FACTORS AFFECTING CARGO DWELL TIME IN DRY PORT: A CASE STUDY OF MODJO DRY PORT

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Factors Affecting Cargo Dwell Time in Dry Port: A Case Study of Modjo Dry Port

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DECLARATION

I, Jemal chekin, declare that the research entitled “factors affecting cargo dwell time in Modjo dry port in the case of Modjo dry port” in partial fulfillment of the requirements for the degree of masters of art in Logistics and supply chain management at Addis Ababa University School of Commerce. This study is my original work, prepared under the guidance of Dr Busha Temesgen. All the references are also duly acknowledged.

Jemal Chekin Nuri

Signature……..

Date……

Confirmation

This is to certify that Jemal Chekin carried out this thesis on the topic entitled “Factors affecting cargo dwell time in dry port: The case of Modjo dry port” under my supervision. Accordingly, I here assure that his work is appropriate and standard enough to be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management.

Dr Busha Temesgen(PhD)

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Date ----------

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ABSTRACT

This study assessed that many factors affecting cargo dwell time in dry port. The research have been revealed that factors affecting cargo dwell time such as inadequate gantry crane machine, reducing cargo delays or dwell time, container cargo and truck turnaround time, custom clearance, limited storage capacity, poor multi-modal connections to hinterland and infrastructure directly influencing cargo dwell time. The research document thoroughly explored these factors and discussed the extent to which they affect cargo dwell time within the dry port industry. The primary objective of this study was to assess factors affecting cargo dwell time with a case study of Modjo dry Port. The target population of the study was approximately 500 people who included ERCA (Ethiopian revenue and customs authority) and Modjo Terminal Operations. Questionnaires have been the major instrument used to obtain primary data from the respondents; while the secondary data were obtained from existing empirical literature relevant to the study. The research was analyzed by exploratory approach using a descriptive survey design. The questionnaire was designed by using Likert scale type and samples of 50 respondents were obtained through a stratified sampling technique of which 30 of the respondents participated in the survey. Data was analyzed using the Statistical Package for Social Sciences (SPSS) and Microsoft Excel 2007. The findings revealed 86.7% of the respondents believe that by improving the infrastructures at Modjo dry port will minimize the congestion problems that sometime occur. Results from the research gives that 83.3% of the respondent's agrees that the lack of Integrated IT system poses substantial delays in custom clearance procedures. The study also recommended that Modjo dry port continuously invest in modern quay and gantry crane machine to supplement the current ones in order to continuously enhance productivity of dry port operations and that ESLSE (Ethiopian shipping and logistics service enterprise) invest in expanding the physical infrastructure such as adequate logistics facilities, expanding dry port yard capacity, railway stations and expanding connections with other dry ports.

KEYWORDS **Cargo terminals, Dwell time, Dry port.**

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

Djibouti-Addis corridor is the main import- export corridor of Ethiopia. The joint transport agreements and corridor committee is established to follow the implementation of the Ethiopian Trade Logistics Project (ETLP) and going to be implemented in the existing Modjo Dry Port. The objective of this project is to enhance the performance of the Ethio- Djibouti corridor through improvements in operational capacity, efficiency and range of logistics services at the Modjo Dry Port. The project was achieve this through investment in physical infrastructure, ICT systems and support for regulatory improvements to increase exports, raise incomes of producers and manufacturers, and to generate jobs. Project beneficiaries would primarily be private sector exporters, importers, manufacturers and farmers, those working for companies producing goods for export, government agencies involved in exporting, importing and consumers. The Ethio-Djibouti multi modal transit, transport agreement (EDMTA) has been one of the functioning units in Africa which allow the most advanced operations in transporting imported goods from the origin directly to destination. As per the agreement, it will be possible to achieve excellent transport and trade facilitation. The system eliminates cargo delays in the port, minimizes the risk of damage, theft, paying storage fees or sells of goods at auction due to delays and avoids numerous non physical barriers to movement in transit to inland dry ports.

Modjo dry port which is located about 70 km east of Addis Ababa is the primary and principal dry port; which handles 75% of multi modal containerized cargo of the country with the aim of developing and building efficient logistics system to the central and other, regions, here by lowering costs, minimizing delays, reducing risk, creating employments opportunities and promoting competitive foreign trade UNCTAD (1985). On the other hand cargo dwell time in inland dry port become the crucial issue worthy attention.

Modjo Dry Port is existed in Lume Woreda in East Shoa Zone of Oromia Regional State. The dry port is designed by “Dry Port Administration Enterprises Establishment Council of Ministers Regulation No. 136/2007”. Modjo Dry Port was operating on 64 hectares of land acquired in 2007. In 2015, the dry port acquired additional 86.922 hectares of land for

expansion in Kolbagode Kebele of Lume Woreda to accommodate the growing bulk of containers arriving from Djibouti seaport. With the ETLP project, the dry port intends to expand and modernize its services through the construction of facilities such as an intermodal transfer facility, bulk storage and bagging activity, a cargo yard and equipment, bonded and general warehousing, and a centre for consolidation/deconsolidation of containers.

Without decreasing the general cost and improving the predictability of dwell time (the time that cargo spends in dry port), the objective of reducing inventories is not likely to be met. In this regard, cargo dwell time in dry ports is critical. Arvis,et, (2010) describes that most of the time needed to transport cargo from dry port to hinterland cities in landlocked countries in Sub-Saharan Africa is spent in dry ports. For efficient operation, ports also require a large storage yard and a better road and infrastructure. However cargo terminals effectiveness in dwell time is often associated with the more organizational side of production such as how efficiently dry ports use inputs to produce current output levels and whether the technologies adopted by cargo terminal operators are most efficient, that are critical to determining cargo terminals efficiency (Chin and Tongzon, 1998).

Cargo dwell time often means speed and reliability of cargo at terminal services. In fast growing industries where products must be moved to markets on time, terminal operators are vital nodes in logistics chain and as such must be in a position to guarantee terminal lines and very reliable service levels. These include on time berthing of containers, guarantee turnaround time for trucks and guaranteed connection of containers. That is the most turnaround time it takes to wait for cargo to out, dry port terminal time, un-berthing and final out from dry port area (Tongzon and Ganesalingam.2009). Cargo terminal efficiency can be reflected in the freight rates and demurrage charges that are charged by logistics companies like Ethiopian shipping and logistics service enterprise (ESLSE) and turnaround time of containers and cargo dwelling time. The larger a container or cargo stays at port terminal; the higher is the cost that a customer will have to pay. This can be passed on to customers in terms of higher freight charges and charges and longer cargo dwelling time, thus reducing the attractiveness for them to hub at a dry port. Dry port cargo terminal efficiencies are classified in to two broad groups, namely: operational efficiency measures and customer-oriented measures. The general set of measures deals with capital and human productivity as well as asset utilization rates. The other set includes direct charges, cargo dwell time, and minimization of dwell time in inland transport and reliability (Tongzon and Ganesalingam (2009).

1.2 Statement of the problem

Cargo dwell time is one of the many performance indicators to assess the efficiency of terminal operation. As compared to standard indicators such as ship (any transport mode) turnaround time or productivity indicators it is however not yet widely used for global benchmarking purposes (Goardon, 2003). To my study I try to ask many stake holders to choose this title and also try to look many researchers have been done on dry port dwell time, by considering its impacts and reasons as a subject of research by itself. Many researchers suggested that the type of infrastructure (such as, internal dry port roads, and communication network), the systems used to receive and release cargos and the machinery or equipment employed influenced the efficiency of cargo dwell time (USAID, 2017).

Dry port dwell time is generally seen as a determinant of physical outputs such as dry port efficiency, dry port capacity, or even trade volumes. Many researchers have shown its growing importance and relevance in the context of modern dry port operations and trade logistics. This study intends to fill this gap in knowledge through assessing and investigating what factors affecting cargo dwell time in the case of Modjo dry port. Specifically, it attempts to: (1) determine optimal storage space utilization by considering the yard inventory and congestion effects on terminal performance; (2) Introduce new allocating storage strategies with the aim of minimizing the amount of re handling moves, which are considered to be the most important cause of inefficiency in container yard terminals, and; (3) develop a generic storage pricing schedule to encourage customers to pick up their containers promptly and, as a consequence, reduce the average duration of stay, avoiding yard congestion Goardon, (2003).

Some challenging factors include: providing adequate and performing equipment, reducing berth times and delays, enabling large storage capacity and ensuring multimodal connections to hinterland and as well as improving infrastructure (UNTAD 2006). Container flows on a few mega ports, in turn influencing berth and crane efficiency of the terminal and adding pressures on hinterland links, often with adverse effects on congestion and the environment.

Modjo dry port has exceeded its design capacity (USAID, 2017). It is already operating almost maximum capacity for both general and containerized cargo, and will suffer progressive declines in operational effectiveness unless both capacity and terminal efficiency issues are adequately addressed (USAID, 2017). Cargo imports at the dry port increases on average 10

percent each year since 2005 (USAID, 2017). Some key problems associated to the inefficiency of the port are; dwell time issue, management of cranes loading and unloading goods, collection of custom duties, inspections etc (USAID,2017). Areas that affect cargo terminal efficiency; dry port's ability to service at the quayside (at berth); yard capacity (to store goods before collection); customs and clearance and infrastructure etc.

The purpose of this study is to find out the main determinants of container dwell time by trying to understand how each sub process influence container dwell time. The study also will try to find out exactly what time portion does each clearing process consume and make appropriate recommendations to improve the performance of Modjo dry port.

Cargo dwell time is one of the many performance indicators to assess the efficiency of dry port terminal operation.

As compared to standard indicators such as container turnaround time or productivity indicators it is however not yet widely used for global benchmarking purposes. It is therefore challenging to define standard limits above which dwell time would be considered too long in any given dry port. Maritime logistics industry sector experts tend to agree on cargo dwell time 3 to 4 days representative standard time in dry port (Goardon, 2003). These issue have been prompted the study to assesses factor that affect container dwell time in dry ports; a case study of Modjo dry port.

