were given a set of answers to choose from. The questionnaire included dichotomous, multiple choice and scaling questions. Dichotomous questions allowed answers from only two possible responses which were either Yes or No. Multiple choice questions were those that allowed respondents to choose from three or more optional responses, from which the respondents selected one answer. Scaling questions provided quantitative measures that were precise with explicit
interpretation. Both quantitative and qualitative data were collected with the questionnaire.

Questions asked consisted of those concerning the last stage of cargo transfer, which is transfer from Terminal to Inland Transport. The questions were sequential and logically related to the research problem. Freight Forwarders were the main respondents because they operated mainly at this stage of cargo transfer which is also known as the delivery stage. At this point, cargo was released for onward carriage to final destination. This was after payment of the appropriate duties/taxes, rent, demurrage, penalties and levies depending on the consignment. The rate of return for the total number of completed questionnaires was 75%, that is a total of 80 questionnaires were administered, out of which 60 were completed and collected.

DIRECT OBSERVATION

Under the direct observation method, interviews were used as tools or instrument in collecting data. Interviews were used to elicit information on specific subjects from knowledgeable respondents (Kwabia: 2006)\(^6\). Interviewers' guide was used in gathering qualitative data. It included a set of questions that were used as a guide for the oral discussions. The questions had inherent probe questions that were asked for more light to be thrown on certain issues to which responses were thought to be inadequate each time such responses emerged.

The interviews were conducted among the Shipping Agents, Port Officials and GIFF. Shipping agents were asked questions concerning the first and second stages of cargo transfer that is from Ship to Quay and from Quay to Terminal while GPHA Officials answered questions regarding all three stages of cargo transfer. Here, reference is being made to transfer from Ship to Quay, Quay to Terminal and then from Terminal to Inland Transport. Data collected at this stage were mainly qualitative data.

Interview conducted with the GIFF Official also centered on the last stage of cargo transfer. Questions administered were pre-tested, this was to ensure that the levels of biases were minimized and information collected was as accurate as possible (Kwobia: 2006).68

Those spoken to were the Customer Service Manager of Maersk, the Sales Manager of Antrak, and the Quality Manager of SDV/Delmas. From GPHA, the Operations Manager, Export Shed Manager and an Official of Terminal Ten were those spoken to. From GIFF, the immediate past Chairman also responded to some questions. In all, a total of 7 interviews were conducted, all those selected were well placed to respond adequately to the questions to which answers were being solicited. A summary of the methodology is shown in the table below:

**TABLE 3:1 Summary of Methodology**

<table>
<thead>
<tr>
<th>Population/Stakeholder</th>
<th>Population Per Target</th>
<th>Sample Size Collected</th>
<th>Sampling Method</th>
<th>Data Collection Method</th>
<th>Data Collection Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipping Agents</td>
<td>9</td>
<td>3</td>
<td>Purposive Sampling</td>
<td>Direct Observation</td>
<td>Interviews</td>
</tr>
<tr>
<td>Freight Forwarders</td>
<td>888</td>
<td>80</td>
<td>Random Sampling</td>
<td>Survey</td>
<td>Questionnaires</td>
</tr>
<tr>
<td>GPHA(Operations)</td>
<td>7</td>
<td>1</td>
<td>Purposive Sampling</td>
<td>Direct Observation</td>
<td>Interview</td>
</tr>
<tr>
<td>GPHA(Terminal)</td>
<td>10</td>
<td>1</td>
<td>Purposive Sampling</td>
<td>Direct Observation</td>
<td>Interview</td>
</tr>
<tr>
<td>GPHA(Export Shed)</td>
<td>8</td>
<td>1</td>
<td>Purposive Sampling</td>
<td>Direct Observation</td>
<td>Interviews</td>
</tr>
<tr>
<td>GIFF(Secretariat)</td>
<td>10</td>
<td>1</td>
<td>Purposive Sampling</td>
<td>Direct Observation</td>
<td>Interview</td>
</tr>
<tr>
<td>Total</td>
<td>932</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.7 DATA ANALYSES

Data from the field of study was processed and analyzed. Data processing involved editing, coding, data entry into computer and verification of entries. The Statistical Package for Social Scientist

(SPSS) was used in analyzing data. Responses were organized into graphs, tables and various forms of charts. Conclusions were drawn and recommendations made from the data analyzed.
CHAPTER FOUR
RESEARCH FINDINGS AND ANALYSES

4.1 Introduction

This chapter contains the analysis of the data from the field of study which included responses to interviews and questionnaires. The presentations are in two parts, the first part involves responses to interviews and the other analyses of data gathered through questionnaire. Descriptive statistics were used and outcomes organized into graphs, tables and various forms of charts.

Interviews conducted were used mainly to assemble information regarding cargo transfers from Ship to Port Terminal. An interview was also conducted among the Ghana Institute of Freight Forwarders, the questions were focused on cargo transfer from Terminal to Inland Transport. The questionnaire was mainly used in gathering information from Freight Forwarders. Questions were revolved around the last stage of cargo transfer which concerns cargo movement from Port Terminal to Inland Transport. Freight Forwarding activities are mainly concentrated at this final stage.

4.2 Interview Results

Introduction

This section presents the results of interviews conducted among representatives from G.P.H.A., G.I.F.F., SDV/DELMAS, Maersk and Antrak with questions centred on Port congestion with particular reference to Tema. The Port Operations Manager, Export Shed Manager and a Terminal Official were those interviewed from GPHA. The immediate past Chairman of GIFF represented the association. From the shipping agencies also, three were selected out of the population. These were the National Sales Manager of Antrak, Customer Service Manager of Maersk and the Quality Manager of SDV/Delmas were those spoken to.
UNDERSTANDING OF THE PROBLEM

One of the G.P.H.A Officials stated that congestion at the Port of Tema was quite a recent problem which he attributed to the increase in transit traffic at the Port. The table below shows details of the traffic performance of Tema Port between 1995 and 2005. There has however been a steady increase in the transit traffic since 1997.

