DECLARATION

I Agnes Forkuo Nyantakyi hereby declare that except for references to other people’s work which have been duly acknowledged, this dissertation is as result of my own research carried out under the supervision of Mrs Felicity Ankomah-Sey and Dr Kwadwo Kwabia. No part of this work has been presented anywhere for a degree.

MRS AGNES FORKUO NYANTAKYI

STUDENT’S SIGNATURE……………………

MRS. FELICITY ANKOMAH-SEY

SUPERVISOR’S SIGNATURE……………………
DEDICATION

This work is dedicated to my children Kwabena Peprah Nyantakyi and Nana Akua Odehye Nyantakyi.
ACKNOWLEDGEMENT

First and foremost, I would like to thank my Supervisor of this project, Mrs. Felicity Ankomah-Sey for the valuable guidance and advice. She inspired me greatly to work on this project. Her willingness to motivate me contributed tremendously to my project. I thank her enthusiasm about this work and her exceptional patience. Thanks also to David King Boison for his immense contribution and most responsible for helping me understand the operations of Inland Container Depots in the Tema Port and the technical aspects of the Container Operations.

An honourable mention goes to my family: my mother, Mercy Cudjoe, who took care of my children when I had to leave them for lectures. I could not have survived this challenge without her.

I thank God for using this work to reveal my weakness to me and build me up. All glory to God for He makes the impossible become possible!
ABSTRACT

The study focused on the impact of Inland Container Depot Operations on the Ghanaian Economy in relation to the kind of employment created by the ICD’s, the method and Mechanism adopted in the operations of the ICDs and the type of cargo transferred to the ICDs. The Port play very vital role in the economic development of every country and for that matter most countries spend millions of dollars investing in infrastructure and superstructures of their Ports to facilitate trade. The operations of Inland Container Depots have received significant attention over the past three decades as it promises to ease congestion at the Port because of its significant role it plays as an off-dock terminal.

The main objective of the study was to assess the role ICD’s play in the economy of Ghana. A total of hundred respondents were taken from a population of seven hundred and nine from various ICD’s and stakeholders in the Tema Port. A combination of stratified and random sampling technique was employed. Structured questions were administered and response rate was 97%. Responses from respondents were coded into Statistical Package for the Social Science and analysed with tables, charts and graphs.

General findings revealed a significant contribution of ICD’s in the area of employment of semi-skilled labour, trade facilitation and injection of efficiency into the clearance process in the Port leading to significant reduction in dwell time of cargo and congestion in the Port. It was recommended that the Port should expand it wings to encourage more investment into ICD’s since it promises to create employment and boost economic growth through trade facilitation.
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<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>RTG</td>
<td>Rubber Tired Gantry Crane</td>
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<td>TEU</td>
<td>Twenty Footer Equivalent Unit</td>
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<td>STS</td>
<td>Ship to Shore</td>
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<td>ACS</td>
<td>Advanced Coastal Services</td>
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<td>Golden Jubilee Terminal</td>
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<td>Meridian Port Services</td>
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<td>Tema Bonded Terminal</td>
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<td>GPHA</td>
<td>Ghana Ports and Harbours Authority</td>
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<td>GHATIG</td>
<td>Ghana Trade and Investment Gateway</td>
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<td>Foreign Direct Investment</td>
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<td>Inland Container Depot</td>
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<td>Terminal Operating System</td>
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<td>TBL</td>
<td>Through Bill of Lading</td>
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<tr>
<td>LCL</td>
<td>Less Than Container Load</td>
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<tr>
<td>COU₅</td>
<td>Clip On Units</td>
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<td>ISPS</td>
<td>International Ship and Port Facility Security</td>
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<tr>
<td>PNDCL</td>
<td>Provisional National Defence Council Law</td>
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<tr>
<td>TCT</td>
<td>Tema Container Terminal</td>
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<tr>
<td>MCT</td>
<td>Maersk Container Terminal</td>
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<tr>
<td>BMT</td>
<td>Beedeg Maranthar Terminal</td>
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CHAPTER ONE
BACKGROUND OF THE STUDY

1.0 Introduction

Over the years the port business has received some attention because of the significant role it plays in the economies of most countries around the globe. The shipment of some type of cargo which cannot be done by Air transport makes the port business a very crucial one. Transporting cargo from a Port of Load (Port of Origin) to a Port of Discharge (Port of Call) requires various stakeholders (channel members) to ensure that cargo is delivered to the right customer in a sound condition and on time. A simple definition of Ports can be taken from Stopfords (2009, pp. 81) book Maritime Economics where ports are defined as; “A geographical area where ships are brought alongside land to load and discharge cargo – usually a deep-water area such as a bay or river mouth”. A Port is essentially a point where goods are transferred from one mode of transport to another.

Today, maritime cargo transportation has predominant transportation model in international trade. In an era of economic globalization, ports are evolving rapidly from being traditional land interfaces to providers of complete logistics platform.

The Port of Tema now handles much of containers than it did in the last decades. This is due to continuous growth in the world trade which has resulted in the introduction of bigger container ships to meet these increasing demands. This also necessitated the need for the massive port expansion. Larger vessels and a subsequent shift towards hub and spoke service networks are now generating demand for new offshore transhipments terminals as a solution to congestion, physically constrained and expensive traditional port locations.
Requirements for better Port facilities are rising especially through the routine transport systems developed in the general cargo transport. The new transport system has been introduced in few trades only and require a reduction of time in Port due to their own service speed. (UNCTAD, 1984).

Ports have introduced the idea of specialised terminal facilities. The largest demand for specialised container terminal is derived from the development of container transport which is in need of greater depth of berths, large storage spaces for the containers and much shorter lay-time in Port and therefore for not being enough to meet the demand of trade, many of these terminals over the world get congested with containers which has created the need for inland container depots a major element in the overall transport chain is the concept of Inland Container Depots (ICD).

An Inland Container Depot (ICD) is a place where containers/general cargoes are aggregated for onward movement to or from the Ports. (Ndikom, 2004). ICD’s are dry ports equipped for handling and temporary storage of containerised cargoes as well as empty containers. They also serve as cargo consolidation and deconsolidation centre where containers are stuffed, stripped, sorted, parked and transported either to seaports or to other inland destinations (UNCTAD, 1985). The range of functions of Inland Container Depots are wide. They serve as a basis for customs clearance and also as a warehouse, platform for revenue/tax collection point, consolidation and desegregation of LCL cargo, temporary storage of cargo and containers and amongst several others.

ICD relieves the container terminals of some of its storage problems and at the same time requires a certain minimum standard of rail, road or water way connections between the Ports and the Container Depots. Unless ICDs are built, transportation of cargoes to and from Port
will take place through a one leg distribution system which has the disadvantage of suboptimum use of inland transport vehicles, increased strain on the road network and reduces the possibilities for realising any economies of scale. The same principle of a two leg distribution system applies to local less than container load (LCL) cargoes handled at a city Port (UNCTAD, 1978).

The application of an Inland Container Terminal has the highest potential of generating employment for a country and increase the volumes of traffic handled by the seaport. ICD’s provides the required catalyst for economic growth, as enhances easy and safe access to international shipping facilities in the hinterland thus giving a boost to inland trading, revitalize export agricultural products leading to multi-product economy and also create various employment opportunities thereby stemming rural urban migration and ultimately lead to increase in government revenue, among several others.