1.3 Research Questions

This study tried to address the following research questions:

1. To what extent does the system employed by the dry port to receive and release cargos affect their dwell time?
2. To what extent does inadequate gantry crane machine affect dwell time of cargo in dry port?
3. To what extent does the infrastructure endowment by the dry port affect the dwell time of containers?
4. What is the effect of custom clearance procedures on dry port cargo terminal?

1.4 Objectives

1.4.1 General objective

The general purpose of this study was to assess The Factors That Affect Cargo Dwell Time in Dry Port with case study of Modjo Dry port.

1.4.2 Specific objectives

The specific objectives that are desired to be achieved through this study are to:

1. To determine how the systems employed by the dry port to receive and release cargos affect their dwell time.
2. To isolate inadequate gantry crane machine affect dwell time of containers.
3. To assess the extent to which infrastructure endowments in dry ports affect cargo dwell time.
4. To establish the effect of custom clearance procedures on Modjo dry port cargo terminal.

1.5 Significance of the study

This study was give clear understanding on factors that affect cargo dwell time in dry port areas and concerned bodies along Modjo dry port, it plays a major role toward the Economic growth and development of a country and it serve as a starting point for more advanced researches on dry port service and it also contributes a guide line for other dry ports throughout the country and other warehouses cost effectiveness, and efficient service provision.

The main purpose of the study is to identify the various factors affecting the Dwell Time (DT) of containers in container terminals. Dry port Cargo terminals are regarded as a key element of logistics chains since they are a link between sea and the hinterland transportation modes and also from inland container depot (ICD) port to hinterland cities in landlocked countries. This study is timely because several investments and expansion are planned for container terminals in Modjo inland container depot (dry port). In general identifying the reasons behind cargo delays in dry ports is crucial to understanding. Because of such identification and quantification, projects may ultimately result in a limited impact, and structural problems of long dwell time will remain. Dry Port performance is strongly related to factors such as scope of hinterland, local economic development level, status of the world economy and government policy on supporting trade, land side infrastructure, population and culture.

Moreover, the study seeks to benefit all stakeholders and players within the dry port area
Especially cargo terminal operators and policy makers because the findings from the Research would provide an in-depth knowledge on practical implications on factors affecting cargo dwell time efficiency. The findings would be a direction for future research and Practical implications as well, especially to those who want to do similar research by assess factors affecting cargo dwell time within the dry port.
Finally, the purpose of this study would be a great benefit to Modjo dry port and others in the country that has similar problems with time inefficiencies; because when the findings and recommendations from the study was well utilized and taken into consideration by the appropriate authority and stakeholders, then the issues of cargo dwell time inefficiencies can be adequately addressed thus enhancing the capacity and Productivity of dry ports which onward will boost economic growth and development.

1.6 Scope of the study

The scope of this research is focus on the factor of cargo dwell time in dry port service along Ethiopian Shipping and Logistics enterprise specifically in Modjo dry port. It also looks at all persons involved in the operations of dry port container terminal in the port of Modjo, stakeholders who make use of the facility in dry port operation activities as well as freight forwarders or shippers and shipping agents. The study also focuses on the potential factors that affect cargo dwell time depends up on the independent variables like infrastructure, custom clearance, equipment, quay crane area and the dependent variable like cargo terminal dwell time.

1.7 Limitations of the study

It is obvious that every study encounters challenges and difficulties; of which this study is no exception. Some of the limitations that would be faced to carry out the study are unwillingness of the respondents to fill the questionnaires. Significant portion of the questionnaire was not filled in; this perhaps could be deduced that most of the respondents would be not willingness to participate in the survey.

As a result of this, the expected sample size would not meet. And also it might be very difficult to collect secondary data from the different import and export customers and logistics companies due to the confidentiality of information but as a researcher I have challenged and solved all the limitations in order to solve the problem I have identified in the problem of the study.

1.8 Organization of the study

This research paper has been organized in five chapters. Chapter one was about back ground of the study, statements of the problems, research objectives, significance of the study, scope of the study, limitation of the study, & organization of the study. Chapter two was disclose relevant literature reviews referred from reputable journal articles on factors affecting cargo dwell time in dry port. Chapter three was highlighted the methodology which includes description of the study area, research approach, research design, population & sample, data sources & types, data collection procedures, ethical considerations & data analysis. Chapter four was about the results, discussions& interpretation. Chapter five was containing summary, conclusions & recommendations. At the end of chapter five the paper have contain list of references in Harvard style.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The literature of the study covers an explanation about the basic concepts which provide definition of dwell time and the recent trends in dry port dwell time. The review also discussed about the general practices of cargo terminal operation opportunities and challenges in performing operation in dry port areas. This chapter reviews relevant literature both about the topic of the research with specific focus on relevant issues on cargo dwell time in dry port.

A number of existing papers and studies on cargo terminal efficiency or dwell time were reviewed for this study. The frame of reference of this research project was guided by the problem and purpose. Hence, it was considered relevant in this study to review theory related to factors affecting cargo dwell time. The review has shown that there are numerous theoretical perspectives and models on factors affecting cargo dwell time which have been developed for dry port cargo terminal operations.

2.2 Theoretical Literature Review

2.2.1 Dry ports

According to Rodrigue and Notteboom (2009) dry ports are ports without water bodies and ships /vessels but performing activities similar to sea ports. Dry ports are normally linked by different transport modes from major water bodies (sea port). They are simply physical infrastructure developed to facilitate cargo handling and its movements and hence reduce cost, time and increase efficiency.

Dry port are facilities on an open or enclosed area developed to provide handling of mainly containers, but also other break bulky dry cargos and are used for storage, consolidation and processing of cargos/goods for efficient and timely dispatching .

Dry ports are closely associated with the promotion of through transport (through bill of lading-TBL) or door-to-door service concept. Dry ports serve as port except for loading and unloading of ships commonly termed as stevedoring operation. In this way the cargo or container by possesses the sea port and all documentation and other transit procedures are processed near to consignees place or within a national boundary. It makes it therefore, easier for land transport to

take over without much delay in littoral countries.(a handbook on the management and operation of dry ports (UNCTAD/RDP/LDC/7) ,genevea,1991.

2.2.2 Dwell Time

Cargo dwell time is one of the many performance indicators to assess the efficiency of terminal operation. As compared to standard indicators such as container turnaround time or productivity indicators it is however not yet widely used for global benchmarking purposes. It is therefore challenging to define standard limits above which dwell time would be considered too long in any given dry port. There is a direct relationship between distribution of dwell times and terminal occupancy. It therefore needs to precisely evaluate a standard dwell time beyond which the efficiency of the terminal is negatively affected. This standard is the free time period defined "as the period during which a container can reside in the container yard without being assessed a demurrage fee" (Huynh, 2006).

According to UNCTAD (1995) it should correspond from a user perspective to the "sufficient time to allow efficient importers to clear their cargo" (UNCTAD, 1995), but in practice, the dry port authority and terminal operators define this free time according to capacity constraints, profit maximization, container traffic patterns or other consideration (for instance differentiation between transit and domestic goods), and they tend to reduce it for example when facing high congestion patterns.

As for consignees (importers or exporters) dwell time in dry ports can be assimilated to a temporary storage period which is justified either by the time necessary to complete cargo clearance formalities (transactional dwell time) or by a decision to leave cargo in the port for a definite number of days superior to that clearance delay (discretionary dwell time) . For containerized imports in dry port, cargo dwell time is defined as the time between truck arrival in dry port and container exist from the dry port facilities.

From a transport service perspective, container terminals are nothing more than intermodal nodes in global transport chains. Their basic function is then to transfer efficiently utilized cargo from a maritime transport mode (container ship) to a land transport mode (rail and truck) and vice-versa.

The efficiency of this transfer operation is then assessed against performance objectives which are in general berth, yard and quay productivity objectives. If we focus specifically of time

performance of entry ports for containerized imports we can however simply look at the agility at which containers are physically transferred from the containership to the land transport mode via the container yard. This total time for the physical transfers only plus the necessary idle time between operations is defined as operational dwell time (UNCTAD, 2003).

Cargo dwell time in dry ports has long been identified as a crucial operational issue of modern logistics. Back in 1978, a seminal report by the National Academy of Sciences in the United States noted, "The old saying 'time is money' is especially germane to modern port activity. The greatest saving in total cargo transport time can be made during the dry port transfer process, not the feeder or shipping transport segments" (National Academy of Sciences 1978, 90).That report emphasized the importance of dwell time in port operations, and its observations are still relevant today. For example, the report noted the adverse impact of long dwell times on total logistics costs: "It is necessary to reduce time spent in dry port by loading and unloading cargo to reduce shippers' total demurrage and other costs" (National Academy of Sciences 1978, 103). It also rightly identified dry port dwell time as a crucial factor of competition between dry ports: "Timely service is the most important ingredient on dry port that can offer to both importers and exporters" (National Academy of Sciences 1978, 95).

Port researchers have studied the issue of dry port dwell time by looking at four main topics: dry port operations and, in particular, the means of optimizing dry port productivity; trade competitiveness, which considers the impact of cargo dwell time on trade; dry port competition, which has recently been the subject of growing attention in the context of direct competition between dry port terminals at the regional and national levels; and supply chain performance, with authors such as Robinson (2002) calling for a paradigm shift to focus on the role of dry ports in global supply chains.

2.2.3 Dry Port Operations

From an operational perspective, studies are interested in the determinants of the operational performance of dry ports and the means and resources to optimize it. The primary indicators of operational performance are container turnaround time and dry port throughput. Asset performance indicators are also widely used to compare berth, yard, or gate performance of different ports. Cargo dwell time in terminals appears to be only a secondary indicator, since it depends on the characteristics of the cargo and the shipper (Chung 1993).