TABLE 4.1: Transit Traffic at Tema Port

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>THROUGH-PUT (MILLION TONS)</th>
<th>TRANSIT (TONS)</th>
<th>CONTAINERS (000'TEUs)</th>
<th>VESSEL CALL</th>
<th>SHIP TURN AROUND (HRS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>4.6</td>
<td></td>
<td>116.8</td>
<td>993</td>
<td>78.42</td>
</tr>
<tr>
<td>1996</td>
<td>4.9</td>
<td></td>
<td>125.6</td>
<td>1127</td>
<td>69.04</td>
</tr>
<tr>
<td>1997</td>
<td>5.2</td>
<td>8,448</td>
<td>140.3</td>
<td>1121</td>
<td>69.15</td>
</tr>
<tr>
<td>1998</td>
<td>5.4</td>
<td>28,871</td>
<td>169.7</td>
<td>1095</td>
<td>67.43</td>
</tr>
<tr>
<td>1999</td>
<td>6.4</td>
<td>29,689</td>
<td>167.9</td>
<td>1190</td>
<td>77.88</td>
</tr>
<tr>
<td>2000</td>
<td>6.2</td>
<td>144,973</td>
<td>167</td>
<td>1163</td>
<td>58.91</td>
</tr>
<tr>
<td>2001</td>
<td>6.3</td>
<td>261,521</td>
<td>178.3</td>
<td>1169</td>
<td>82.65</td>
</tr>
<tr>
<td>2002</td>
<td>6.8</td>
<td>627,773</td>
<td>223.4</td>
<td>1272</td>
<td>83.12</td>
</tr>
<tr>
<td>2003</td>
<td>7.8</td>
<td>855,093</td>
<td>305.9</td>
<td>1172</td>
<td>107.66</td>
</tr>
<tr>
<td>2004</td>
<td>8.5</td>
<td>764,128</td>
<td>354.7</td>
<td>1381</td>
<td>115.36</td>
</tr>
<tr>
<td>2005</td>
<td>9.6</td>
<td>875,325</td>
<td>392.8</td>
<td>1643</td>
<td>116.53</td>
</tr>
</tbody>
</table>


The situation of congestion was rather pronounced at the land side. At the sea side, the only challenge seemed to be the long waiting periods at anchorage by ships while waiting for vacant berth. Congestion at the Port of Tema was linked in a way to the increasing rate transit traffic.

The Port of Tema was originally designed to handle general cargo. The advent of containerization has not seen the Port responding well to the demands of this new revolution in cargo movement. 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 surcharges become applicable.

Congestion is mainly in the form of delays. Waiting time of vessels at anchorage while waiting for a vacant berth becomes a cost element to the carrier. This they say cost about
$40 - $60,000 per day. The surcharges are used by the shipping lines to offset the cost incurred due to the long waiting times. The waiting periods become cost due to the daily charter and operational cost of the vessels, the ancillary engines of these vessels still run while the vessels wait at anchorage.

At Tema Port, congestion is evident in the following ways;

- Ships waiting at anchorage for a vacant berth
- Trucks waiting to exit at the Eastern and Western Gates
- Trucks waiting to enter the Port at the Central Gate
- Trucks waiting to scan
- Trucks waiting to be loaded

Congestion has made the clearing of containerized cargo a bit difficult. To transfer cargo from the Port Terminal to its final destination entails a lot of processes. The paperwork alone is lengthy and burdensome. This long and onerous activity only succeeds in making the importer incur additional and avoidable cost. Each day an import container stays in the Port beyond the free days, it attracts rent and demurrage from Port Authority and the respective shipping lines. This is also coupled with the high statutory Customs duty and VAT payments.

Admittedly, all the officials spoken to thought the Port was congested, but were not hesitant in adding that the situation was firmly under control though they were still confronted with many challenges in this regard.

4.3 CAUSES OF CONGESTION (All Stages)

The G.P.H.A. officials indicated that the causes of congestion were mainly procedural, as the custom regime regarding cargo delivery does not facilitate quick movement of cargo. Now there are more vessels calling at the Port than before, it will then be necessary for these CEPS procedures to be reviewed to facilitate quick cargo movements within the Port.
The CEPS regime concerning transit cargo is very unwieldy involving two very long processes. The first has to do with ascertaining the value of the consignment for bond purposes. The second aspect involves movement of trucks from Port to destination via road, this is called trance one. These processes take over a week to complete and the loaded cargo stays in the Port pending completion of the process. The trucks laden with the transit cargo cannot leave until the process is complete. The transit traffic that goes through the Port accounts for about 8% of the throughput of the Port, on the contrary, 80-90% of trucks waiting in Port are transit trucks. Other causes he mentioned were delays at DICs, false and incomplete documentations, causing cargo to remain in the Port longer than usual.

Port planning was another factor mentioned. Originally, the Port was designed to handle palletised and general cargo. As a result, there is not enough space for trucks and handling equipments like the reach stacker to manoeuvre during cargo operations along quay one. The distance between the quay and the sheds is limited, thus making it difficult for effective handling to be undertaken.

Before berthing, the long waiting is caused by inadequate number of berths to receive larger vessels. The Port of Tema has 12 berths aside the oil and Valco berths. Berths 1 and 2 have a draught limitation of 11.5 meters. Berths 3-12 have draught limitations of 7.2 - 7.6 meters (Ghana Ports:2005-2006). What this means is that, any vessel that calls at the Port of Tema requiring a draught of 7.8 meters, would have to wait to use berths 1 or 2, whiles berths 3-12 may be vacant.

Congestion is not peculiar to Port of Tema. But it must be added however, that the situation at Tema is peculiar to an extent. In Tema, there are too many trucks in the Port area at any given time. In the Port of Lome in Togo for example, the situation is rather different, trucks enter the Port only when cargo is ready for pickup. Trucks do not wait in the Port as the situation is in Tema, Ghana. Of all three stages, it was agreed unanimously that the last stage, which involved movement of cargo from Port terminal to inland transport, contributed largely to the congestion problem at the Port Terminal.

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1. Transfer from ship to quay is undertaken swiftly without much delay. This involves the use of the ship’s crane, the ship to shore gantry crane was also added recently. The ship to shore gantry crane was introduced towards the end of 2006. The gantry crane moves about 25 containers per hour and this is an acceptable standard internationally.

2. Transfer from Quay to Port Terminal is also affected slightly by the difficulty associated with vehicular traffic flow. The intricacy associated with vehicular movement within the Port impacts negatively the easy flow of cargo from Quay to Terminal. This stage like the first stage involves less paperwork and fewer agencies.

3. Transfer of cargo from Terminal to Inland Transport, posed a lot of challenges as it involved many different agencies. At this stage, the rate of cargo flow is drastically slowed down and as a result the entire cargo transfer chain was affected. The chain here involves movement of freight from Ship to Inland Transport.

4.4 TEMA PORT TERMINAL (Container Storage Area)

The Port Terminal is a transport chain at which interchange facilities exist between common and different modes of transport. Container throughput at the Port of Tema experienced significant increases over the last few years. In the year 1996, the Port of Tema handled 125,600 TEUs and in 2005, the Port handled 392,800 TEUs (Twenty Foot Equivalent Unit) representing about 9.6 million tones of cargo. It must be added, that the increase was as a result of growth in transit traffic. The Port of Tema is attracting more shipping lines each year. Some of the shipping lines have existing service whiles others have transferred services from other Ports to the Port of Tema (Port Newsletter:2006)\(^7\).