Ghana Ports and Harbours Authority mapped out programmes to assist in achieving objectives and strategic plans of the Port Reform Project. The Port Reform Project included the development of Ghana’s maritime and logistics services with improved facilities in the sea Ports. In 2001, GPHA embarked on institutional reforms and capacity improvement programmes which included retooling of the Port, broaden the base for competition, broaden the base for the injection of capital into the industry and increase the private sector participation for greater efficiency. Out of such programmes came the establishment of Inland Container Depots.

The rationale for establishment of ICD’s was to solve the seaport problems of congestion, cargo clearance delays of ship business operations. Thus, GPHA facilitated the establishment
of ICD’s outside the Port by both the private sector and GPHA. Some of the facilities can be found around the Tema Port are; Golden Jubilee Terminal (GJT), African Coastal Services (ACS), Tema Container Terminal (TCT), Tema Bonded Terminal (TBT), Beedeg Maranther Thrountainer (BMT), DARMCO, ATLAS Container Terminal (ACT), Maersk Container Terminal (MCT) Terminal One Depot and APM Terminal. In addition, GPHA in partnership with the Ghana Shippers Authority has been working with the private sector for the establishment of the Boankra Inland Port near Kumasi which is 180 miles north of Takoradi Port and 130 miles from North West of Tema Port.

The impact of the establishment of ICD’s has created employment avenues for citizens of Ghana, and has also generated significant revenue to the Ghana government.

1.1 Research Statement

The development of ICD’s has the potential of creating a lot of economic benefit for the nation. These benefits may come in as a form of employment creation, growth in trade and national revenue. Various forms of revenue are likely to be generated for the economy. The various forms of employment created are direct ICD related jobs as well as indirect ICD related jobs. It also has the potential of creating trade in the hinterlands.

1.2 Research Objective

The main purpose of this research was to research into the contributions of the operations of the inland container depots in Ghana. The study will look specifically into the direct and
indirect related ICD jobs created as well as the volume of traffic handled by the ICDs and the kind of traffic that passes through the ICDs.

1.3 Research Questions

The study seeks to answer the following specific questions:

R₁ : What kind of direct and indirect employment has ICD operations created?

R₂ : What kind of traffic passes through the ICD’s

R₃ : How would the volumes of cargoes transferred to the ICD’s be rated?

R₄ : How would the operations of the ICD’s be rated?

R₅. What mechanism are used in the operations of the ICDs

1.4 Significance of the Study

Some of the relevance of the study were;

- It will become a model for other ports around the world to adapt in their operations,
- It will serve as an additional literature for students who want to research into this area of study and
- It will help widen the current scope of ICD operations in Ghana.

1.5 Scope of the Study

The research is limited to the operations of the Inland Container Depots and therefore excludes activities of the main port operations. There are currently ten major ICDs in operations within the Port of Tema area however, for this study the emphasis will be on three
(3) of them which includes the Golden Jubilee Terminal (GJT), Tema Bonded Terminal (TBT) and African Coastal Services (ACS).

The study will also be limited to the employment creation, the kind of traffic and the volumes of cargoes ICD’s operators handle and its impact on the economy.

1.6 Conclusion

Based on the study findings and analysis with related literature, conclusions shall be drawn and recommendations made.
CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews relevant literature both on and about the topic of the research in order to draw conclusions upon which a framework of the study would be established. The Researcher went over a number of literatures and studies relevant to the present study in different journals, articles, books and reports. This included the review of some literature pertaining to the topic under study that helped made a fair and informed assessment of the study. The literature studies which have a bearing on the study herein cited under the following headings:

- Overview of Terminal Operations
- Inland Container Depot
- Employment Creations
- Traffic handled by Container Terminals
- Technology used in the operations of ICDs
- ICD Operations as a Trade Facilitator
- Overview of Ghana Ports and Harbours Authority

2.1 Overview of Terminal Operations
Maritime transport plays a significant role in the national and international trade and economic growth. The seaport trade represents more than 90 percent of international trade in the world (Esmer, 2008). A seaport is described as a terminal and an area within which ships are loaded and/or offloaded with cargo and sometimes includes the usual places where ships wait for their turn or are obliged to wait for their turn irrespective of distance from the area. In broad view seaports have five major roles (Branch, 1986): Cargoes and passenger handling, providing services for ships such as bunkering and repairs, Shelter for ships in case of heavy sea and storm conditions, bases for industrial development and Terminal forming part of a transport chain. Port efficiency is undoubtedly an important requirement for the survival in the competitive shipping industry. Since facilities in the port are expensive to purchase and to maintain underutilization will result in loss of capital and higher running cost of operations. Nonetheless, inadequate facilities result in delays which lead to high dwell time and high ship turnaround time (Hussain & Tahar, 2000).

Tu-Chang (1992) noted that seaports are very complex and dynamic systems consisting of a number of interacting elements fuelled by random variables, therefore full utilization of the available resources and efficient management of operations are the two main goals. Many objectives will be accomplished under the two goals which are increasing the port throughput and utilization of resources (berths, cranes, quay, yards, reach stackers, mafi’s, forklifts, straddle carriers etc.).

In the last 30 years, the revolutionary development of container handling has increased the efficiency of worldwide trade and will continue to do so at an 8% growth rate in the coming years (Steenken, D et al, 2004). The growing demand for container transportation culminates in various issues including risk of terminal congestion, delays in delivery and other extra charges like demurrage and rent as a result of the high dwell time. The main
function of container terminal is to act as a freight station or transfer and storage of containers. It is imperative for operators of container terminals to guarantee quick operations to reduce delays in the delivery of cargo to ship, trains or rail transport time.

Further studies by Rodrigue and Notteboom stressed that the container terminal operating industry has experienced an internationalization process during recent decades which took place in three conservative waves (Rodrigue & Notteboom, 2010). The first wave comprised companies such as HPH, P&O and SSA who according to the authors expanded their operations in new markets and as a result benefited from the port privatization schemes in many sectors across the world. When the strategies of the first wave companies worked successfully, a second wave of terminal operators started seeking expansion internationally. Companies such as PSA, CXS World Terminal and Eurogate among others were part of the second wave. The last wave of terminal operators according to the authors came to the fore when major container carriers entered the terminal industry in a quest to support their core business and these led to three categories of global terminal operators: Pure Stevedores who manage terminals as profit centers, integrated carriers who manage terminals purposely as cost centers and a category of hybrid terminal operators consisting of shipping lines engaged in stevedoring business and handling both cargo and third party traffic to make profit.

2.2 Inland Container Depot

An Inland Container Depot (ICD) is a place where containers/general cargoes are aggregated for onward movement to or from the Ports. (Ndikom 2004). Inland Container Depot as ICD’s are dry Ports equipped for handling temporary storage of containerised cargoes as well as empty containers. According to UNCTAD (1985) Inland Container Depot may also serve as
cargo consolidation and decongestion centre where containers are stuffed, stripped, parked and transported either to seaports or to other destinations.

ICDs could also be termed as a common user facility with public authority status equipped with fixed installations and offering services for handling and temporary storage of import/export laden and empty containers carried under customs control and with Customs and other agencies competent to clear goods for home use. Container freight station are also facilities where groupage cargoes are segregated and stored awaiting clearance by owners, temporary admissions, re-export, temporary storage for onward transit and outright export. Transhipment of cargo also take place from such stations. The Inland Container Depot’s in Ghana for example under the supervision of Ghana Ports and Harbours Authority are: Tema Bonded Terminal (TBT), Meridian Port Services (MPS), Golden Jubilee Terminal (GJT), African Coastal Services (ACS), Tema Container Terminal (TCT), Maersk Container Terminal (MCT), Beedeg Maranthur Terminal (BMT), DARMCO, ATLAS Container Terminal and Terminal One Depot. Ghana Ports and Harbours Authority (GPHA) was established by an act of Parliament (P.N.D.C.L. 160) 1986 which mandates them as the only authority to build, plan, develop, manage, maintain, operate and control Ports of Ghana and foster growth. The usage of ICDs allows the time-consuming process of logistics management and transhipment to be handled at the warehouse instead of at the Port. This allows the Port to concentrate on loading/offloading of ships. A case study on the Port explicitly that crane productivity falls as the number of containers stored at the Port increases.