2.2.4 Trade Competitiveness

Another research field where cargo dwell time has been given specific attention is international trade, specifically in the context of trade facilitation initiatives. However, the impact of long cargo dwell time on trade efficiency has only recently been seen as a major hindrance to the development of low-income countries like Ethiopia. When analyzing key issues in international trade, Dasgupta identifies dry port logistics, specifically cargo dwell time, as the area most in need of reform (Dasgupta 2009, 239).

Cargo dwell time also enters the equation of trade cost proposed by Sengupta in his book on the economics of trade facilitation (Sengupta 2008, 178). And achieving more time-efficient dry port clearance operations is often, perhaps always, a main objective of trade and transport facilitation projects that have been designed to address comprehensively the physical and other obstacles to trade in developing countries. In addition to the long duration of container stays in the dry port, Arvis, Raballand, and Marteau (2010) identify the unpredictability of cargo dwell times as a major contributor to trade costs because consignees need to "Compensate for the uncertainty by raising their inventory levels" (Arvis, Raballand, and Marteau 2010, 47). In other words, delay is not the only issue of importance when considering the impact of dwell time on the performance of trade; predictability and reliability of cargo dwell times are equally important because they have a major impact on the total costs of trade logistics.

2.2.5 Supply Chain Management

The very focus of dry port management has changed radically in recent years with the advent of containerization and the "terminalization of supply." The objective of optimizing the use of dry port facilities has been gradually replaced by performance objectives that seek to gain competitive advantage over other dry ports. Since 1995, the United Nations Conference on Trade and Development (UNCTAD), for example, has recommended the implementation of performance-based yard tariffs that would encourage customers to reduce the dwell time of containers in terminals. However, in many places, the promotion of efficient behavior among dry port users has met with resistance from consignees, who tend to use the terminal as a storage area hence the difficulty of finding acceptable optimum levels of use. Specific pricing objectives have been proposed, but the implementation of effective storage tariffs is very complex (UNCTAD 1985).

Similarly, Rodrigue and Notteboom (2009) argue that freight forwarders use terminals as an extended component of their distribution centers and try to take full advantage of free time, while terminal operators try to restrict such behavior. Nordås, Pinali, and GelosoGrosso (2006) use a few case studies to show that a broader range of products are becoming time sensitive following the adoption of modern supply chain management practices in the manufacturing and retail sectors. The functional use of terminals as a cheap storage area brings new challenges to terminal operating companies that are not limited to pricing issues. High dwell times are no longer indicators of poor terminal performance in general but, in some circumstances, are "perceived as an indicator of a higher level of integration between the dry port and inland freight distribution brought by supply chain management" (Rodrigue and Notteboom 2009).

The objective of helping dry port users to achieve better supply chain performance would therefore lead terminal operating companies to accept or even support long cargo dwell times. Rodrigue and Notteboom conceptualize this paradigm shift from "bottleneck-derived terminalization," where the dry port terminal is essentially a source of delay and a capacity constraint in the shippers' supply chain, to "warehousing derived terminalization," where the terminal replaces the warehousing facilities of shippers and gradually becomes a strategic storage unit (Rodrigue and Notteboom 2009). Such a functional shift comes with a few prerequisites: extra terminal capacity (low occupancy rates), modern supply chain practices (such as integration and synchronization of supply and demand or just in- time manufacturing), and good liner shipping connectivity, which is indispensable for responsive supply chains. These assumptions would probably not hold in most Sub-Saharan African countries today: liner shipping connectivity is very low, with most countries being in the lowest tier of the UNCTAD liner shipping connectivity ranking (UNCTAD 2009).

The use of terminals as warehouses is nevertheless prominent in African ports, as is demonstrated in this report. In fact, no attempt has been made to model the demand of customers for long-term storage in a way that is applicable to ports in Sub-Saharan Africa. Yet the problem has been identified for a long time: "As far as they are interested in warehousing, customers are biased in favor of utilizing the dry port facility as much as possible" (UNCTAD 1985).

2.2.6 Factors to Be Modeled While Looking at Dwell Time

For individual customers, the length of dry port dwell time is determined by three factors: the efficiency of container-handling operations, the complexity of the transactions for border control and intermodal exchange, and the requirements of the consignees for storing cargo in the dry port. The basic cargo-handling operations in a container terminal are the movements of goods across the berth, in and out of the storage area, and entering and exiting the dry port from the landside. The efficiency of these operations affects the time and costs of the transfer. Each operation has capacity constraints, and delays occur more frequently as the level of use approaches this capacity. Both the port and the terminal operator are responsible for the efficiency of these operations.

Transactions are associated with the intermodal transfer of cargo across a border. They include the procedures of customs and other border agencies that control the type and quality of goods entering and exiting a country. They also include the financial transactions associated with the transfer of ownership and liability for the cargo as well as with the collection of duties and taxes on it. In the case of imports, the transfer of ownership involves exchanging the bill of lading between the shipping line and the consignee. The transfer of liability between the shipping line, dry port operator, and provider of land transport involves the exchange of documents for receipt and delivery of the cargo. The minimum time required to complete these transactions is determined by parties other than the cargo owner; however, the actual time is determined by the efforts of cargo owners and their agents to coordinate with these parties and to cooperate in completing the transactions.

The decision of the consignee to store cargo in the port rather than elsewhere along the supply chain is based on cost and convenience. The period of storage depends on the delivery time as well as on the cost of alternative storage outside the dry port. The use of dry port storage therefore depends on its pricing and the amount of duties and taxes payable when cargo leaves the dry port.

The parallel clearance formalities undertaken by customers can be classified into three main constituents of dwell time in ports:

• Operational dwell time, which refers to the performance of physical operations

• Transactional dwell time, which refers to the performance of clearance formalities

• Storage dwell time, which refers to the voluntary storage of cargo in the Container yard as part of a wider inventory management strategy.

2.3 Empirical Literature Review

Empirical studies are reported in the area of factors affecting cargo dwell time in dry port. Many researchers have reported about factors affecting cargo dwell time in dry port. These researches were interdependent since the cargo flow depends on the dry port capacity and service. The result or finding of this study is particularly interesting in order to understand which variables can be included in the model. In addition advantages such as the location of the dry port and the area cover to the customers play an important role in the volume of dry port throughput. However, more factors of dry ports determined by the cargo terminal throughput volumes Tongzon (1995).

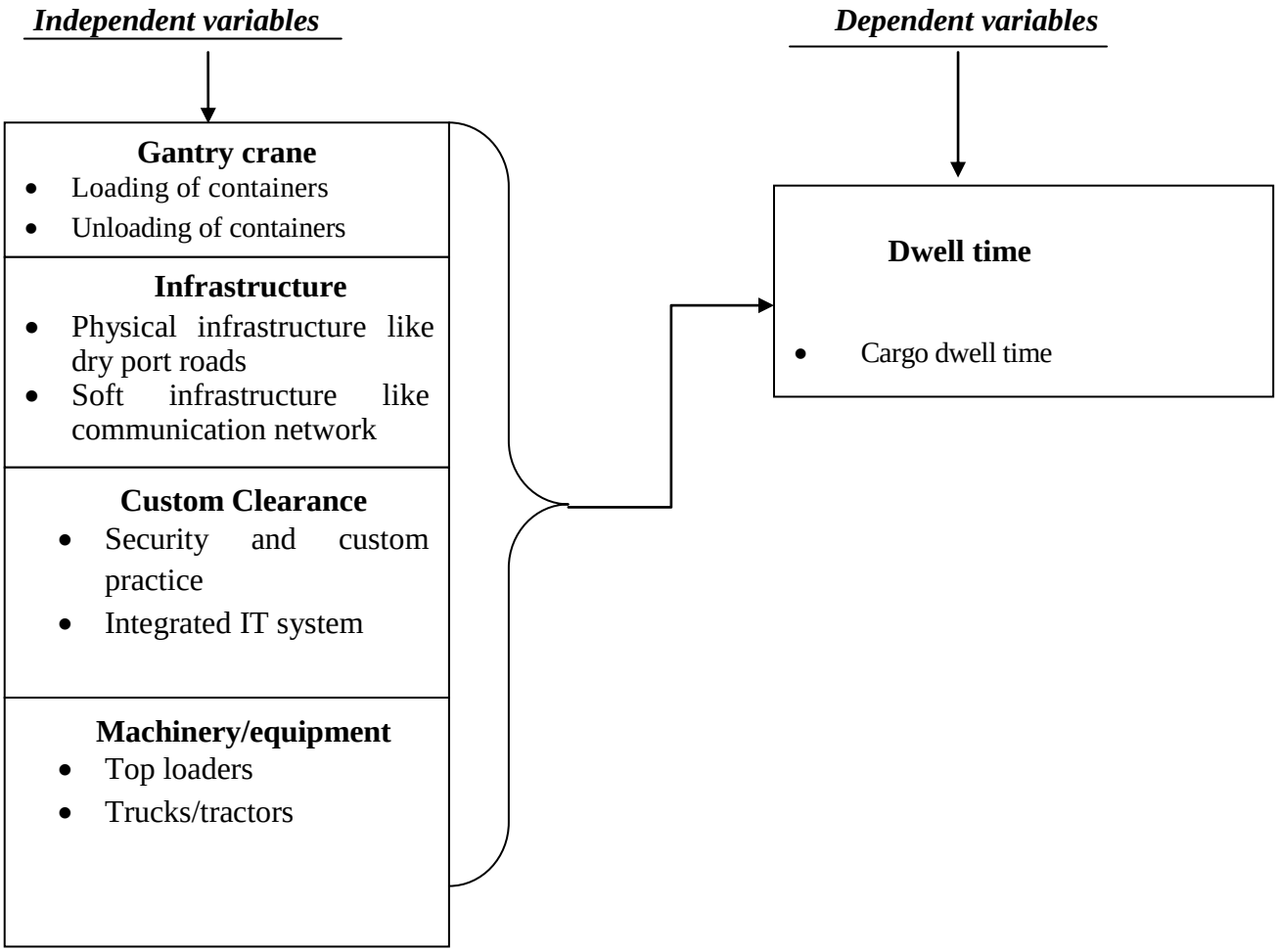
Also cargo dwell time is dependent on the following factors: the major factor is the geographical location of the dry port. If the dry port is located on an easily accessible location by different customers, more cargo is likely to flow to that specific dry port. The second factor is the cargo terminal efficiency or dwell time. This factor can be measured by looking at the cargo mix, gantry crane efficiency, the size of cargo exchange (economies of scale), average number of cargo handled per hour and again, Tongzon (1995) states that dry port charges could also be included as variable in the model. However their contribution to the total costs is relatively small.