\(^7\) TEMA PORT: Port Newsletter:May-August,2006,18.
The Port of Tema has 6 terminals (Container Storage Area) with one of the storage areas or terminals being operated by a private consortium. Reach Stacker is the main equipment option, the Reach Stacker allows about 327 TEUs/hectare. According to UNCTAD, the Front-end Loading system allows 275 TEU/hectare which is considered poor as far as land utilization was concerned (Alderton:1999)\(^1\).

Operators of the Front-end Loading system require medium skill to run the system, it must be added that equipment maintenance cost was medium compared to a low and a high equipment maintenance cost for the Chassis and Straddle Carriers respectively. Among the various operating systems according to UNCTAD in the table on page 17, the Straddle Carrier and the Yard Gantry Systems are most efficient in land utilization. The Straddle Carrier system holds 385 TEU/hectare, as the Gantry System also holds 750 TEU/hectare.

At Terminal 10 (Container Storage Area) in the Port of Tema, containers are stacked in rows of 9 with spaces of about 11 meters to allow the reach stacker travel and maneuver between the stacks. The Terminal holds about 18 stacks, with each stack containing 108 TEUs, at full capacity, terminal 10 holds about 1944 TEUs. Stacking is also done along the roads within the Port. This situation arises because of lack of terminal space to accommodate these containers, as well as the limitations of the equipment option. These situations also create traffic congestion along the main access roads thereby making them inaccessible.

Also, human activities at the Storage Areas do not enhance smooth operations. In this regard, there appears to be poor monitoring of activities within the Port, probably the reason people walk, drive and park their cars at any place that seems convenient to them. There must be proper coordination of Port

\(^1\) ALDERTON PATRICK : Port Management and Operations. 1999:139.
activities to ensure smooth terminal operations. In certain cases, after GPHA has loaded delivery trucks, they are not allowed to depart because CEPS has not yet released them. As a result, these trucks remain at the Storage Area for days thereby creating congestion.

**LAND REQUIRED FOR CONTAINER STACKING AREA**

As per the following, it is possible for an estimate to be carried out to determine the stacking area for containers, based on various operating parameters and equipment options such as straddle carrier, front end loaders or reach stackers. The GPHA operating parameters include annual throughput, dwell time and stacking height.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Throughput</strong></td>
<td>392,800 TEUs (2005)</td>
</tr>
<tr>
<td><strong>Daily Requirements</strong></td>
<td>1076.16</td>
</tr>
<tr>
<td><strong>Dwell Time</strong></td>
<td>14days (Estimated Period)</td>
</tr>
<tr>
<td><strong>Peaking Factor</strong></td>
<td>0.75 (Often assumed allowance for peak)</td>
</tr>
<tr>
<td><strong>TEU Ground Area</strong></td>
<td>15.25m²</td>
</tr>
<tr>
<td><strong>Stacking Height</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Stacking Area</strong></td>
<td>((15.25 \times Dr \times Dt)/Pf/Sh)</td>
</tr>
<tr>
<td><strong>Total Stacking Area \times e</strong></td>
<td>(Factor for operating system)</td>
</tr>
</tbody>
</table>

Approximate e Factors:
- Straddle Carriers = 1.8
- Front Loaders = 3.9
- Reach Stacker = 2.3

With the GPHA operating parameters and equipment option, the following estimates were generated:

- Front End Loaders = 298677 m²
- Straddle Carrier = 137856 m²
- Reach Stacker = 176149 m²
Similarly, if the stacking height is increased from 4 to 5, the various outcomes would be affected. It is also possible for the operating system at the Port of Tema to be changed to a more efficient system that boosts better land utilization. The Port of Tema has a total container storage space of 18 hectares. According to the above estimates, the 2005 throughput required land space of about 17.6 hectares. This is almost about the entire container storage area of the Port of Tema with the reach stacker as the equipment option.

Any further increases in throughput with the same equipment option suggest that the congestion situation will be worsened at the Storage Area. The various equipment options require different manoeuvring pathways, the larger the traffic paths, the lesser the efficiency in relation to land utilization. What stops the Port of Tema from opting for a Straddle or a Yard Gantry system which allows 385 TEU/hectare and 750TEU/hectare respectively? Indeed, the efficiency of these two systems, far outweigh that of the reach stacker which is the equipment option at the Port of Tema.

**CHALLENGES**

Again CEPS was listed as the main challenge in fighting congestion. About 80-90% of the congestion problems could be traced to the doorstep of CEPS. Freight forwarders were also another challenge he reiterated. There are so many unregistered forwarders or clearing agents who do not even have offices. These make it difficult for trust to exist between CEPS and the Forwarders. Lack of equipments was just a small part of the problem. Only about 10% of the problem could be attributed to GPHA. Vehicular traffic flow is difficult, transporting container cargo from Ship to Terminal or vice versa takes longer than accustomed, causing an increase in the ship’s turn around time.

Clearly, the stage involving transfer from Port Terminal to Inland Transport seems to be the main
problem area. This is so because there are numerous agencies involved and also this is the stage where duties are paid. The first two stages involved three main players, the Carrier or his Agent, Stevedore and the Port Authority. The last stage however involves as many as seven or more agencies depending on nature of commodity. Some of the agencies required about one week to complete their work for a particular consignment. Probably the reason so many delays are encountered at this stage.

4.5 DEALING WITH CONGESTION

One of the GPHA officials spoken to believed the Port Authority had done a lot of work as far as congestion is concerned. These the authority had done in spite of the many limitations. Some of the approaches adopted in dealing with the situation included;

> GPHA has given out land to encourage the construction of more off dock terminals so as to decongest the Tema Port.

> GPHA has also relocated such activities as stripping or devanning within the Port to other off dock facilities. The Golden Jubilee Terminal is one of such off dock terminals established purposely to handle LCL (Less than a Container Load) cargoes.

> Container storage is no longer permitted within the Port.

> The Port Authority has put in place a system (Vehicle Appointment Scheme) to control the number of vehicles within the Port at any given time.

> The introduction of the 45 ton capacity ship to shore as well as the rubber tyre gantry cranes would also go a long way to control this situation.

Key issues like water depth at berth and the cumbersome nature of cargo delivery are some of the areas that need immediate attention. The rationale behind the construction of the devanning terminal (Golden Jubilee Terminal), was towards decongesting the Port. If the procedures regarding
cargo delivery are not revised, then it is possible for congestion to resurface even at this new facility.