ICDs has key role in port congestion, one of the most effective measures taken by GPHA to deal with congestion inside Port of Tema was to allow investors to invest into inland container depots create off-dock terminal devanning facility. The establishment of Golden Jubilee Terminal has enabled the port to manage the rise in container volumes more
effectively. Before the new facility opened, containers were unstuffed inside the Port area and the contents then had to be stored. A key commodity handled by the ICDs are imported vehicles shipped in containers either as complete units or CKD (completely knocked down) kit form and containers (dry and reefers and dangerous cargoes). ICD’s bring services of the port closer to importer and exporters, security of cargo is ensured and overall revenue is generated for the economy in the form of charges paid for services rendered such as handling charges, transfer charges, storage charges, plant hire charges amongst several others.

2.3 Employment Creation

In wake of increasing cost of goods and a widening Balance of Trade deficit, the government of Ghana launched the Ghana Trade and Investment Gateway (GHATIG) project in 1998 to stimulate the economy. The Ghana Ports and Harbours Authority (GPHA), which is under the Ministry of Transport was by no means the important institutions that was key to achieving the objective of the economic reform. The landlord port system which has become the standard being promoted by international development partners like the World Bank and UNCTAD to port labour unions (Turnbull and Wass, 2007) was adopted for Ghana's ports. Within the context of the GHATIG, the government of Ghana approved a policy to attract Foreign Direct Investment (FDI) and to convert GPHA into a landlord port authority where the private sector can invest in the port and participate in it operations. It involved the transfer of operations to the private sector which invested in Inland Container Depots. This system called for re-training of personnel’s, re-designation of jobs and freshly recruitment of persons to fill vacant and created positions. This was to enable GPHA play it role in achieving the target of the gateway project.
In Nigeria the establishment of Inland Container Depots has created about 10,000 jobs and 2 trillion Naira invested by indigenous terminal owners. However, the direct related jobs includes managerial, engineering, operational and among several others.

2.4 Traffic handled by Container Terminals

The concept of inland terminals is increasingly being accepted and implemented worldwide and ports are adding container terminals to their portfolios. Inland Container Depots handle tonnages such as containerised cargoes (reefer or dry cargo or dangerous), vehicles and others but significantly different value levels in other categorised terminals. There are about 500 container ports with 110 handling a traffic of more half a million TEU. The world container throughput sum all containers handled by terminals, either as imports, exports or transshipment. In 2011, about 563 million TEU were handled by container terminals, with a notable growth in containers transshipped at intermediate locations as well as the repositioning of empty containers. Empty containers, most of them being repositioned, are also counted as they account for about 20% of the world's throughput.

2.5 Technology Used in the Operations of Inland Container Depots

Containerization of cargo began in the 1950’s and became popular in the1960’s with a 60% of Dry Cargo and 90% of non-bulk cargo shipped in containers. This changed the global commerce dramatically. Container handling technologies continued to evolve same as container handling methodologies to improve terminal efficiencies. Since the late 1980s, the container terminal industry has been supported by a growing range of expert information systems to coordinate and more recently automate the planning and management of container and equipment moves in a complex and demanding business environment. Inland Container
Depots (ICDs) make use of stacking method due to space constraints. The most commonly used equipment are reachstackers, gantry cranes, RTGs, forklifts, straddles carriers amongst several others. These equipment aid in the operations at the ICDs in the handling of containers and other cargoes in the areas of stacking, devanning, receiving, transferring stuffed and unstuffed containers and empty containers. As part of optimum injection of efficiency and the continuous volume increase, the need of handling more and more containers within given time window and more optimized operations considered (Saanen, 2004). There are more than a dozen semi or fully automated terminals in use throughout the world. As of 2012, there was one automated terminal in the USA located in Portsmouth VA and two automated terminals planned in POLA. Automated Container Terminals are as those that use container handling equipment that require no human interaction such as Terminal Operating System (TOS). Terminal Operating System (TOS) is a software application which support the planning, scheduling and equipment control activities of a container terminal and by this being responsible for accurate operations within the terminal (Agerschou et al, 2004), (Stahlbock and Voß, 2008). TOS was originally used for ship and yard planning, but as container throughput, increased, systems were expected to also optimize gate planning, equipment control, data inputting, ground stowage strategies and human resource management. JADE Master Terminal is an integrated cargo management system. It is designed to maximize efficiency in the competitive cargo business and has the ability to run ports on a 24 hour, seven day a week basis. JADE Master Terminal models all of the standard ISO type containers (including 20-foot and 40-foot, tanks, flats, and fans), breakbulk, cars, timber, Less Than Container Load (LCL) cargo, Clip On Units (COUs), generators, and refrigerator towers. It is a user interface, highly graphical and enables viewing graphical representation of terminal areas, customize color-coding of display and point and click on an object to perform an action.
Invariably, the introduction of this automated terminal systems limits the engagement of humans to perform some of the functions which used to be performed manually. Dockers’ unions have warned that introducing highly automated container terminals could lead to loss of jobs. The dockers’ section of Dutch FNV Bondgenoten run a series of models on the effect of container trade flows in Europe’s largest container port once new facilities become operational, in terms of how the technology could affect employment prospects for its members. Practically, at the Port of Tema the TOS programme is in its implementation stage. Super users are being trained on the system whereas consultations are ongoing with stakeholders on the new systems. In addition, the Unions are negotiating with management to merge jobs, re-position personnel to keep their people at work.

2.6 ICD Operations as Trade Facilitator

Most Ports along the coast of Africa have recently announced and commenced major expansion works in preparation for projected growth and increase in container trade activities towards the region as a result of rapid expansion and urbansation of the region’s population. Major Port developments are expected to be operational at various locations in the mid-term future and these ports developments are expected not to only serve their respective countries but at the hinterlands. ICD’s are a convenient shipping alternative extending port services closer to hinterland customers. In Kenya, Inland Container Depots are directly linked to the container terminal at the Port of Mombasa by rail through a service called ‘railtainer’ provided by the Rift Valley Railways. It has stacking area of 99,000sq m with a capacity to handle 180,000 TEUs annually and it provides a one-stop shipping centre that not only caters for all shipping needs. Government agencies like Kenya Revenue Authority, Kenya Bureau of Standards, Kenya Immigration, Kenya Plant Health Inspectorate Services, Veterinary
Department and Port Health are located within the depots to ensure faster documentation processing as well as banking institutions for money deposits and other related agencies who facilitate in the operations at the ICDs. In addition includes; a weigh bridge and railway siding for transportation logistics. This service transport containerised cargo by rail, on Through Bill of Lading (TBL) status. ICD has been dedicated to improving service delivery through focused superior customer service as well as fostering strong working relations with its stakeholders. ICDs strive to be the best in terms of technological advancement, efficient and effective business management processes as well as offering competitive and superior customer service. It as well offers a good network for road, ferry and rail services to transit countries. Economic justification may be demonstrated by showing that the ICD’s are needed to handle the flow of goods and promotes trade or other economic goals such as job opportunities which can be direct and indirect, opened up areas to more business where they are located, establishment of some cottage industries, which has the potential to ignited some multiplier effects on the socio-economic wellbeing of the people and its attendant reflections and also has the potential for development of the places of location of operations and increases the revenue of Government. ICD’s enhances easy and safe access to international shipping facilities in the hinterland, it provides the required reagent for economic growth. Stakeholders believe strongly that efficient operation of ICDs will integrate Ghana’s transport and logistics chains into the existing port system.