Additionally, some studies have identified factors affecting cargo dwell time in dry port. The research determines customer's choice affect cargo dwell time in dry port. These researches are relevant for this study since the choice of the dry port users determine the container flows to the dry ports. The major factors from this thesis are the physical and technical infrastructure, the port efficiency, gantry crane machine efficiency, custom clearance procedures, the hinterland connections, the dry port charges and the available (logistic) services besides that area. The physical and technical infrastructure includes dry port physical characteristics such as the roads, the type of cranes used in the dry port. These variables indicate the limits and the ability of the dry port and the possible dry port output, Wiegmans et al,(2007).

On the other hand, dry port competition was an impact on the dry port choice factors. Containerization was led to standardization in the maritime logistics industry, implying that dry ports doesn't rely on specialization to maintain their market share and to generate revenues as much as they used Roll and Hayuth (1993).

2.4 Conceptual Framework

The study would be guided by a Conceptual Framework that is indicated by the independent and dependent variables.



This study conceptualizes cargo dwell time have been affected by infrastructure, the type of systems used to receive and release cargo, custom clearance, cranes that are loading and unloading cargo and lastly the machinery employed by the dry port. The purpose of this study was to test the nature and the strength of these relationships.

The following factors would be affect dwell time and dry port efficiency parameters that attributable to Modjo dry port.

2.4.1 Infrastructure

The critical role that container infrastructure plays in favoring the economic development of a country or region is well established. Infrastructure is the necessary condition for efficient cargo

handling operations and adequate infrastructure is needed to avoid congestion, foster trade development as well as securing deep-sea container connectivity for economies heavily dependent on international trade. Container infrastructure, however, needs to be complemented by efficient hinterland transport connections if the port is to fully exploit its potential as growth catalyst and supply chain node (Suykens and van de Voorde 1998). Unfortunately, it is not uncommon for development projects to focus exclusively on enhancing the infrastructural capabilities of the dry port, without adequate consideration of the hinterland connections.

The urgency of looking at dry port and terminal development in conjunction to their hinterland connectivity is exacerbated by the pressure on container terminals to increase their efficiency levels resulting from the rapid growth of containerized cargo traffic flows and their increased variability (Haralambides 2002). As dry port capacity cannot be developed as rapidly as increases in demand (Haralambides 2002), any overcapacity is eventually exhausted and episodes of congestion ensue even in the most efficient terminals.

This will concentrate container flows on a few mega dry ports, in turn impacting berth and crane productivity of the terminal and adding pressure on hinterland links, often with adverse effects on congestion and the environment (Yap and Lam 2013).

The expected increase in transshipment associated with many containers, is likely to influence the terminals not only forcing them to handle higher volumes in the same period of time, but also to reduce the variability of their operations (i.e. increase reliability) in order to guarantee seamless flows of cargo among transshipment ports and feeder ports (Gilman 1999). The increases in productivity and reliability at terminals will require more tracking, greater container visibility and more emphasis on environmental and regulatory compliance particularly as terminals now occupy critical positions the supply chain (Notteboom 2008).

Generally, infrastructure is divided into physical and soft elements. Physical infrastructure includes not only the operational facilities such as the number of berths, the number of cranes, yards and tugs and the area of storage space, but also the intermodal transport such as roads and railways (Tongzon and Heng, 2005). Whereas, the soft infrastructure refers to the manpower employed. Maximum deployment of both types will assist in reducing container turnaround, thereby increasing the terminal capacity to accommodate more containers.

2.4.2 Inadequate Port Capacity

The cargo handled was within the overall capacity available at the dry ports, a closer analysis reveals that in some of the most important streams of cargo, dry ports are handling more than their designed capacity. The growth in cargo has been phenomenal whereas the concurrent growth in capacity has not been able to keep pace with it. The growth in container traffic and the lack of corresponding growth of capacity can be cited to illustrate this point.

Further, the ports are projected to handle increased volumes of traffic in view of the anticipated GDP growth. Therefore, immediate enhancement of dry port capacity is imperative. Inadequate port capacity leads to congestion thereby resulting in increased dwell time.

2.4.3 Poor Road Network within the Port

The roads within most of the ports are narrow and are not designed to handle the present kind of traffic and load. This results in traffic congestions leading to delays in feeding evacuation of cargo, which in turn lowers the productivity of vessels.

Lack of route planning for optimization of existing road network with suitably located weighbridges, along with excessive crises-crossing of roads, result in multiple congestion points.

2.4.4 Inadequate Cargo Handling Equipments / Machinery

The cargo handling equipments / machinery at the ports were commissioned years ago and have outlived their designed lifespan. The productivity of these equipments does not conform to the requirements of the modern calling at ports. Further, the right type of cargo handling accessories like container spreader, special gears for handling wood pulp, newsprint, logs etc., required by the trade are either not available or are insufficient. Sophisticated container handling equipment like Quay Gantry Crane (QGC) is available only in few amounts. Further, other types of container handling equipment at the terminal like Rubber Tiered Gantry Crane (RTG), Rail Mounted Gantry Cranes (RMGC), Top Lift Trucks (TLTs) and Reach Stackers (RS) are yet to be provided in sufficient numbers at most of the dry ports.

For dry ports predominantly handling dry bulk cargoes, productivity depends on the capacity of wharf cranes and the grabs. These are insufficient to cater to the needs of all the users. It may not be economical to procure all equipment, but depending upon demand, the port can either procure or outsource the same.

2.4.5 High down Time of Equipments

The equipment available at ports suffers from frequent breakdown due to poor maintenance policies, i.e. reactive instead of preventive maintenance. The large response time, non availability of spares, dependence on proprietary parts and cumbersome purchase procedures result in large down time of equipment.

2.4.6 Custom Clearance

The impact on operations of custom clearance procedures at ports and in transportation is well established (Clark, Dollar and Micco 2004), and one of the main advantages of dry port is the possibility of concentrating custom inspections outside of the seaport terminals (Roso 2008, Roso, Woxenius and Lumsden 2009*b*). One of the first definitions of dry ports, Inland Clearance Depot, (UNECE 1998) specifically accounted for the provision of customs clearance services. These facilities are defined as inland intermodal terminals dedicated to the handling and storage of goods under custom transit. The typology of operations performed in dry ports differs globally but typically include good clearance for temporary storage for onward transit, export, warehousing or import. The provision of custom clearance and quarantine services imposes high security procedures for accessing the dry port, similarly to seaports, and depending on the country may include high fencing, cameras and guards (Roso and Lumsden 2010). However both importers and exporters face high costs for sea transport and substantial inefficiencies in port clearance procedures.

UNCTAD (2003) reports that the average freight rate for imports for example is 47% higher than in most developing countries and twice the rate in developed countries, estimated at 5.21% (UNCTAD, 2003). From a political economy perspective however, entry ports are also the place where the customs clearance procedures are completed to allow goods to enter definitively or temporarily into the country. However, there is a growing awareness of the significance of customs clearance time efficiency to facilitate international trade. In theory, the time to perform import clearance formalities starts much before containership arrival and is not therefore strictly related to cargo dwell time.

Customs clearance and cargo dwell time are therefore closely related. Customs take (sometimes rightly) a large share of the blame for long delays, but they are not alone (UNCTAD, 2003).

For some operations, customs clearance is efficiently managed by shipper and clearing and forwarding agents, and transactional dwell time is not a major contributor to total dwell time.

For other however the time lost in the clearance process because of missing documents, errors in the declaration or simply lack of anticipation is so important that it explains an important proportion of long delays. Moreover, customs administration are just one player among others players who manage official formalities. Nevertheless, in terms of dwell time, customs processes still usually "mark" the beginning and the end of most of the processes (UNCTAD, 2003). Security and custom regulation can impose substantial delays in the operation of the terminal and it is therefore essential that coordination with the agencies responsible for these activities is negotiated and security practices are embedded in terminal management.

To our knowledge, no one has specifically analyzed port dwell time as a subject of research by itself. In other words, port dwell time is generally seen as a determinant of analytical outputs such as port efficiency, port capacity, or even trade volumes, but is not treated as an issue worthy of attention by itself. Nevertheless, research has shown its growing importance and relevance in the context of modern port operations and trade logistics. This study intends to fill this gap in knowledge belongs to the following perspectives.

Assessment and collection of Customs duties on import and export cargoes as per Customs laws (Customs Act, 1962 and Customs Tariff Act, 1975); Enforcement of the various provisions of the Customs Act governing imports and exports of cargo, baggage, postal articles and arrival and departure of cargos. Discharge of various agency functions and enforcing various prohibitions and restrictions on imports and exports under Customs Act and other allied enactments; Prevention of smuggling including interdiction of narcotics drug trafficking; and international passenger processing.