4.6 DATA FROM QUESTIONNAIRE

These were responses from primary data gathered through the survey method. The questionnaire was the main tool used and was administered to mainly Freight Forwarders. Questions administered included those concerning the background characteristics of respondents, knowledge of the subject and perception among others. Key questions bordered on cargo transfer from Terminal to Inland Transport.

BACKGROUND CHARACTERISTICS

The ages of respondents ranged from 19-58 years, the highest frequency was between ages 29-38 with a corresponding percentage of 36.67%. The least occurred frequency was 49-58 with a percentage of 13.33%.

Educational levels also included those with SSS, Tertiary and other qualifications. Those with tertiary backgrounds included those with University and Polytechnic levels of education. The others included those with Diplomas, Certificates and those belonging to professional bodies such as the Institute of Chartered Ship Brokers, Chartered Institute of Marketing, GIFF Certificate holders and those belonging to the various Accounting bodies.

A frequency of 27 and corresponding percentage of 45% represented those in the Tertiary bracket making up the most occurred frequency. Respondents were also made up of 73.33 males and 26.67 females.
Below is a representation of companies from which respondents were selected. Also captured is the distribution of questionnaires among the various companies.

### Table 4.2 Questionnaire Distribution

<table>
<thead>
<tr>
<th>Company</th>
<th>Frequency</th>
<th>Percentage(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J&amp;E SHIPPING</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>TOTAL LOGISTICS</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>CONSOLIDATED SHIPPING LTD</td>
<td>7</td>
<td>11.67</td>
</tr>
<tr>
<td>JSL LTD</td>
<td>4</td>
<td>6.67</td>
</tr>
<tr>
<td>TEAMWORK FREIGHT SERVICES</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>CARLOKING SERVICES</td>
<td>11</td>
<td>18.33</td>
</tr>
<tr>
<td>DOCK TO DOOR</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>SAMTASHIE</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>FAME SHIPPING</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Carloking Services recorded the largest responses. Carloking Services is one of the leading international freight forwarding companies in Ghana with network partners the world over. Carloking Services offers complete logistics solutions to both her local and international clients. Carloking represented 18.33% of the total responses. Teamwork Freight Services (TFS) also recorded 15%.

Another 15% of respondents were drawn from J & E Shipping. The rest of the respondents were from the other companies and these represented a total of 51.67% of the total respondents. These companies included Dock to Door, JSL Ltd, Fame Shipping, Samtashie Shipping, Total Logistics and Consolidated Shipping Ltd. The rate of return for the total number of completed questionnaires was 75%. A total of 80 questionnaires were administered, out of which 60 were completed and returned.
The data below captured the job titles of the various respondents. Some of the positions included General Managers, Sales Officers, GCNet Operators, Operations Officers and Delivery Officers.

Concerning the positions of the respondents, field officers made up 40% of the total respondents, while commercial officers and operation managers made up 22% and 20% respectively. The last group made of general managers and GCNet Operators also represented 7% and 11% respectively.

**WORK EXPERIENCE**

This question was to find the number of years informants had worked in the maritime industry.
TABLE 4.3: Work Experience

<table>
<thead>
<tr>
<th>YEARS</th>
<th>FREQUENCY</th>
<th>PERCENT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3YRS</td>
<td>7</td>
<td>11.67</td>
</tr>
<tr>
<td>4-7YRS</td>
<td>10</td>
<td>16.66</td>
</tr>
<tr>
<td>8-11YRS</td>
<td>23</td>
<td>38.33</td>
</tr>
<tr>
<td>Above 12YRS</td>
<td>20</td>
<td>33.34</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Respondents, totalling 38.33% had worked in the freight forwarding industry between 8-11 years. Further, 33.34% had also been in the industry for over 12 years. Also, 16.66% had practised the trade between 4-7 years. The last group representing those with 1-3 years working experience in the industry, were 11.67% of the total respondents.

4.7 PORT CONGESTION (Port Terminal-Inland Transport)

These sets of questions sought to get responses pertaining to congestion at the Port of Tema, Ghana. These questions were vital as far as the subject under review was concerned. The aim was to illicit the opinions of respondents to establish the facts regarding congestion at Tema. Some of the questions sought to find out if the Port of Tema was congested, what the possible causes were and a host of other relevant questions concerning the subject in relation to the set objectives.

WHAT IS PORT CONGESTION

In response to the above question, a variety of answers emerged, all in a bid to explain what congestion was. Following are a summary of the various outcomes.

1. Delays in delivery.
2. Overcrowding of containers at terminals.
3. Overcrowding and long waiting periods for vessels at anchorage.
4. Too many containers and vessels at the Port.
5. Too many vehicles within and around the Port.
6. Long queues at pay points.
7. Long queues at entry and exit points.
8. Long queues for equipments and examinations.
9. Too long cargo dwell time.
10. Difficulties in transporting cargo from Quay to Terminal or storage facilities within and around the Port.
11. Difficulties in locating containers within the Port or Terminal (Storage Area).

IS THE PORT OF TEMA CONGESTED?

In view of the answers given to what Port congestion was, the preceding enquiry sought to establish if the Port of Tema was congested or not. Respondents gave their opinions in the following fashion as captured by the graph below.

GRAPH 4.1: Port Congestion Responses

As to whether the Port of Tema was congested or not, 91% of respondents answered yes while 9% also answered no. It stands to reason, that the larger group of 91% are asserting that the various characteristics of congestion listed above could be identified or are visible at the Port of Tema.
However, 9% forming the smaller cluster did not support this assertion, by their perception, the items listed above were not applicable as far as the Port of Tema was concerned.

By virtue of the data gathered, it can be said emphatically, that the Port of Tema was congested before and during the period of this study. If the Port was congested, then many delays would be encountered during cargo movement through the various stages of transfer from ship to inland transport until consignment exits the Port.

GRAPH 4.2. Main Causes of Congestion (Port Terminal-Inland Transport)

Respondents attributed 65% of the causes to Customs Procedures. CEPS Procedures involved the various regimes put in place to regulate activities regarding the different Customs processes. Each regime determines what are the requirements and the processes involved. Here, interest is inclined towards import and transit cargo.
For example, the procedure pertaining to imports requires the following documentation and procedure:

- Original Bill of lading
- Attested Invoice
- Packing list
- Import Declaration Form (IDF)
- Final Classification and Valuation Report (FCVR)
- Tax Clearance Certificate (TCC)
- Tax Identification Number (TIN)
- Permits and Licenses where applicable.