2.7 Overview of the Ghana Ports and Harbours Authority

The Ghana Port and Harbours Authority operates the two (2) main harbours of the West African nation Ghana. These include, Tema Port in the east and thirty (30) km away from Accra, lies in south-eastern Ghana along the Atlantic Ocean, 29 km east of the capital town of Accra and Takoradi Port in the western part of the country and approximately two hundred
and thirty (230) km away from Accra have seen growing volumes of cargo passing through the ports. With bigger and better facilities being phased in by Ghana Ports & Harbours Authority (GPHA) and with central government offering new incentives for trade, more and more shippers are discovering the benefits of using Ghana’s Ports. With its central location in the sub-region, Ghana has stolen a march on its neighbours by offering a wider range of maritime services than ever before and delivering those services quickly and cost effectively.

Tema Port is the larger and younger of the two sea ports. It covers 3.9 million square metres of land and 1.7 million square metres of harbour water. The Tema Port is International Ship and Port Facility Security (ISPS) code compliant. The Port of Tema was commissioned in 1962 as part of a government drive to boost the country’s industrial development. The Ghana Ports and Harbours Authority (GPHA), a Statutory Corporation operating under the Provisional National Defence Council Law (PNDCL 160) of 1986, is charged with the responsibility of planning, building, managing, maintaining and operating the sea ports in Ghana. Facilities for import and export cargo as well as transit and trans-shipment cargo are provided by the port authority. It is more than a mere loading or unloading place for goods; it is a traffic junction, where goods are transhipped to and from South Africa, Middle East, Asia and some West and East African countries. Transit cargo destined for the hinterlands/landlocked countries of Burkina Faso, Mali, Cotonou and Niger are also handled. The Tema Port handles about 80% of the Nation’s import and export cargoes. It handles a wide range of cargo including conventional cargo such as bagged products, iron, steel and sawn timber as well as containers, dry bulk cargo and oil products. The Tema port experienced its fair share of handling containerised cargo in the late 1970s. By early 80s, traffic increased extensively, emphasizing the growing importance of containerisation in the global economy. In 2003, the port handled 305,868TEUs, representing nearly 2.5 million tonnes of cargo. Since then, traffic has increased sharply to close to 500,000 TEUs as at 2007.
However, space to accommodate this phenomenon remained same. The rise in container traffic brought with it the attendant problems of inadequate space for storage and customs inspections/examinations leading to congestion of cargo, ships and trucks in and around the port.

In fact, there has been a general improvement in Ghana’s infrastructure and facilities including road, rail, road and air transport as a result of new investment. The government driven Gateway Project is helping Ghana to position itself as an ideal base in the region for international trade and investment.

2.8 Assessment

The above reviewed literature can be categorised under the following which in my view can be applied in this study.

2.8.1 Overview of Terminal Operations

It was evident that facilities in the container terminals are expensive to purchase and to maintain and however there is a growing demand for container terminals because it had increased productivity in worldtrade. The study assess the efficiency of ICD’s on the economy.

2.8.2 Inland Container Depot

In the reviewed literature above it is evident that ICD’s place a significant role in creating employment, generating revenue for the economy and facilitating trade. The study will see how far the three chosen ICD’s in Ghana have been able to contribute its quota in this direction.
2.8.3 **Employment Creation**

It was realized from the reviewed literature that ICD’s activities provides some sought of employment. The study would ascertain to what extent do the ICD’s employment impacts on the unemployment menace in the country.

2.8.4 **Traffic handled by Terminals**

Considering the above reviewed literature, the terminals handle varied traffic and this study will assess the volumes and the kinds of traffic handled by the ICDs.

2.8.5 **ICD Operations as Trade Facilitator**

Considering the above reviewed literature, the economic as well as socio-economic benefits achieved by the establishment of Inland Container Depots cannot be overemphasized.

2.8.6 **Technology Used in the Operations of Inland Container Depots**

It is evident that the technology used at the container terminals seemingly potential to inject efficiency into the operations of the ICDs and its associated adverse effects on jobs. The study assess the impact of these technologies on the operations of the ICDs.

2.9 **Conclusion**

In this chapter, related literatures were reviewed and an assessment made. The next chapter describes the methods that were employed to collect, analyse and interpret the research data.
CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter discusses the method that was employed for the study and it includes among others the research population, research design, sources of data, data gathering procedure, method of data analysis, ethical consideration and the profile of the ICD’s. Information for this study has been obtained through Secondary data.
3.1 Population

The population of the study was all the ICD’s in the Tema Port. They were ten in number and includes Golden Jubilee Terminal (GJT), African Coastal Services (ACS), Tema Container Terminal (TCT), Tema Bonded Terminal (TBT), Beedeg Maranatha Throutainer (BMT), DARMCO, ATLAS Container Terminal (ACT), Maersk Container Terminal (MCT) ABM Terminal and APM Terminal.

3.2 Sampling

Three out of the ten ICD’s were considered for this study. They were Golden Jubilee Terminal (GJT), Tema Bonded Terminal (TBT) and Africa Coastal Services (ACS) due to easy access of data and proximity to their premises.

3.2.1 Direct Employment Sampling

To get the required information and data for this research on direct related ICD’s jobs it was necessary to gather information from the Human Resource Department of the Golden Jubilee Terminal, African Coastal Services and Tema Bonded Terminal. The statistics provided by the Golden Jubilee Terminal included peopled engaged permanently, those who work as casuals and on contracts. Much of this data has been collected from existing materials provided for the executive management of the Ghana Ports and Harbours Authority.
3.2.2 Indirect Employment Sampling

On the issue of indirect related ICDs jobs, the Port Monitoring Manager who is in charge of the Monitoring and Control Unit of the Ghana Ports and Harbours Authority was contacted to provide statistics on the indirect jobs created through the operations of the ICDs. The data was existing information available to the Port. The Monitoring and Control Unit is in charge of monitoring operational activities in the Port, they undertake research and development for the port in the areas of providing statistics on the volumes of traffic that passes through the Port, the kinds of cargo that are transferred to the ICDs, they are also responsible for the daily report on weighbridges installed in the port environs, vessel berth planning and allocation, vetting of stevedore timesheets, productivity report and amongst several others of traffic for the port for management consideration and forecast purposes.

3.2.3 Volumes of Traffic Handled and the Kinds of Traffic That Passes through the ICDs

The Terminal Managers of the various ICDs i.e. Golden Jubilee Terminal, African Coastal Services and Tema Bonded Terminal were contacted for statistics on the annual throughput of the terminals from 2009 to 2014. Much of this data had already been recorded for corporate planning purposes. The Terminal Managers take direct oversight responsibility of the terminals to achieve optimum utilisation of the facility for economic benefit.

3.3 Data Gathering Procedure

The secondary source data was statistics obtained from the ICDs and using information accessible through the GPHA management information system. The data collected from these
sources were analysed to form the basis for interpretation and subsequent conclusions for this study.