2.5 Dry port Stakeholders and their Roles

2.5.1 Dry Port Trusts

Provide infrastructure facilities like equipment, storage space, navigational channels and road / rails network within the port area; Perform cargo operations like loading / un-loading of trucks, container / cargo handling operations like landing of containers/cargo from truck, movement to storage yard, stuffing/unstuffy of containers facilitating the process of examination through movement of containers to CFSs, delivery / aggregation of containers/cargo; Provide berthing facilities, cargo handling facilities including manpower and equipment, cargo storage space in the form of open land or shed space etc., assessment and recovery of port related charges and documentation formalities for import / export goods.

2.5.2 Container Operating Agent

They represent the container Lines and provide the steamer agent with details of the containers belonging to them in the vessel. They also give the delivery order to the Clearing Agent / Importer for clearing the container. Similarly, the liner gives the authorization for loading containers on a truck to the clearing agent. They recover terminal handling charges and container detention charges as also issue Bill of Lading and Agent's delivery order to the consignees.

2.5.3 Importer / Exporter / Customs House Agents (CHA)

Importers / exporters are the owners of goods being imported / exported. They are mainly responsible for completion of Customs and port formalities either themselves or through a CHA. CHA is a person engaged in providing any service, either directly or indirectly, connected with the clearing and forwarding operation. They are licensed to enter the customs premises and clear the goods through Customs / port after payment of all duties and port charges on behalf of the importer. Similarly, the CHA brings in the export cargo and completes all documentation for loading on behalf of the exporter.

2.5.4 Transport Operators (Railway / CONCOR / Private) Road

The cargo cleared for delivery from the port or received for export in the port is transported to / from the consignor / consignees' premises by the private transporter.

Railways

The Railways provide the permanent way and rolling stock for the transportation of rail bound cargo. The availability of these resources may have an effect on the dwell time of cargo. The Container Corporation (CONCOR) handles the rail bound containers.

Lack of infrastructure or other resources with the CONCOR / other private operator affects the dwell time of containers.

Container Freight Stations (CFS) / Inland Container Depots (ICD)

Receipt and dispatch / delivery of cargo; stuffing and stripping of containers; transit operations by rail / road to and from serving ports; Customs clearance; consolidation and dis-aggregation of LCL cargo; temporary storage of cargo and containers; reworking of containers; and maintenance and repair of container units.

Security Agencies

Government security agencies like the CISF or private security agencies are entrusted with the safe keeping of cargoes inside the port premises.

They are required to prevent pilferage / damage of cargoes. The regulatory measures imposed by these authorities may affect the dwell time of cargoes within the dry port.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter discusses research methodology used in carrying out the study in Ethiopian shipping and logistics service enterprise especially in Modjo Dry Port. It consists of research design, research approach, Sources of data and data collection tools, procedures of data collection, population and sampling techniques, data analysis and presentation, reliability, validity and potential ethical issues of the Study.

3.1 Description of the study area:

The study area was at "Ethiopian Shipping and Logistics Services Enterprise Modjo dry port branch" & is located around Modjo town.

3.2 Research Design

Research design is a detail plan, structure and strategy that used to answers research questions and control variables. It helps to control the experimental, extraneous and error variables of a particular research problem being investigated and specifies the methods and procedures for collecting and analyzing needed information. In this study the researcher used explanatory and descriptive research design to conduct the study, this is because explanatory study is helpful when a researcher wants to make causal inferences and it seeks to identify cause-and-effect relationships. Explanatory research have been used in order to assess impacts of specific changes on existing norms, various processes etc and also it focus on analysis of a situation or problem to explain the patterns of relationships between variables.

3.3. Research Approach

For this study the combination of quantitative and qualitative research approach have been employed in order to attain the objective of the study. The combination of two approach helps to compare two data sources was considered because it allows determining if there is a pattern evident in the data. The benefit of the study would be containing information from data that are going to be merged. The results produced have been helps to better understand the phenomenon to be studied. Mixed research approaches have been employed for this research completion to generate rich data from multiple sources, which are both quantitative and qualitative type. The researcher would be interested to present both employees view and management's attitudes towards cargo dwell time efficiency. Therefore, the study would be followed explanatory type

of research and Survey research strategy used. Primary data or information from survey questions has quantitative characteristics and qualitative data was gathered through key structure interview. The research is academic and only in limited period, it is cross-sectional type in terms of time dimension.

3.4 Population and Sampling Technique

The total population of this research includes 500 employees of Modjo dry port and others that are worked around from the dry port. From the total population, 200 of them are from Modjo dry port worker , 100 of them are from the main importers of the country, and the rest of 200 are from ERCA(customs worker) 'that are currently operating their job along modjo dry port and responsible governmental organizations as the universe of this research work. Among these samples have been taken from main importer, Modjo dry port worker and ERCA (customs worker). Document review and questionnaire from Modjo dry port operators, interview and Focus group discussion with 3 governmental organizations have been made. Here, the researcher was take the manager purposively from each sampled dry port operators and each governmental organizations. This is in order to get detailed and sufficient information from the concerned individual in the organizations. Purposively for selecting these departments is, most of the company's operation activities are dependent upon the performance of these departments.

The researcher used both probability and non-probability sampling techniques to select a sample from this population. The researcher conducted the study by selecting the respondents using proportionate stratified probability sampling techniques from ten stratums.

Simple random sampling was used to select a sample from each department.

Non probability sampling technique was also used to gather data from each stratum or department that involves purposively sampling to interview with three stratums (managers and operation heads) of each department. Among these samples were taken from document review and questionnaire from sample department, interview with three department managers or operation heads was made and 10 Ex- employees by phone. Here, the researcher took the managers purposively from each sampled departments. This is in order to get detail and sufficient information from the concerned individual in the organizations.

3.5 Sampling Frame

The sampling frame of this research is a total of 500 Modjo dry port stakeholders from this 200 Modjo dry port workers, 100 main importers, and 200 ERCA (customs worker) that are operating along Modjo dry port.

3.6 Sampling Unit

The sampling units of this research paper will be 84 sample respondents from a total of 500 Modjo dry port, main importer and ERCA (customs worker). Therefore, representative sample of these employees have been calculated based on formula for sample size determined for finite population.

3.7 Sample size

Among, 500 Modjo dry port, main importer and ERCA (customs worker) operating along Modjo terminal. Among these importers and dry port operators, the researcher has been use the following formula to determine the sample size which is developed by Yemane (1967).

$$n=N/ (1+N (e)^{2)}$$

Where:

N= population size =500

n= sample size

e= level of statistical significance set (10% =0.1)

Therefore, the sample size (n) =500/ $(1+500*(0.1)^2)$ $^{=}$500/6=84

As indicated above to determine the sample size, this study have been employed a confidence interval of 90%. The justification for this is that to have manageable sample size by considering the resources and time constraints and also for the purpose of making analysis process encouraging and free from laborious task. Then, to determine the sample size of each stratums using proportionate sampling

$$ni=(n*Ni)/N$$

Where

ni=sample of i^{th} strata

n=targeted sample=84

Ni=population of i^{th}strata

N=Total population=500

Let N1=dry port workers=200

N_2=main importer=100

N_3=customs worker=200

n_1= (n*Ni)/N= (84*200)/500=34

n_2= (84*100)/500=17

n_3= (84*200/500=33

Therefore, the researcher selected a sample of 34 from dry port workers, 17 from main importer and 33 from customs workers working along the Modjo terminal.

And finally, using systematic sampling the researcher have been select k^{th} element of sampling frame of the stratum, where **k=ni/N** for each stratum that would be followed lottery method of setting the starting point.

3.8 Source of Data and Data Collection Tools Used

The researcher used both primary and secondary data and the collection process have been done through a systematic sequence of events. The process began by informing in advance and getting permission from the port and terminal sector in Modjo dry port in order to avoid any possible stop that might arise from lack of permission to conduct the research.

Primary source of data was obtained from the sample population of Modjo dry port, customs and main importers through questionnaire and interview, and from concerned regulatory government institutions through interview and focused group discussions. And also personal observations have been used to observe the reality on the ground especially concerning dwell-time and other issues at different checking points.

Secondary source on the other hand, was collected from printed materials, company reports and books. The works of other researchers and publications (mainly, journals, thesis, and online resources) and Internet will also used. Moreover, the researcher was used written documents, annual reports make as a source of data. Secondary sources of data also obtained from document review and reports of Modjo dry port and companies, the statistical abstracts and annual report of logistics and dry port sector, Ethiopian Revenue and Customs Authority, Ethiopian shipping and logistics service enterprise, research papers/thesis's, publications, unpublished materials.

3.9 Method of data collection

Two data collection instruments have been used to gather relevant data for the purpose of the study. These are questionnaire as the major tool and interview with officials as supportive instrument to triangulate the data found through questionnaire.

- ✓ **Questionnaire-** according to Yount (2006), the standardized wording and structured questions of the questionnaire provide a higher reliability in the data than is practically able to be obtained by interview and is completed at the subjects' convenience. data is more valid under these conditions than when answers are given "on the other" in an interview so questionnaire was an advantage over some other types of surveys in that this is cheap and doesn't require as much effort from the respondent and often has standardized answers that make it simple to compile data. In the questionnaire close-ended questions have been incorporated in order to get the desired information.
- ✓ **Interview** - In interview, through direct personal investigation researcher collects data personally from the sources concerned. Kothari (2004) stated that, in an interview the interviewer on the spot has to meet people from whom data has to be collected. Interview used to generate in depth data and gives greater flexibility for questions, and is suitable for intensive investigations. Hence, from three department heads and managers face to face interview were carried out and the interview have been designed in a way that more specific and truthful answers were got. This method helped the researcher to get additional information that has been not provided by the questionnaires.
- ✓ **Focused group discussions**: This would be used to get detail information from logistics companies managers, operation managers and responsible government regulatory bodies, directories and department heads working along the sector (Modjo dry port).
- ✓ **Observation**: was used to observe the study area that helps the researcher to get chance to particularly see the challenge practically on the ground.