**PROCEDURE**

- Purchase IDF
- Submit IDF and other relevant documents to DIC (Destination Inspection Company)
- Obtain FCVR from DIC
- Submit declaration electronically to Ghana Customs Management System through GCNet (Ghana Community Network).
- Validation of declaration
- Payment of relevant duties at the designated banks
- Processing by compliance officer
- Proceed to cargo terminal for examination and release of goods

Source: CEPS².

The above excludes shipping line releases and processing of rent through G.P.H.A. Concerning

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transit cargo, the documentations are much lengthier and the processes even more cumbersome than imports.

Handling equipments also contributed 17% to the problem of congestion according to respondents. These equipments involved those used by stevedores in lifting, transferring and transporting of containers within the Port. Such equipments include Reach Stackers, Fork Lift, Trailer Chassis and Cranes. As a result of this lack, there have been delays associated with the handling operations.

Storage facilities at the Port include both covered and open storage. The covered storage usually holds bulk cargo. The open storages are the terminals for storing containers, these are temporary storage facilities. The storage facilities or Terminals were noted to be the cause of 15% of the congestion at the Port of Tema.

Poor routing also accounted for 3% of the congestion problem. The inability of loaded trucks to exit the Port freely was also seen as a big challenge. As a result of the poor route planning, it is difficult for loaded trucks to exit the Port. Some unfortunate trucks remain in the Port sometimes overnight although all documentary requirements have been met and the necessary payments also effected.

DELAYS IN CARGO TRANSFER (Port Terminal-Inland Transport).

Cargo movement from Terminal to Inland Transport involves the CEPS procedures that deal with import clearance. These processes take weeks to complete as it involves so many activities performed by different agencies at different locations dotted within the Accra and Tema metropolis.
Majority of the respondents admitted there were delays in cargo movement from terminal to inland transport. These represented 94% of the responses as against 6% who responded in the negative. This stage of cargo delivery involves such agencies as CEPS, DICs, Shipping Agencies, Forwarders, Port Authorities and the Regulatory Bodies such as Standard Boards, Food and Drugs Board and the National Communication Authority. These activities take weeks to undertake, hence the delays and slow rate of cargo delivery resulting in the long cargo dwell time that has become an attribute of the Port.

AVERAGE NUMBER OF CLEARING DAYS
The average number of days spent in clearing container cargo would allow the fact to be established as to whether cargo dwell time is long at the Port or not.
On the average, 40% of freight forwarders admitted using 4 days to clear containerized cargo. Additionally, 25% also used 3 days to clear whiles 14% and 21% used 2 and 5 days respectively. A recent presentation by Nestle Ghana on Trade Facilitation in Ghana, mentioned that it took the company 6.2 days on average to clear import containers from the Port of Tema (Nestle Ghana:2005)\textsuperscript{73}.

Before this stage, vessels would have waited for over a week at anchorage waiting for vacant berth. Vessels spend about three to five days to discharge and load. The Cargo is then transferred to the terminal awaiting clearance or delivery. That is transfer from Terminal to Inland Transport. The days here represent the period when declaration is made through the GCNet, then through the various stages before cargo exits the Port. At this point, the cargo would have stayed in the Port for over 2 weeks.

\textsuperscript{73} NESTLE GHANA: Workshop on Trade Facilitation in Ghana, Challenges at the Ports:17-19 Oct.2005.
In finding out if respondents were able to clear cargo within the free days at the Tema Port, the following results emerged. Free days are days designated by the Port Authority within which importers can take delivery of their cargoes without payment of Port rent. The free days are the first seven days after discharge of cargo. After this period, rent is charged daily until the cargo is cleared. In the case of transit cargo, the number of free days allowed is twenty-one days, after which cargo attracts Port Rent.

In responding to the above question, 80% of respondents said they could not clear their cargo within the free days allowed at the Port. On the other hand also, 20% said they could clear their cargoes within the free days. When asked why, the larger group of 80% mentioned the cumbersome nature of the delivery process and inadequate handling equipments as the main reasons for their inability to take delivery of cargo within the stipulated free days. The minority of 20% also said they could do so only when importers submitted their documents at least one month before arrival of vessel.
Clearly, the responses to the efficiency of the various stages of cargo movement showed that the levels of efficiency reduced as cargo moved from one stage to the other. A total of 44% of respondents thought transfer from Ship to Quay was more efficient or less cumbersome. Transfers from Quay to inland transport also recorded 39%, whereas transfers from terminal to inland transport also recorded 17%, indicating the most cumbersome transfer stage.

**LOCATING IMPORT CONTAINERS.**

After valuation of the custom declarations, the next stage in the clearance process is examination. At this point, the forwarding agents will have to search for their containers to enable CEPS officials conduct physical examinations. The FCVR indicates the type of examination to be undertaken, this is represented by the colour red, yellow or green:

i. Red refers to high risk goods as well as those goods selected by the Computerized Risk Management System (CRMS). Such goods are subjected to physical examination / inspection prior to release, the goods are inspected to ensure they meet quality, public health and safety standards.
ii. Yellow involves intensive scrutiny of documents. Any examination of such goods are dependent on the levels of discrepancies detected during vetting of documents and/or scanning results. But in almost all cases, goods end up being physically examined. This might be due to the levels of discrepancies or probably due to the fact that CEPS officials are too used to conducting physical examinations.

iii. Green usually involves low risk goods and may not be subjected to any physical examinations. Here, reduced vetting of documents is undertaken and goods may be released without physical examinations. But the fact still remains that there is hardly any cargo that is released without some form of examinations.

In locating containers, some directions are usually given by the terminal operators as to the possible location of the container among the stack. In congested situations however, these directions become unreliable, the reason freight forwarders wander about at the terminal in a bid to locate or find these containers.

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>MCT</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>TCT</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>TEMA</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>PORT</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>ACS/GMT</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>

In finding out from forwarders how easy it was to locate their containers in the various terminals, 30% thought it was easy at TCT, 26.67% also indicated it was easy at MCT. ACS/GMT and Port of Tema recorded 25% and 18.33 % respectively.

From the above data, Tema Container Terminal (TCT) offered delivery officers a less difficult task of locating their containers. Following closely was Mearsk Container Terminal (MCT), African Coastal
Services (ACS) and then the Port of Tema Terminal. It must be added, that all the other terminals with the exception of the Port Terminals are privately owned. This difficulty also impacts on the slow process of cargo delivery. Such difficulties could also emanate from poor stacking and tracking as well as congestion at the storage area.