To explain the jobs created through the operations of the ICDs, it is important to determine the number of jobs created through the concept of the inland container depot operations in Ghana, determine the volumes of traffic handled by the ICDs which has direct bearing on the traffic that comes into the country and also establish the kinds of traffic that passes through the ICDs and the way forward. Having this focus area will help address the issues. An important point to targeting a specific area makes it easier to realize its goals of economic benefit.

3.4 Research Design

In this research methodological purposive sampling was employed. This was because of the nature of the study and also the contacts with the various personnel who understand the topic under consideration. Yin, described five (5) primary strategies by which social scientists collect empirical data. According to him, depending on the research questions, to which extend the researcher has control over behavioural event, the research can choose from the following experiment, survey, analysis of archival records, history and case study (Yin 2004). In this study a survey approach was used because the researcher wants to have easy access to information and also to minimise cost, Shuttleworth buttress this point by emphasising that surveys are used to gather information on a population at a single point in time mainly by the use of questionnaires or interviews (Shuttleworth, 2008).
3.5 Method of Data Analysis

Data obtained for the purpose of this study were collated mainly using the Statistical Package for the Social Sciences (SPSS). These were coded and inputted into the SPSS software which formed the main data which was used in chapter four (4) for performing various analysis. These inputted data was screened using the necessary statistical tools to ensure the research captured were qualitative. Tables, frequency tables, charts and graphs were used to analyse simple qualitative data.

According to Yin (1994), the ultimate goal of analysing data is to treat the evidence fairly, to produce compelling analytical conclusion and to rule out alternative interpretations. In another sense, data analysis is seen to consist of three concurrent flows of activities (Miles and Huberman, 1994). These three concurrent flows of activities are data reduction and data displays, conclusion drawing and verification. Trochin (2005), state the three ways for drawing conclusions based on empirical findings. This method is normally used when established theories in the field of study are limited and the purpose is to form a new theory. Deductive method is used when drawing conclusion perceived as valid when it is logically connected. Usually in deductive studies, theories and literature that have been established already used as foundation for the new research.

From the above explanation, the method of analysis will be based on deductive method. The research was based on existing literature on the application of inland container depot operations in the Port industry.

3.6 Ethical Consideration

Ethical issues with this research work were handled carefully and circumspective in order not to exposure participant’s confidentiality. Data integrity was the hallmark of this research.
3.7 Organisational Profile

Ghana Ports and Harbours Authority (GPHA) owns Ghana’s two main Ports, Takoradi Port and Tema Port built in 1928 and 1962 respectively. GPHA is a Stationary Corporation operating under Provisional National Council Law (PNDCL 160) of 1986. GPHA is a merger of the erstwhile Ghana Ports Authority, Ghana Cargo Handling Company Limited and Takoradi Lighterage Company Limited. It is charged with the responsibility of planning, building, managing, maintaining, operating and controlling Ports in Ghana and foster growth while encouraging competition with neighbouring Ports.

3.8 Conclusion

In this chapter the method used to collect, analyse and interpreted primary and secondary data was employed. A brief profile of GPHA has been cited. In chapter four, the data collected through the participants contacted will be analysed and reported using graphs, tables and charts.

CHAPTER FOUR

ANALYSIS AND INTERPRETATION
4.0 Introduction

Chapter Four describes presentation and the discussion of the results. As such, the presentation and discussion of the results are related to the research questions and the objectives of the study. Since the research questions were derived from the objectives of the study, it is expected that achieving the objectives will answer the research questions.

The presentation and discussion of the results shall be as follows;

- The kind of direct ICD related jobs
- The kind of indirect ICD related jobs
- The kind of traffic handled by the ICDs
- The kinds of cargo received by the terminals
- The volumes of traffic handled by the ICDs
- The speed of volumes of cargo handled
- The mechanism adopted in the generation of the ICDs

4.1 The kind of direct ICD-related jobs

Statistics obtained from the Golden Jubilee Terminal, African Coastal Services and Tema Bonded Terminal revealed that jobs are rated in order of Highly Skilled, Semi-Skilled, Skilled and Unskilled. Highly Skilled and Skilled staff accounted for 25.77% each, Semi-Skilled staff recorded 29.90%, whilst Unskilled Staff accounted for 18.56% (see figure 1).

- Highly skilled labour comprised of professionals such as Terminal Officers, Harbour Mobile Crane Operators, Reachstacker Operators, Mafi Operators, Forklift Operators, drivers and others.
- Skilled labour also comprised of Cargo Manifest Strikers and Vanners, Interchange Clerks, Records Clerks, GCNet Clerks, CDI Writers, Billing Clerks and amongst others.

- Semi-skilled labour comprised of workers such as Waybill Clerks, Data Input Clerks, Dockers, Tally Clerks, Headmen, Foreman, Progress Chasers

- Unskilled labour comprised of General Cleaners, Carpenters (container seal breakers), car number writers, container inner cleaners, banger’s and others.

*Figure 1: Job Rating*

From the graph, Semi-skilled staff accounted for 29.90% which was the highest score followed by Highly Skilled and Skilled which accounted for 25.77% each. This goes to suggest that ICD business is a generalised area which require appreciable level of skills. The level of information technology usage is high due to the need for fast information transfer for the large volumes of cargoes and the large number of customers that must be served in short
and specific periods such as the electronic operated mafi’s, electronic operated reachstackers, electronic operated harbour mobile cranes, verification of clearing documents and others.

4.1.1 Direct ICD-related Jobs at the Terminals

Data gathered on ICD-direct related jobs at the terminal indicated that the ICDs has created jobs in the areas of Operational, Managerial, Engineering, Administrative and fire Service. The Operational jobs included Yard Planners, Cargo Manifest Vetters and Strikers, CDI Writers, Conditioning Clerks, Records Clerks, Drivers, Waybill Clerks, Yard Foremen, Plant Operators, Carpenters and amongst several others. Managerial jobs included jobs given to people in management positions. Managers take oversight responsibility and coordinate activities at the terminals. The Engineering jobs includes the Technicians, Mechanics, Vulganizers, tools handlers, MPCD Clerks and others. The Administrative jobs also includes the HR Clerks/Pers and Admin. Clerks, Secretaries, Receptionist, Office Assistants, Cleaners and others and the Fire Service jobs related to the Fire Tender Drivers, Firemen, Station Officers, Division Officers and others. Available data revealed that at the terminal personnel have been categorised into permanent, contract and casual. This was with the explanation that the Port has adopted the concept of downsizing where it will maintain a minimum number of staff as permanent and the remaining as either contract or casual staff. This approach has gained popularity since 1980s in the port industry especially for ports which aimed to cut cost and improve efficiency and performance.

4.1.2 ICD-related Operational jobs at the Terminals
Data gathered revealed that at the terminals, 72 people are permanently engaged to perform operational jobs whiles 121 people are also engaged on contract basis on the same field and 188 people employed on casual basis on the same field. See figure 2

Figure 2: Personnel Categorised in the Operational Jobs

At GJT there is a high rate of people engaged in the operational jobs (70%) whiles ACS recorded 18% and TBT 12%. These ICDs are private-owned enterprise and has a minimum number of staff working in the operational job. See figure 3

Figure 3: ICDs with high dominance of operational staff
The implication of the data on the ICD related Operational jobs clearly suggests that the operations of the ICDs has quite created job opportunities in the area of terminal operations in spite of the high dominance of casual staff thereby generate revenue for the economy. Whatever way it may appear, people are encouraged to take up operational related courses from the Universities, Polytechnics and other eligible institutions to equip them and have chances to be recruited into the operational jobs available at the port. The operational related courses could be supply chain management, port and shipping administration, cargo handling, freight forwarding, and others. Golden Jubilee Terminal as a government owned ICD operated and managed by the Ghana Ports and Harbours Authority engaged higher number in the operational area compared to the other two private-owned ICDs i.e. Tema Bonded Terminal and African Coastal Services. These are normal practices of most governmental organisations and also as a result of increased traffic volumes.