The following procedures have been followed by the researcher to collect the data required for the study.

1. Data collection or gathering tools are questionnaire and interview check list was prepared.
2. The questionnaire develop for current employees was pilot tested to check the clarity
3. Collection and gathering is made based on the feedback from the pilot test
4. The amended questionnaire was delivered by hand to the respondent at their work stations during working hours and collects through the researcher.
5. Interview session was conduct with the management staff and the information compiled accordingly.

3.10. Method of Data Analysis

The researcher used both quantitative and qualitative data analysis tools in the course of the study. Quantitative data that were collected through questionnaire were analyzed using SPSS software program and Microsoft excel 2007 as descriptive statistics like frequency, percentages, mean and standard deviation. To make data presentation attractive for readers, the researcher used visual aids such as frequency, tables and charts. Data obtained from interviews was qualitatively analyzed through narration to triangulate the validity and reliability of data gathers the survey questionnaire.

3.11. Reliability Test

To evaluate reliability, this study or research was employed interviews and documentation. Also pilot tests of questionnaire were carried out by cronbach alpha to guarantee a common understanding of questions among respondents. This study has mainly assessed factors affecting cargo dwell time in dry port and the study has been concentrated on theories and empirical perspectives that have made an effort towards establishing factors affecting cargo dwell time in dry port. The main results of these factors affecting cargo dwell time in dry port are: lack of well organized dry port capacity and infrastructure, inadequate modern gantry crane machine, custom clearance procedure and lack of fully structured IT system in dry port are the main factors that affect cargo dwell time.

3.12. Validity

To measure validity of the research, this study was employed interviews and documentation. Also data have been gathered from higher level, middle level and lower staff as units of analysis and the study has been examined by advisor and other colleagues to use appropriate research methodology based on the objective of the study that can be addressed. The different units ensured adequate representation of respondents who have experiences and seniority Modjo dry port hence validation. Data collection and gathering tools were questionnaire and interview check list was prepared and the questionnaires develop for current employees were pilot test to check the clarity and collection have been based on the feedback from the check list and amendment questionnaire is delivery to the respondents.

3.13. Ethical Considerations

Confidentiality or privacy is some of the most corner stone of field research activities in order to get relevant and appropriate or well organized data. The researcher assured the purpose of the research paper and confidentiality of any information gather through questionnaire on the introductory part of the paper. During data gathering some respondents didn't show willingness to respond to the questionnaire but, the researcher approached and explained the purpose and assured the confidentiality and finally they would be positive to give response.

3.14 Data Presentation

After the data is analyzed the findings and results of the research was presented by using tables, frequency distribution, graphs/charts, Percentages and in the form of statement.

The researcher was used Likert scale as parameter to measure the variables.

CHAPTER FOUR

PRESENTATION, ANALYSIS & INTERPRETATION

Introduction

In this topics data presentation, analysis and discussion of the findings were included. The analysis begins with a description of the respondents biographical profiles, which is help the reader to understand the workforce of the respondent in the factor that affect cargo dwell time in dry ports. The questions on the factors that affect cargo dwell time in dry port presented and analyzed by using Descriptive statics to see the factors affecting cargo dwell time.

Response Rate

From the data collected, out of 60 questionnaires administered, 30 were filled and returned which represents 50% response rate. Such a response rate is considered adequate according to Mugenda (2003) who mentioned that a 50% response rate is adequate, 60% good and above, while 70% is rated very good. Bailey (2000) collaborates that a response rate of 50% is adequate, while a response rate greater than 70% is very good. This infers that the response rate in this case of 50% was an adequate representation of the entire targeted population.

4.1 Data Presentation and Findings

Background Information

The research address to establish the background information of the respondents by using the following parameters: gender, age, level of education, type of organization, name of department section/unit, position held by the respondents and number of years respondents have been working with the department.

Gender Distribution

Table 4.1: Gender of the Respondents

Gender	Frequency	Percentage
Male	22	73.3%
Female	8	26.7%
Total	**30**	**100**

The descriptive statistics of the study indicates that 22 (73.3%) of the respondents were male, while the remaining 8 (26.7%) were female as shown in Table 4.1. This implies that more male respondents participated in answering the questionnaires.

Age of the Respondents

Table 4.2: Age of the Respondents

Age	Frequency	Percentage
Less than 24 years	0	0%
25 – 29 years	0	0%
30 – 45 years	21	70%
46 – 50^{+} years	9	30%
Total	**30**	**100**

The finding shows that 70% of the respondents are aged between 30 – 45 years, 30% of the respondents are aged between 46 – 50^{+} years. This indicates the majority of the respondents are aged between 30 – 45 years. It implies that most of the worker's at Modjo dry port are matured and have great experience so they give a full and unbiased information for the study.

Level of Education

Table 4.3: Level of Education

Level of Education	Frequency	Percentage
First degree	19	63.3%
Diploma	0	0%
Post Graduate degree	3	10%
Certificate	5	16.6%
"O" Level	2	6.7%
CPA	1	3.3
Total	**30**	**100**

From the descriptive statistics shown in table 4.2, 19 (63.3%) of the respondents were reported to be first degree holders, 3 (10%) of them were holders of Post Graduate degree, 5 (16.6%) of the respondents were holders of certificate, 2 (6.7%) were reported to be holders of "O" Level, while the remaining 1 (3.3%) respondent had CPA so in the above statistics the majority of the respondents are first degree holders and it implies that there is no opportunity to upgrade in to post graduate level and they give more attention in operational service in Modjo dry port.

Type of Organization

Table 4.4: Type of Organization

Organization Type	Frequency	Percentage
Modjo terminal operation	22	74%
Importers	3	10%
Customs	5	16%
Total	**30**	**100**

The finding reveals that 74% of the respondents came from Modjo cargo terminal operations, 3 (10%) of the respondents are from main importers, while 5 (16%) of them came from customs authority. This implies that majority of the respondents came from the Modjo terminal operation and it used to get a clear understanding on the factors that affect cargo dwell time in Modjo dry port area because the majority of the respondents are in the dry port operation area and have a clear knowhow on the problem of dwell time occurred at that area.

Name of Department section/unit

Table 4.5: Department Section/unit

Section/Unit	Frequency	Percentage
Conventional Cargo Operation	9	30%
Monitoring and Control	1	3.3%
Heavy Lift	1	3.3%
Maintainer Services	1	3.3%
Cargo Terminal Operations	11	36.7%
Administration	2	6.7%
Planning Office	2	6.7%
Manifest	1	3.3%
Claim and refund	1	3.3%
Shore	1	3.3%
Total	**30**	**100**

Table 4.5 shows that 30% of the respondents came from the Conventional Cargo Operations department/section, 3.3% of the respondent came from monitoring and Control section, 3.3% of the respondent works in Heavy Lift section, 3.3% of the respondent works in Maintainer Services section, 36.7% of the respondents came from Cargo Terminal Operation department/section, 6.7% of the respondent came from Administration, 6.7% of the respondents came from Planning Office section, 3.3% of the respondent work in Manifest section, 3.3% of the respondent work in Claim and Refund section, while 3.3% of the respondent works in Shore section as a general it implies that there are many section in dry port area and in this section the majority of the respondents are from cargo terminal operation and they have a close relation with our study about factors affecting cargo dwell time in dry port and I hope to get detail data to the study

What is your position/status in the organization?

Table 4.6: Respondent Position

Position	Frequency	Percentage
Senior Manager	2	6.7%
Middle Manager	5	16.7%
Junior Manager	18	60%
Operator	0	0%
Clerical	3	10%
Docker	1	3.3%
Unionisable	1	3.3%
Total	**30**	**100**

The result from Table 4.6 shows that 6.7% of the respondents hold the position of Senior Manager, 16.7% of the respondents hold the position of Middle Manager, 60% of the respondents hold the position/status of Junior Manager, 10% of the respondents are clerical workers, 3.3% of the respondent holds the position of Docker, 3.3% of the respondent holds the position of Union sable, while operator position accounts for 0%. It indicates that majority of the respondents hold the position/status of Junior Manager and it implies for our research purpose we have used mostly the junior level manager and they may have no detail experience on the top management of operation and that affect our study to get fact information on the highly operation management side.

How many years you have been worked in this organization?

Table 4.7: Number of Years you have been worked in the organization

Year	Frequency	Percentage
Over 10 years	22	73.3%
6 – 9 years	8	26.7%
3 – 5 years	0	0%
Less than 2 years	0	0%
Total	**30**	**100**

The result from Table 4.7 shows that 73.3% of the respondents have worked in their respective department/section for over 10 years, 26.7% of the respondents have worked between the periods of 6 – 9 years. While none of the respondents worked between a periods of 3 up to 5 years and less the 2 years respectively. This shows that majority of the respondents have worked with their respective departments/sections at Modjo dry port for over 10 years and that used for the study to build up the data by experienced worker and the research was get real respondent and answered depends on their large time experience.

Cargo dwell time efficiency

To what extent do you agree or disagree cargo dwell time Efficiency can be measured by the level of increase in inputs and throughput?

The study sought to find out the extent of agreement or disagreement as to whether cargo dwell time efficiency can be measured by the level of increase in inputs and throughput at the Modjo dry port. As Figure 4.1 indicates, 6.7% of the respondents strongly disagree, 3.3% of the respondents disagree, 3.3% of the respondent was uncertain, 50% of the respondents agree while 36.7% of the respondents strongly agree. The finding shows that majority of the respondents answered cargo dwell time is measured by the level of increase in input and throughput of cargo at dry port it implies that there is low input and output of cargo at dry port that indicates there is a problem on the flow of cargo or problem on the standard limits of cargo dwell time seat to the dry port.