POLICY ON OVER STAYED CARGO

The Port has in place a policy on overstayed cargo that regulates how long import containers are allowed to remain in the Port without confiscation by the authorities. At present, the number of days allowed is 60. After this period, the cargo is confiscated and auctioned by the state after notices have been given to the respective consignees. This exercise is undertaken by CEPS.

<table>
<thead>
<tr>
<th>TABLE 4.5: Policy on Overstayed Cargo Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
</tr>
<tr>
<td>Valid YES</td>
</tr>
<tr>
<td>NO</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

All of the respondents admitted there was indeed a policy on overstayed containerized cargo. In spite of the existence of this policy, reports have emerged pointing to the fact that some containers have been abandoned in the Port for about five years. Some of these containers were discovered because their contents went bad and produced unpleasant smell.

INFORMATION ABOUT PERTINENT PORT ISSUES

Respondents were asked if they had any information about pertinent Port issues, especially current Port developments and also to find out if the flow of information was consistent among those in the Port community. The following outcomes emerged.
Over half of the respondents admitted they did not have any information about pertinent Port issues, that is 61%, at the same time, 39% said they had some information about pertinent Port matters. Information dissemination within the Port environment is very indispensable as it affords all stakeholders the opportunity to contribute to issues of common concern. Proper information flow would also allow the Port Authorities to correct any incongruity as far as its operations and dealings with the other Port users are concerned. This will go a long way to benefit all within the Port community.

When asked how they came by this sort of information, 43% said they did so through GIFF. Another group forming 26% indicated they got such information through friends. Port magazines and newsletters were the source for 18% of respondents. The final group of 13% got their information through GPHA notices. The notice boards can be very useful in disseminating information to people within a community. The Port magazines have not been that effective probably because they are not enough and it is obvious forwarders are not the intended targets.
5.1 CONCLUSION

An efficient transport system is an essential facility for exploitation or development of economic resources on a national or an international scale. It allows products to be conveyed from areas of low utility to those of high utility. Its provision arises for economic, political and social reasons. In an economy where transport cost are relatively high, the need for a balanced social policy is paramount, else isolated communities may cease to exist.

Congestion has been a major issue confronting most Ports the world over. Congestion at the Port of Tema has been the theme around which this study has revolved. Certain lapses within the logistics chain that have the potential to cause congestion have been identified. Cargo flow from Ship to Inland Transport constituted the core of this research.

From the research, it was discovered that the Port of Tema was Congested. This was substantiated by the data collected and also by the researcher's observation. The characteristics of a congested Port were evident at the Port of Tema. The findings of the study also revealed many areas of concern that suggest that the Port Authority must re-strategize in its quest to nip the situation of congestion in the bud. Indeed, much remains to be done in ensuring that the Port of Tema truly becomes the gateway to West Africa. Commitment to dealing with this situation has imbedded in it the much desired efficiency the Port so dearly craves for. This would further propel the Port of Tema towards attaining the status of the choicest among the many competing West Africa Sub Regional Ports.

Congestion at the sea side was quite pronounced at the anchorage area where waiting periods were long and sometimes unbearable to Ship agents. Also, the productivity of the Ship –Shore Gantry
Cranes was quite commendable. The productivity of the cranes was comparable to some European and American Ports. It was also concluded that cargo stays too long at the Port Terminal or Storage area due to the numerous activities associated with cargo delivery through customs; these are coupled with the frequent break down of the Reach Stackers and other lifting equipments at the storage area. It must be mentioned that the relationship between the rate at which cargo arrives at the Port and the rate at which cargo is released is not well coordinated. This coordination is important for the enhancement of efficiency of the entire logistics chain.

From the studies, it came to light, that even among the local off dock container terminals, the Tema Port Terminal did not have any advantage over its local contemporaries. The other container terminals (TCT, MCT, ACS/GMT) were faster in cargo delivery than the Port of Tema. That is cargo dwell time was unacceptably long by the findings. Also, the general layout of the Port of Tema made it difficult for containers to be located at the storage area, as some stacking appeared to have been unplanned. Terminal space also appeared inadequate; as a result, some containers were stacked along the main access roads there by creating congestion.

It was concluded that, the Port’s operating system, that the reach stacker, did not promote efficient land utilization in the container storage areas. Indeed there are better operating systems such as the Straddle Carrier and Yard Gantry operating systems which ensure efficient land utilization at the container storage facility.

Also, human activities at the terminal areas did not enhance smooth terminal operations. In this regard, there appeared to be poor monitoring of activities within the Port, the reason people walk, drive and park their cars at any place that seemed convenient to them. These activities must be well coordinated.
to ensure smooth terminal operations, there must be some level of restriction and this must be effectively enforced and complied with.

The Port is an international trade platform; as a result, operations at the Port will have to conform to acceptable international standards. As a nation, we stand to gain greatly from a vibrant Port environment. The Port becomes attractive to carriers/ship-owners and a good destination for foreign direct investments (FDI). This is because manufactures would be guaranteed efficient transportation system to their various market centers globally. The upsurge in FDIs would go a long way to affect the economy of this country in a positive manner.

Ports have been noted the world over to be the main entity in job creation in most maritime nations. They have the capacity to take up large numbers of the workforce of their respective nations. It is unfortunate that even though this nation abounds with lots of experts in the maritime industry, she is beleaguered with the situation of congestion.

5.2 RECOMMENDATIONS

A number of areas may be identified in which recommendations can be made to assist in better management of congestion at Port of Tema, Ghana.

5.2.1 SHIP-QUAY

Firstly, there is the need for the Port Authority to reconsider dredging berths 3-12 to a depth of at least 10 meters. This would allow vessels with draft requirements above 7.6 but not more than 10 meters to have access to berths without the long characteristic waiting at anchorage for berths 1 and 2 to be vacated.
Also, this would help check the current situation where vessels requiring draft of 8 meters would have to wait so as to use berths 1 and 2 which are 11.5 meters deep. While at the same time, the other ten berths aside the Oil and Valco berths remain vacant. The lesser the waiting periods, the more attractive the Port becomes to carriers/ship-owners as they avoid a lot of cost associated with long waiting periods. Because of the nature of the liner trade, it becomes imperative that container vessels are given priority over general cargo vessels at least until the congestion situation is dealt with appreciably.

5.2.2 QUAY-TERMINAL

Here, the slow arrival and departure of haulage trucks in transporting containers from Quay to Terminal needs a lot of attention. This activity affects the ship’s turn around time. It goes further to affect the productivity of the gantry cranes as they have to wait for the arrival and departure of these trucks. The vehicular traffic situation within the Port and its immediate environs will also have to be looked into to allow easy flow of haulage trucks to and from ship side. In this regard, the traffic routing especially within the Port should be re-examined.