4.1.3 ICD-Related Administrative Jobs at the Terminals
Statistics obtained revealed that twenty-four people are engaged permanently to perform administrative duties whiles two people are employed on contract basis. The terminals do not engage casuals to perform administrative jobs. This explains the sensitive nature of the department where personnel records and other confidential records are kept. Personnel who are posted there are usually permanent staff who would have served the organisation for a while and would not easily let go their terminal entitlement and as such will be responsible enough to account properly for their actions. Moreover, administrative jobs are not the core business of the port but are supporting services to the industry. See table 1, 2 and 3

**Table 1: Category of Administrative jobs at the Golden Jubilee Terminal**

<table>
<thead>
<tr>
<th>Permanent staff</th>
<th>Contract staff</th>
<th>Casual staff</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>2</td>
<td>-</td>
<td>28</td>
</tr>
</tbody>
</table>

**Table 2: Category of Administrative jobs at the ACS**

<table>
<thead>
<tr>
<th>Permanent staff</th>
<th>Contract staff</th>
<th>Casual staff</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>3</td>
<td>-</td>
<td>12</td>
</tr>
</tbody>
</table>

**Table 3: Category of Administrative jobs at the TBT**

<table>
<thead>
<tr>
<th>Permanent staff</th>
<th>Contract staff</th>
<th>Casual staff</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2</td>
<td>-</td>
<td>10</td>
</tr>
</tbody>
</table>
4.1.4 ICD-Related Managerial jobs at the Terminals

Data gathered revealed that through the operations of the ICDs job avenues are created for people who have the requisite qualifications, the abilities and the technical knowhow to take up managerial positions. The managerial jobs include Terminal Managers, General Managers in charge of Operations, Yard Managers, Shipping Managers, Logistics Managers, Equipment Managers, Monitoring Managers and others. These category of staff are engaged permanently. They have oversight responsibility of the terminals and its administration. Usually, they are people who are seasoned in the port industry, who possess a long experience of working in the sector. Data gathered further indicated that at GJT a number of 10 people are in management positions whiles at the ACS and TBT a number of 4 staff are in management positions. See figure 4

*Figure 4: Personnel in Managerial Jobs at the ICDs*

![](chart.png)

It is evident from the data that GJT recorded higher dominance of personnel in management position then the other two ICDs. As stated earlier these are normal practices with
government-owned enterprises. Besides, the managers at the GJT were already managers working at the main Port who were transferred to the terminal to fill positions which have been created as a result of the birth of Golden Jubilee Terminal (GJT). Due to the concept of downsizing, some departments were scrapped and other jobs merged. Being a government-owned enterprise it could not easily lay off people and therefore had to keep them until they retired. Private-owned ICDs are oriented for profit making and would not keep large labour force. Ultimately, jobs are created and the resulted revenue generated to the government in terms of taxes, tolls and others.

4.1.5 ICD-Related Engineering jobs at the Terminals

Data gathered revealed that the ICDs has created engineering jobs for people. The engineering jobs included technicians, mechanics, vulganizers and others. At the terminals, engineering jobs are categorised into permanent, contract and casual. However, they are usually supported by students who attached themselves for training, internship and national service. It was evident from the data that 15% have been engaged permanently to perform engineering jobs whiles 10% employed on contract and 75% enrolled as casual staff. See figure 5

*Figure 5: Category of Personnel in Engineering Jobs*
The implication of the data presented clearly suggests that the introduction of ICDs has impacted positively. It has created jobs for the people of Ghana and thereby generate revenue for the economy. It has encouraged the youth to enter into learning trades such as vulcanizer, mechanics, auto electricians and others around the situated or located ICDs and as well educational/technical institutions sends out their students on attachment trainings and others.

4.1.6 ICD-Related Fire Service jobs at the Terminals

The introduction of ICDs has created fire service jobs for people. Data gathered revealed that personnel in the fire service are all (100%) permanently engaged. At the Terminal they do not have contract nor casual fire service workers. The Fire Service are in charge of safety at the ICDs and the Port environs to make the Port safe to attract more vessel calls and thus increase traffic volumes.
4.2 Indirect ICD-Related jobs

Besides the direct ICDs-related jobs created, there are indirect jobs the operations of ICDs has created and among them are Haulage business, Transport business, Equipment Hiring Business and Service Providers.

4.2.1 Haulage Business

Data gathered revealed that the presence of the ICDs has created jobs for people in the area of haulage. The haulage business includes Truck Owners who evacuate containers from the Port to the various ICDs and other hinterlands as well as transport cargoes to consignee’s destinations. It is evident from the table that there was a significant increase in the number of haulage businesses operating in the Port from 2009 to 2014 which suggests that due to growth in trade people are encouraged to enter into the business and thereby generate revenue for the economy of Ghana and create jobs for articulator/truck drivers, mates, toll collectors, formation of haulage association (personnel managing are paid) and others. The presence of the haulage businesses in the Port is paramount as ICD Operators go in for their services to evacuate their containers from the Ship side to their terminals due to the limited number of fleet. Consignees also rely heavily on these haulage workers. It is obvious that increase in traffic handled by the ICDs allows people to enter and stay in the haulage business since they provide the solution for cargo transport to the other hinterlands and facilitate the movement of containers and other cargos to the ICDs. See table 4

*Table 4: Haulage Bus. Operating in the Port*

<table>
<thead>
<tr>
<th>HAULAGE BUSINESS OPERATING IN THE PORT</th>
<th>DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YEAR</strong></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>2006</td>
</tr>
<tr>
<td>Year</td>
<td>2007</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Cars</td>
<td>21</td>
</tr>
<tr>
<td>Year</td>
<td></td>
</tr>
<tr>
<td>Jobs</td>
<td>9</td>
</tr>
<tr>
<td>Year</td>
<td></td>
</tr>
<tr>
<td>Jobs</td>
<td></td>
</tr>
</tbody>
</table>

### 4.2.2 Transport Business

Data gathered revealed that a number of cars have been registered at the Tema Port to provide transport services in the Port environs especially ICDs located areas. It is evident from the table that the number of cars registered in the port for transport business increases year by year and thereby generate revenue for the government of Ghana and job creations in the areas of drivers and mates, station masters and toll collectors and others. Their presence are still required because the location of some of the ICDs requires transport for commuters who may
include importers, exporters and other stakeholders who transact business at the ICDs to their various destinations as well as the staff who do not own vehicles. See table 5

Table 5: Transport Bus. Operating in the port

<table>
<thead>
<tr>
<th>TRANSPORT BUS. OPERATING IN THE PORT</th>
<th>DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR</td>
<td>YEAR</td>
</tr>
<tr>
<td>2005  2006</td>
<td></td>
</tr>
<tr>
<td>30  38</td>
<td>8</td>
</tr>
<tr>
<td>2007  2008</td>
<td></td>
</tr>
<tr>
<td>42  58</td>
<td>16</td>
</tr>
<tr>
<td>2009  2010</td>
<td></td>
</tr>
<tr>
<td>58  68</td>
<td>10</td>
</tr>
<tr>
<td>2011  2012</td>
<td></td>
</tr>
<tr>
<td>64  71</td>
<td>7</td>
</tr>
<tr>
<td>2013  2014</td>
<td></td>
</tr>
<tr>
<td>79  82</td>
<td>3</td>
</tr>
</tbody>
</table>