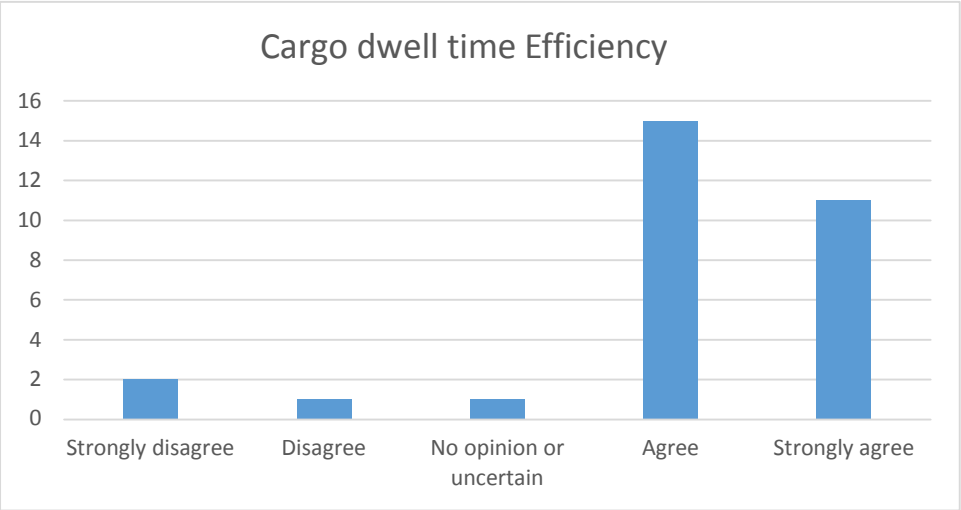


Fig 4.1: Cargo dwell time Efficiency

How do you assess the throughput of cargo at Modjo dry port terminal?

The study required to assess the current throughput of cargo at Modjo dry port. It gives that 40% of the respondents assess the throughput to be moderate, 53.3% assess it to be high, 6.7% of the respondents assess it to be very high, while very low and low options account for 0%. This implies that the majority of the respondents answered throughput of cargo at Modjo dry port currently is encouraging, due to its high throughput so this is an appreciatable action and to be continued as usual.

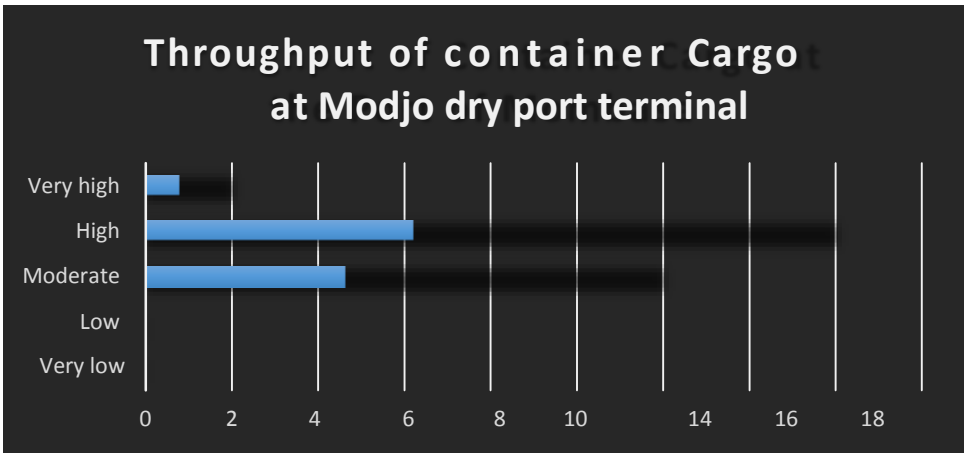


Figure 4.2: Throughput of Container Cargo at Modjo dry port

Do you think by enlarging the current cargo terminal will increase the volume of cargo inputs and throughputs respectively?

The study sought to ascertain as to whether expanding the current terminal will increase the volume of container inputs and throughputs respectively at Modjo dry port. Of the 30

Respondents, 30% of the respondents indicate maybe, meaning they are not too certain, 70% of the respondents overwhelmingly say yes, while 0% accounts for no. This implies that the current level of improvement at Modjo dry port is imperative for incremental expansion to increase more cargo traffic.

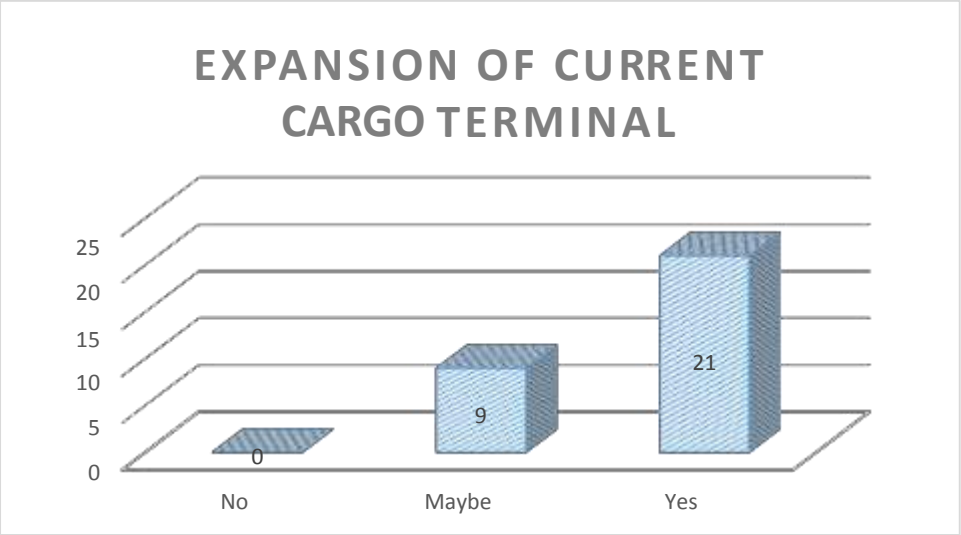


Figure 4.3 Expansion of Current Cargo Terminal

How do you grade the current performance of cargo terminal at Modjo dry port?

The study aimed to grade the current cargo terminal performance at Modjo dry port.
Out of the 30 respondents, 3.3% of the respondent grades the current performance very poor, 0% accounts for poor, 46.7% of the respondents grades the performance on the average, 36.7% of the respondents grade the performance good, while 3.3% of the respondent grades the performance to be excellent. This concludes that the current performance of cargo terminal at Modjo dry port is on the average and have many challenges to reach the international standard and faces many problems on the performance of the terminal and have waiting many jobs to achieve its long term plan.

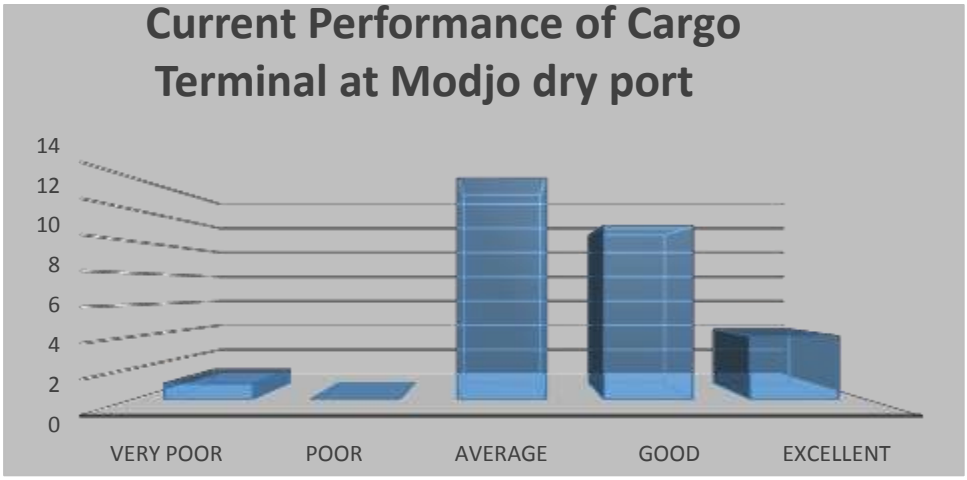
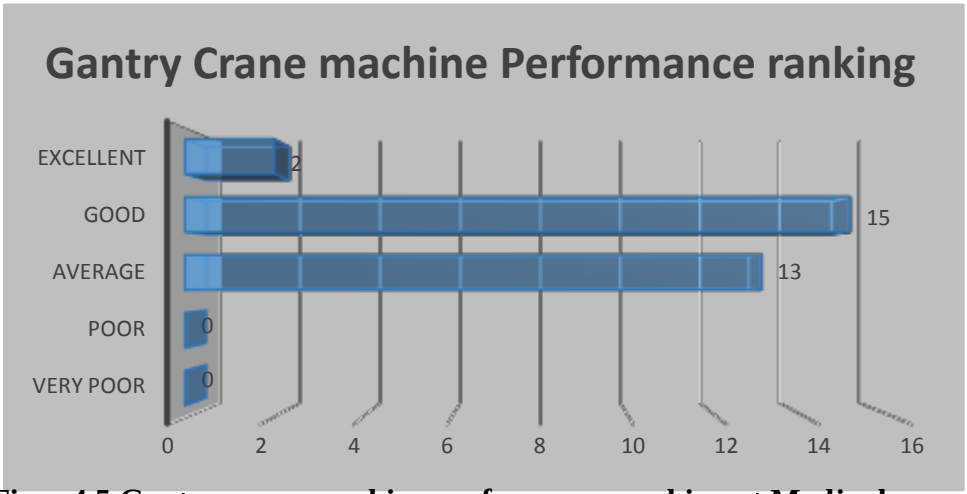


Figure 4.4: Current Performance of Cargo Terminal at Modjo dry port

Gantry crane machine

How do you rank the performance of gantry crane machine in terms of loading and unloading of cargo at Modjo dry port?