It is not profitable for trucks to be rendered ineffective due to the slow pace at which traffic flows within the Port. There should be an unimpeded access at all times. This should include those requiring entry or exit accesses. Possibly, single traffic lanes could be an option and also closure of routes along the quay area during discharge and loading operations. Only vehicle/trucks arriving to load may be allowed access to this area.

Further, documentation regarding the transfer of containers to the various off dock terminals must be made simpler and faster to facilitate quick movement of these trucks. This would prevent the long waiting periods. The use of an electronic data interchange or the GCNet should be encouraged among the concerned agencies.
5.2.3 TERMINAL – INLAND TRANSPORT

The cargo transfer process appears to get more cumbersome as cargo moves from one stage to the other. To begin with, the Customs Regime concerning imports and transit must be reorganized to meet the demands of current global trade. Activities like physical examinations should be reduced and the use of the scan encouraged, this would enhance quick cargo delivery. If physical examinations are reduced to about 10%, it would go a long way to improve the congestion situation within the Port. A mobile scan can be very helpful in this regard. This would prevent the long queues that usually congest the scan area. Likewise, premises examination should be encouraged to reduce examination activities within the Port of Tema. Premises examinations would allow for the cargo to be examined at the consignees premises that is if it has to be examined at all. This would also contribute towards keeping the congestion at the stripping/devanning areas at minimum levels.

Also, human activities at the terminal areas do not enhance smooth terminal operations. In this regard, there appears to be poor monitoring of activities within the Port, the reason people walk, drive and park their cars at any place that seemed convenient to them. These activities must be well coordinated to ensure smooth terminal operations. It is necessary that for some level of restriction to be put in place at the terminal area, this must be strictly enforced and all must endeavor to comply.

Further, the construction of the Inland Port must be expedited, as it will allow for transit cargoes bound for landlocked countries to be transferred directly to this facility for onward carriage to their respective destinations. There is the need for CEPS officials to also undergo periodic trade facilitation training so as to enable them adjust effectively to current trends in global trade. The main role of CEPS is towards trade facilitation, but this role has not been played effectively. They are rather seen as impediments rather than facilitators. DIC activities should be structured and standardized so as to avoid the many delays associated with their operations. The activities of DICs have been identified as
one of the areas that contribute to delays, as it takes about two weeks for FCVR to be issued to respective importers.

Again, the conflicting roles between CEPS and the DICs should also be looked into; this is mainly in the area of valuation. CEPS has a responsibility to collect taxes in the form of duties on behalf of Government at the nation’s entry points. Further to this, a target is set for them to achieve annually. Interestingly though, it is the DICs which determine the amount payable as import duty/tax per consignment. The various Freight forwarding Associations should also be merged in one association for effective monitoring and supervision, this action would also pave way for the unregistered and illegal forwarders to be exposed and brought to order. At the moment, there are about three different freight forwarding associations.

In general, the CEPS regimes regarding imports and transit must be standardized. This would allow for the number of activities involved in both regimes to be reduced to rid them of unproductive and repetitive activities. Some of these activities include multiple checks by different organizations especially at the exit points. Further, effective control and monitoring systems should be put in place to effectively check activities of CEPS officials who are core in the delivery process. Since the nation does not derive any revenue as in duty from the transit business, it is proper that the process is made simpler to enhance swift cargo delivery. Emphasis should rather be placed on activities and mechanisms that would ensure that these transit goods are not diverted onto the Ghanaian markets.

It is also very crucial for the general layout of the Port to be considered, as it became obvious that the layout of the Port did not support the container trade which incidentally dominates the maritime trade globally. Concurrently also, lifting equipments at the terminals must be given a face-lift to increase productivity at the Port terminal. Container stacking at the Terminal must be automated to allow for
containers to be located more efficiently during delivery. Perhaps it is time for the Port Authority to introduce a more efficient terminal operation system that would allow for efficient use of Terminal space. In this regard, a Yard Gantry or a Straddle Carrier would be most beneficial. A Yard Gantry is strongly recommended as it offers optimum efficiency in land utilization.

The current trend in transportation is towards multimodalism. The Multimodal Transport system allows the use of rail, road, air and sea to transport a single consignment. It therefore becomes vital that the road and rail infrastructures as well as inland waterways are developed within the country. An efficient transport system would be the foundation for other cargo transfer options that would ease the burden of over dependence on road transport which accounts for the many trucks within and around the Port. Emanating from this is the frequent breakdown of cargo trucks within and around the Port.

There must be a shift, towards a centralized processing facility, where CEPS, DICs, GPHA, Shipping Agency, Stevedores and the Banks can be located. This would prevent the movement across the length and breadth of Accra and Tema before a single consignment could be cleared from the Port. It is important to mention that transit cargo operations would have to be isolated or separated from that of imports. This would allow for more efficiency in each of the separated regimes and the many delays curtailed. It must be possible for cargo to be processed through CEPS within three days as the case is in the Port of Lome in the Republic of Togo.

Additionally, proper traffic planning statistics must be used for the expansion projects, this would go a long way to help improve the vehicular traffic situation. Cargo exit must be well laid out to avoid long delays at the exit points; also the various security checks at the gates must also be streamlined. A strong consumer feedback mechanism should be put in place, so that users of Port facilities can send their concerns across and this must be complimented with a good response time. Effective supervision
of Port Operations must be carried out to ensure that all agencies achieve an acceptable level of efficiency.

Finally, regular reviews of the congestion situation at the Port of Tema must be carried out and a permanent committee put in place to monitor the congestion situation at all times. The challenge can be thrown to institutions like the Regional Maritime University, the Ghana Shippers Council and the Ghana Maritime Authority. This study has attempted to achieve its objectives, which are;

i. To find the possible causes of congestion at the Port of Tema by studying cargo movement from ship to inland transport.

ii. To make recommendations towards lessening the congestion situation.

Other investigations of various problem options on congestion at the Port of Tema can only serve as a beneficial enlightenment for academic and practical purposes.
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QUESTIONNAIRE

CONGESTION AT TEMA PORT: A STUDY OF CARGO FLOW FROM SHIP TO INLAND TRANSPORT.

Dear Respondents,

I am a Master of Arts student in Port and Shipping Administration at the Regional Maritime Academy. I am undertaking a research entitled Congestion at Tema Port: A study of cargo flow from ship to inland transport. I would be very grateful if you could furnish me with answers to the following questions. These findings are for academic purposes and for that reason, your identity will not be disclosed.