4.2.3 Equipment Hiring Business
It is revealed from the data gathered that the ICDs hire equipment in their operations. The equipment hired could be reachstackers, straddle carriers, forklifts, mafi’s and amongst several others. The ICDs are limited in full complement of equipment and hire some operational equipment to handle their operations especially in the area of receiving, delivering and devanning. This usually happens when they handle containers beyond their capacity. They often than not hire equipment to enable them serve their customers during delivery operations, also to stack stuffed and unstuffed and empty containers in the terminal and outside the terminal due to space constraints. It is evident from the table that there is a significant increase of Equipment Hiring Companies operating in the port from one to nine companies and whose services are rendered to the ICDs which suggests growth in volumes of traffic handled by the ICDs and also an increase in traffic that passes through the Port of Tema See table 6

Table 6: Equipment Hiring Bus Operating in the Port

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2005</th>
<th>2006</th>
<th>DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2007</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.2.4 Service Providers

Data gathered revealed that the operations of the ICDs has created jobs in the area of provision of Services such as suppliers, painters, food vendors, repairers, training facilitators, software developers, typists, janitorial service providers and amongst several others. It is obvious from the table that from 2005 to 2014 there has been a tremendous increase in the number of service providers in the Port which suggests an increased in traffic volumes handled by the ICDs and as well safe Port which encourages business continuity and startups. This also suggests a positive impact of the ICDs on the Ghanaian economy since it generate significant revenue. See table 7

*Table 7: Service Providers Operating in the Port*

<table>
<thead>
<tr>
<th>SERVICE PROVIDERS OPERATING IN THE PORT</th>
<th>DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>YEAR</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>2009</td>
</tr>
<tr>
<td></td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>2011</td>
</tr>
<tr>
<td></td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>2013</td>
</tr>
<tr>
<td></td>
<td>125</td>
</tr>
</tbody>
</table>

The implications of the data on direct and indirect ICDs-related jobs suggests that the ICD’s create a large number of employment in the Port Business. Mostly engaged are operational workers who handle the containers and cargoes and who register statistics for optimum accountability for the containers and cargoes. This may suggest a high dominance of operational staff in the Port Business. This was followed by Administrative Staff. It is evident that ICD’s employ a number of people for various jobs and thereby generate revenue for the country in the form of taxes and other statutory charges related to the port business.
due to the numerous activities undertaken. Additionally, the generation of jobs has also been felt through indirect employment in sectors such as Haulage Business, Transport Business, Equipment Hiring Business, Service Providers (Suppliers, Repairers, Painters, Training Facilitators, Software Developers, Food Vendors etc.). ICDs operations cannot be complete without these classes of jobs.

In general, the economic contribution of ICDs has been largely positive. It has quite increased the rate of job opportunities and also opened up areas to more businesses where they are located such as cottage industries which has ignited some multiplier effects on the socio-economic wellbeing of the communities served by the port. The economic benefit of ICDs activities has spread more equitably and has the potential of attracting investment into the area of locations and generate much needed economic development opportunities.

4.3 Kinds of cargo received by the Terminals

Data gathered on the kinds of cargo received by the terminals revealed that the terminals received varied cargoes. Ghana Ports and Harbours Authority solely in charge of container transfers to the various ICDs and who has mandated Terminal One Depot and Meridian Port Services (MPS) to transfer containers. The transfers are done based on the agreement signed with the Ghana Ports and Harbours Authority and the operatives of the ICDs. Per the agreement the Golden Jubilee Terminal was to receive containerised cargoes which may include reefers and dry containers and imported vehicles shipped in containers either as complete units or CKD (completely knocked down) kit form. ACS per the agreement was to receive only containerised cargo which could either be a reefer or a dry cargo and TBT was to receive only dangerous cargoes which are usually containerised or loose. Other types of
cargoes are left for the Shorehandlers. These can be imports, export, Transhipment and Transit traffic.

4.4 The Volumes of traffic handled by the ICD’s

Data gathered revealed that volumes of traffic handled by the Golden Jubilee Terminal ranged between 20,000 TEUs to 60,000 from 2009 to 2014 whiles ACS recorded between 30000 TEUs to 40000 TEUs during the same period. TBT also recorded averagely 10000TEUs of traffic. See figure 6

Figure 6: The Volumes of traffic handled by the ICD’s

![Graph showing volumes of traffic handled by the ICDs]

It is evident from the graph that container traffic at the ICDs grows at a good rate from 2009 to 2014 which involved domestic and transit import traffic as well as transshipment and export traffic and vehicles. This shows significant growth rate in traffic volumes. Therefore the container volumes passing through the ICDs will be approximately 80%.
The implication of the data presented on the volumes of traffic handled by the ICDs clearly suggests that the introduction of ICD’s has impacted positively. It has quite increased the traffic that comes into the country because storage facilities are readily available, safe port environment which encourages more vessels to call and efficient services rendered and significant customer satisfaction. It has also sent a strong evident that trade boosts economic growth, and that economic growth means more jobs. The benefits of inland depots are increasingly being recognized. The Port Authority has forecast to receive 400000TEUs passing through the port to the ICDs. Majority of the cargo will pass through the ICDs and thereby increasing container throughput. The significant portion of import of dangerous cargo is as a result of the restrictions on permits for the importation of such cargo and limited in its usage.

4.5 The Speed of volumes of cargo handled

Data gathered revealed that cargoes handled at the ICDs are rated in terms of the kind of cargo being handled. The speed of volumes of vehicles handled at the terminals was rated Very High (60%) whiles dry and reefer containers rated (35%) High and dangerous cargo rated (15%) Semi-High, meaning the contribution of ICD’s has brought efficiency in the handling and delivery of cargo in the Port as shown in figure 7

Figure 7: Speed of volumes of cargo handled
The implication of the data presented are as follows:

- The speed of volumes of cargo handled as Very High were 60% and High 35% suggested that clearance at the ICD’s has been very effective and strive to be the best in terms of effective business management processes as well as offering competitive and superior customer service. This indicate a positive impact of the contribution of ICD’s to the clearance of cargo in the Port. This may be because it is a facility where all checking/clearance are done by Customers/Clients. Unlike the days where Customs processes were scattered and clearance was cumbersome.

- The implication on trade facilitation clearly suggests that the introduction of ICD’s has impacted positively on trade facilitation. Port Businesses without ICD’s in contemporary times would have been very tedious. This may probably be because of the volume and value of the trade. It may also be because most trade through the Port could be part of supply chains into the country or going beyond the borders of the
country to landlocked countries. Such trades have to be dealt with in accordance to just-in-time principles.

4.6 The Mechanisms adopted in the operations of the ICD’s

The methods adopted by the ICD’s in their operations can be broadly seen on how cargoes are offloaded from trucks to stacking and how cargoes are devanned/stripped amongst others. Data gathered on how cargo is offloaded from truck to stack revealed that the terminals uses 100% Reachstacker, forklifts and RTG in their stacking and discharging operations. From the Operations Department of the various institutions, it was realised that at least one equipment is used in the offloading cargo from the truck which included the use of Reach Stackers/RTG and Reach Stacker/Forklift respectively. This implies that the regular use of these equipment for operations comes at a significant cost to the ICD operatives. This is because there is the need for maintenance and replacement of parts and huge expenditure on equipment hire. How cargoes are devanned/stripped is done by the use of reachstackers and forklifts. ICDs strive to be the best in terms of technological advancement. With the introduction of the new technologies in the operations of the ICDs in the area of data inputting, recording and tallying, gate systems, delivery and receiving. The Terminal Operating System component takes care of such jobs.
CHAPTER FIVE  
SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This Chapter summaries the findings from the presentation and the discussion of the results from chapter four with the aim of arriving at factual conclusions which will serve as the basis for the recommendations. Findings will be aligned to the objective of the study in order to ensure the achievement of the objectives of the study.