Thank you

P1. What is your age group?
   a) 19 – 28   b)29 – 38   c) 39 – 48   d) 49 - 58   e) 59 - 68

P2. SEX
   a) Male    b) Female

P3. Educational Background
   a) SSS     b) Tertiary     c) Other

Q.1 Name of company? ..............................................................
Q.2 How old is your company? ..................................................
Q.3 What position do you occupy in your company?..........................
Q.4 How long have you occupied your current position?..................
Q.5 How many years have you worked with your company?...............
Q.6 How long have you worked in this industry?

Q.7 What is Port Congestion?

Q.8 Would you regard the Port of Tema Congested?
   a) Yes  b) No

Q.9 If yes why? ..............................................................................................................
   If no, why not? ..............................................................................................................

Q.10 What are the main causes of Congestion?
   a) Customs Procedures  b) Storage Facilities  c) Inadequate Handling Equipments  d) Poor Routing Plan

Q.11a Are there delays in cargo movement from terminal to inland transport?
   a) Yes  b) No

Q.11b If yes, what are the causes?
   a) Customs Procedures  b) Storage Facilities  c) Inadequate Handling Equipments  d) Poor Routing Plan

Q.11c If no, why not? ..............................................................................................................

Q.12 What is the minimum number of days spent in clearing containerized cargo?
   a) 2 days  b) 3 days  c) 4 days  d) 5 days and above

Q.13 Which of the following terminals allows you to easily locate your container?
   a) GMT/ACS  b) MCT  c) TEMA PORT  d) TCT

Q.14 Is there a policy on over stayed cargo in the Port of Tema?
   a) Yes  b) No

Q.15 Do you know the details of the policy?
   a) Yes  b) No

Q.16 If yes, what are the details? ..............................................................................................................

Q.17 Does congestion affect productivity of the Port?
   a) Yes  b) No
Q.18 If yes, in what way? .................................................................
Q.19 Is the cost of transacting container freight business increasing at the Port of Tema due to delays?
a) Yes       b) No
Q.20 If yes why? ...........................................................................
          If no why not? .................................................................
Q.21a Are you able to clear cargo within the free days from the Port of Tema?
a) Yes       b) No
Q.21b If yes why? ...........................................................................
          If no why not? .................................................................
Q.22a Which of these terminals allows faster cargo delivery?
a) Tema Port    b) MCT    c) TCT    d) ACS/GMT
Q.22b What is the reason for your answer in Q22a? .................................................................
Q.23a Which of the following stages of cargo movement is well organized?
a) Ship – Quay b) Quay – Terminal c) Terminal – Inland Transport
Q.23b What is your reason for your answer in Q23a? .................................................................
Q.24a Do you have any information about current Port developments?
a) Yes       b) No
Q.24b If yes how do you get this information?
a) GIFF       b) Friends c) GPHA News letters d) GPHA Notices
Q.24c If no what are the reasons? .................................................................
Q.25 What suggestions do you have about reducing congestion at the Port of Tema?
APPENDIX 2

INTERVIEW GUIDE (GPHA)

1. Background of congestion at the Port of Tema?

2. Would you say the Port of Tema is congested?

3. What are the main causes of congestion at the Port of Tema?

4. What are some of the difficulties that confront your fight against congestion?

5. What are your comments on difficulty in container (import) location vis-à-vis terminal operations and general Port layout?

6. Considering the three stages of cargo transfer (Ship-Quay, Quay-Terminal, Terminal-Inland Transport) which of the stages poses the most challenge as far as congestion is concerned and why?

7. Would you say the Port Authority has done enough about the congestion situation?

8. Do you have any suggestions regarding the control of congestion?
APPENDIX 3

INTERVIEW GUIDE (SHIPPING AGENCIES)

1. Does congestion affect your operations at the Port of Tema?
2. What accounted for the imposition of congestion surcharges on the Port of Tema?
3. What would you say are the causes of congestion at the Port of Tema?
4. What options do you have when you have to call a seriously congested Port?
5. Do you think the Port Authorities have done enough regarding congestion?
6. What suggestions do you have towards lessening congestion at the Port of Tema?
APPENDIX 4

INTERVIEW GUIDE (GIFF)

1. How does congestion affect cargo clearance?

2. What are the causes of congestion during cargo transfer from Terminal to Inland Transport?

3. Are there enough cargo handling equipments at this stage of cargo transfer?

4. What do you think the Port Authorities can do about congestion at the Port of Tema?


APPENDIX 6

DEFINITION OF TERMS

1. Anchor- An implement by which a ship is rendered stationary.

2. Anchorage- Area of a port designated for vessels to anchor.

3. Cargo- Merchandise conveyed on a ship, aircraft or hovercraft, other than mail or other property, carried under the terms of an international postal convention.

4. Congestion Surcharge - A charge raised by the ship-owner payable by the shipper on cargo in circumstances where excessive congestion/delay is experienced in the port. The surcharge is to recoup the additional cost incurred by the ship-owner consequent on the delay experienced.

5. Container- A transportable unit permitting intermodal unitized merchandise distribution which may be national or international. This may involve FCL or LCL type of consignment. Most containers are built to ISO standards (International Standards Organization). The sizes include 20 feet, 40 foot. A wide variety of containers exist including covered dry, top loader, bulk liquid, bulk powder, bin type, skeleton, refrigerated and so on.

6. Container Terminal- An accommodation where (FCL) full and empty containers are received from or delivered to merchants, mainly a temporary storage facility.

7. Demurrage- An agreed amount payable to the ship owner in respect of delay to vessel and equipments beyond agreed periods.
8. **Destination**- The ultimate named place for cargo delivery according to the contract of carriage.

9. **Dwell Time**- Time spent by the container in the port. It will depend on many factors such as status (FCL, LCL, Empties etc.), customs procedure, communications efficiency between the parties concerned, the port's pricing policy on this matter, etc.

10. **Export**- The process of selling or dispatching a product to another country, in the process, an international boundary is crossed.

11. **Freight Forwarder**- An entity/company responsible for undertaking export/import cargo arrangements on clients/shippers behalf at a seaport, airport or at the frontier. At the sea port it would include collection of freight; collection and issuing of bills of lading; notification of arrival and loading of goods; customs, import, and export documentation; payment of duties and levies as necessary; issuing of landing accounts and certificates of shipment, arranging and sorting of cargo, cold storage, warehousing, transport to destination, cargo or damage surveys. Also referred to as Forwarding Agents.

12. **Importing**- The process of buying goods from an overseas market.

13. **Moor**- To attach a vessel to quay wall by a cable or rope tied around bollards.
APPENDIX 7

MAP OF TEMEA PORT