5.1 Summary Findings and Conclusions

5.1.1 The kind of direct and indirect ICD-related jobs created

All personnel were directly involved in either the ICD business or connected to that business. The number of ICD’s accounted for were three namely: GJT, TBT and ACS. It was also evident that a significant number of years was required to work in the Port considering the fact that majority of the staff had worked in the Port for years. Most jobs in the Port were operational in terms of being a (Dockers, Vetters, Conditioning Clerk, Input Clerks, and amongst others) but there were significant number of jobs that were of managerial, administrative, engineering and fire service. Most jobs were semi-skilled which consolidates the fact that some number of years and experience is needed to be able to work in the Port Industry. It was also revealed that a significant number of indirect jobs were created in the port industry such as haulage business, transport business, equipment hiring and service providing business and has contributed significantly to the job creation and revenue generation for the economic growth of Ghana. The revenue generated could be in the form of import duties and other charges levied by the ICDs on services rendered.
5.1.2 The Volumes of traffic handled by the ICD’s

It was evident that the volumes of traffic that are handled by the ICD’s are between 10,000 TEUs to 60,000 TEUs. This suggest that ICD’s Operatives receive high volumes of traffic such as containerised cargoes same as vehicles and dangerous cargoes because the introduction of ICDs in Ghana has boost the clearance of cargoes in the Port and has also indicated a very positive superior customer service and revenue collection point which has implied vessel owners and importers to use the Port of Tema to transact port business. However, the ICDs are challenged with space constraints with respect to the impact of rapidly growing container volumes.

5.1.3 The traffic that passes through the ICD’s

It was revealed that all traffic that passes through the ICD’s are containerised and are made of general cargo, vehicles and dangerous cargo. The traffic that passes through the ICDs either imports, exports or transshipment. At least one of the ICD’s handles one or more categories of these cargoes. This suggests that more of the containerised cargoes are moved to the ICD’s leaving the break bulk and conventional cargoes to the Shorehandlers – Redsea Maritime Services.

5.2 Recommendations

The following is recommended based on the above summary findings and conclusions:

- The operations of the ICD’s looks satisfactory however the Port should create avenues for the ICD’s as well expand its capacity to invite more investors to invest in the
establishment of ICD’s since it has proven overtime to generate employment for the country.

- Governments should create the enabling environment for private sector investment in critical areas like connectivity and inland container depots. In effect ‘denationalisation’ to usher in regional integration - more people, larger market and more options.

- Government must appreciate the contribution of the operations of ICDs as a catalyst of trade to the development of the economy and deliberately create the requisite conditions that attracts investors into the Port business.

- As part of measures to improve upon the operations of the container business which has proven to facilitate trade, create jobs and brings in various types of traffic to the country, equipment requirement levels in Ports which has been inadequate over the past years should be revisited to carefully analysis the future need for current equipment requirements. However, the Port should invest into sophisticated cargo handling equipment.

- Ghana’s fast-growing economy in the area of ICD operations needs new roads, new rail links to keep pace with growth across the country and also ensure that the land side sector and the port interfaces meet the requirements of shippers and carriers. With volumes of cargo increasing, investments is needed for Ghana Ports to remain competitive.
• The awaited Boankra Project (Inland Container Depot) should feature warehousing, container stacking areas, a devanning area, truck parking and links to the national road network and build a reliable rail link from Tema Port to all connectivity and other GSA infrastructure projects.

• Offloading cargo to the hinterlands helps to reduce congestion in the port area but a lot of the responsibility should be placed on the agencies responsible for clearance and on carriage of cargo to have smooth clearance procedures at the hinterlands. These agencies include CUSTOMS and other governmental agencies on the corridors.

• The main barrier in the past has been cultural and language differences, since most other countries in the region are French-speaking, Ghanaian Authorities should attract or rather win back lost traffic by offering importers and exporters a better quality of service as well as a more secured services to boost the volumes of traffic handled by the ICD’s.

• Much education should be made on the implementation of the Terminal Operating System (TOS) which is in the implementation stage to sensitize staff and all stakeholders the associated outcomes which is being speculated to send a number of the workforce especially those in operations home. This is to avoid labour unrest and also appreciate the phase of automation of port for effectiveness and efficiency.

• Further research is recommended to expand the scope of the study.
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Appendix
REGIONAL MARITIME UNIVERSITY COLLEGE

IMPACT OF INLAND CONTAINER DEPOT OPERATIONS ON THE GHANAIAN ECONOMY

The objective of this questionnaire is to seek information on the impact of inland container depot operations on the Ghanaian economy. The information being sought is strictly for academic purposes. It would be highly appreciated if you could take some time to complete it. Your answers will be treated as confidential. Thank you.

a. Please indicate the name of Terminal
   1. ACS,
   2. GJT
   3. TCT

b. Years of Service?
   1. 1 – 5 years
   2. 6 – 10 years
   3. 11 – 15 years
   4. 16 years and above

c. What kind of employment has ICD created in the economy?
   1. Planner
   2. Docker
   3. Clerk
   4. Managerial
   5. Others

d. How would you rate your type of job?
1. Skilled
2. Semi-skilled
3. Highly skilled
4. Unskilled

e. **Number of years in business**
   1. 1 – 5 years
   2. 6 – 10 years
   3. 11 – 15 years
   4. 16 years and above

f. **How would you rate the operations of the ICD’S?**
   1. High
   2. Very high
   3. Average
   4. Low
   5. Very low

g. **How would you rate the contribution of ICD’S to the clearance processes?**
   1. Very High
   2. Very
   3. Average
   4. Low
   5. Very low

h. **Has the introduction of ICD facilitated trade in Ghana?**
   1. Yes
   2. No
   3. No idea

i. **How is cargo received into your terminal?**
   1. By truck
   2. By rail
   3. Others

j. **How is cargo offload from trucks to stack?**
   1. Reach stacker
   2. RTG
   3. Forklift
   4. Reachstacker & RTG
   5. Reachstacker & Forklift

k. **How long does it take to receive cargo into the terminal?**
   1. 1 – 3 hours
   2. 4 – 6 hours
   3. 7 – 9 hours
   4. 10 and above
1. **How long does it take to unpack one unit of general cargo?**
   1. 30 minutes – 1 hour
   2. 1 hour - 2 hours
   3. 2 hours – 3 hours
   4. 4 hours and above

m. **How long does it take to deliver a container?**
   1. 30 minutes – 1 hour
   2. 1 hour - 2 hours
   3. 2 hours – 3 hours
   4. 4 hours and above

n. **What type of cargo do the terminals receive?**
   1. Dry bulk cargo
   2. Break-bulk cargo
   3. Containerized

o. **What kind of cargo do the terminal receive?**
   1. Dangerous Cargo Only
   2. Reefer Goods Only
   3. Vehicles Only
   4. General Cargo
   5. Dangerous Cargo and Reefer
   6. Vehicles and Dangerous Cargo
   7. General Cargo and Vehicles
   8. Others (Please Specify)………………………………………………………………………………………………………………