A 5-point Likert Scale was used to rank the performance of gantry Crane machine in terms of loading and unloading of cargo at Modjo dry port. The finding shows that 43.3% of the respondents rank the performance of gantry Crane machine on average, 50% of the respondents ranks it good, 6.7% of the respondents rank the efficiency/performance to be excellent, while very poor and poor were left unanswered. Therefore, the finding concludes that the performance of gantry Crane machine in terms of loading and unloading of cargo at Modjo dry port is good but it also have challenge to satisfy customers need and must have update the machine through time as the customers and the time as well as the whole technology would be needed.



Figre 4.5 Gantry crane machine performance ranking at Modjo dry port

How do you grade the operational effectiveness of the current gantry crane machine at Modjo dry port?

The study sought to grade the operational effectiveness of the current gantry Crane machine at Moddjo dry port terminal. Finding reveals that 3.3% of the respondents grade the operational effectiveness ineffective, 53.3% of the respondents grade it on average, and 36.7% of the respondents grade the operational effectiveness very effective. This implies that the operational effectiveness of the current gantry crane machine at Modjo cargo terminal is on average.

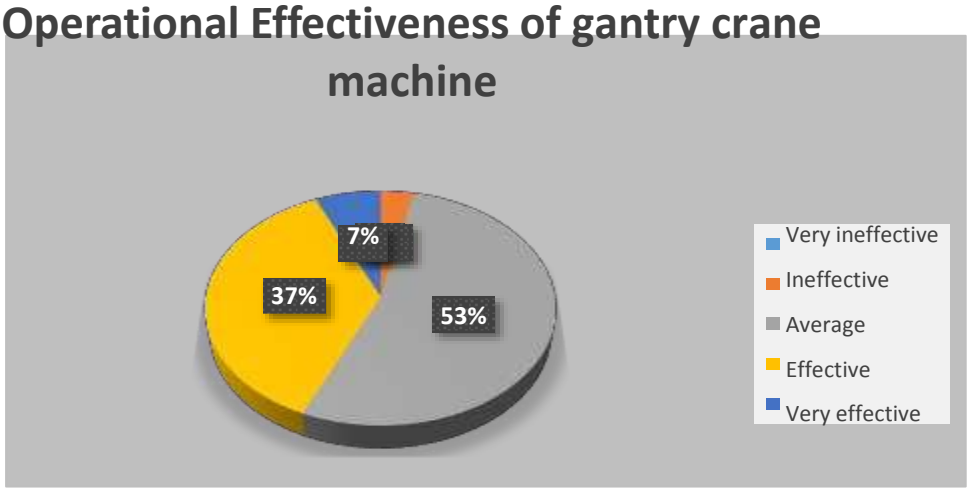


Figure 4.6: Operational Effectiveness of gantry Crane machine at Modjo dry port

On average, how could you measure gantry crane operational efficiency?

A 5-point Likert Scale was used to measure gantry crane operational efficiency. Of the 30 respondents, 6.7% of the respondents' measure yard crane operational efficiency very good, 36.7% of the respondents responds it good, 56.7% say satisfactory, while poor and very poor were left unanswered.

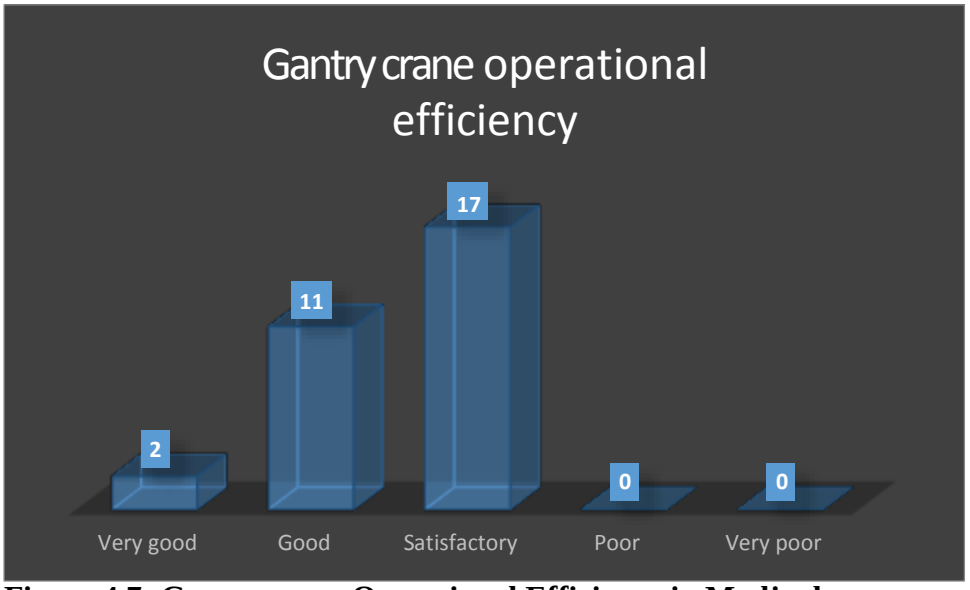


Figure 4.7: Gantry crane Operational Efficiency in Modjo dry port

4.6 Dwell Time

Table 4.8: Dwell time as an indicator to assess cargo terminal efficiency

Option	**Frequency**	**Percentage**
Strongly disagree	0	0%
Disagree	0	0%
No opinion or uncertain	0	0%
Agree	12	40%
Strongly agree	16	60%
Total	**30**	**100**

The study sought to find out the extent of agreement or disagreement as to whether dwell time is an indicator to assess cargo terminal efficiency at Modjo dry port. As Table 4.8 depicts, 40% of the respondents agree, 60% of the respondent strongly agree, while strongly disagree, disagree and uncertain were unanswered. The finding shows that dwell time are used as an indicator to assess the efficiency of cargo terminal at Modjo dry port.

Table 4.9 Turnaround time of Containers at Modjo dry port

Option	**Frequency**	**Percentage**
Very much below average	0	0%
Below average	18	60%
Above average	11	36.7%
Very much above average	1	3.3%
Total	**30**	**100**

The study sought to find out the average position of turnaround time of Containers at Modjo dry port. Table 4.8.1 shows that, of the 30 respondents, 60% of the respondents place the turnaround time of trucks below average, 36.7% of the respondents place it above average, 3.3% of the respondent indicates very much above average, while very much below average was unanswered. This infers that the turnaround time of Containers at Modjo dry port is below average.

Table 4.10 Transactional dwell time at Modjo dry port

Option	Frequency	Percentage
Very slow	0	0%
Slow	1	3.3%
Average	20	66.7%
Fast	9	30%
Very fast	0	0%
Total	**30**	**100**

The study sought to assess transactional dwell time at Modjo dry port. Of the 30 respondents, 3.3% of the respondents assess the transactional dwell time to be slow, 66.7% of the respondents assess it on average, and 30% of the respondents answers the transactional dwell to be very fast, while very slow and very fast were unanswered. The result gives that transactional dwell time which is the total time taken to complete clearance processes is on average.

Infrastructure

How do you assess the significance of both physical and soft infrastructure in Modjo cargo terminal operation?

The study sought to assess the significance of both physical and soft infrastructure in cargo terminal operations. The result gives that 40% of the respondents assess both physical and soft infrastructure in terminal operations to be important, 60% of the respondents assess it to be very important, while the not important and somewhat important were unanswered. This implies that both physical and soft infrastructure play a major role in cargo terminal operation.

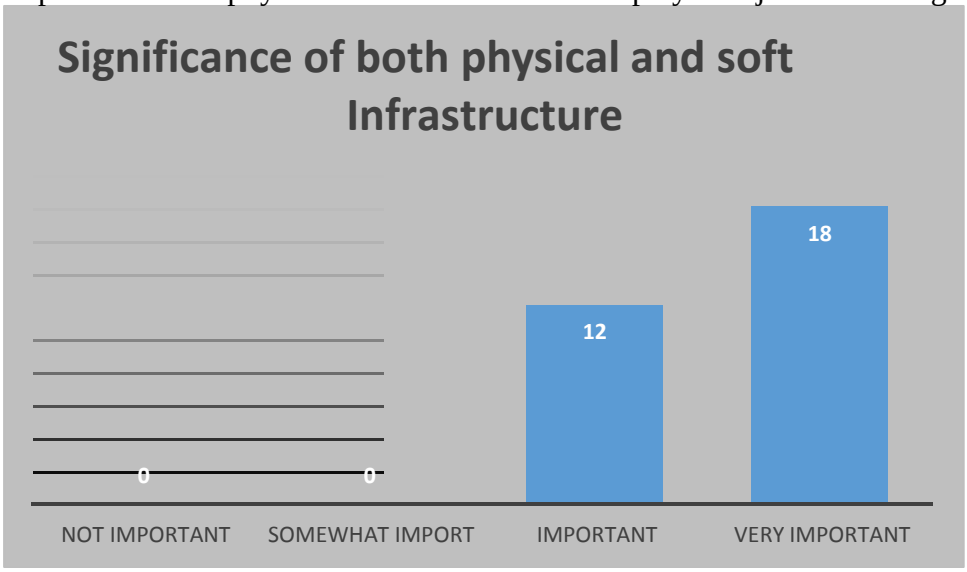


Fig 4.8: Significances of both Physical and Soft Infrastructure

How do you assess the congestion of cargo operations at Modjo dry port?

A 5-point Likert Scale was used to assess the congestion of cargo operations at Modjo dry port. Results gives that of the 30 respondents, 3.3% of the respondents assess the congestion problem of cargo operations to be very bad, 63.3% of the respondents assess it on average, 20% of the respondents assess it as being good, 13.3% of the respondents assess it to be very good, while none of the respondent mention it to be bad. This infers that the congestion problem of cargo operations at Modjo dry port on the average.

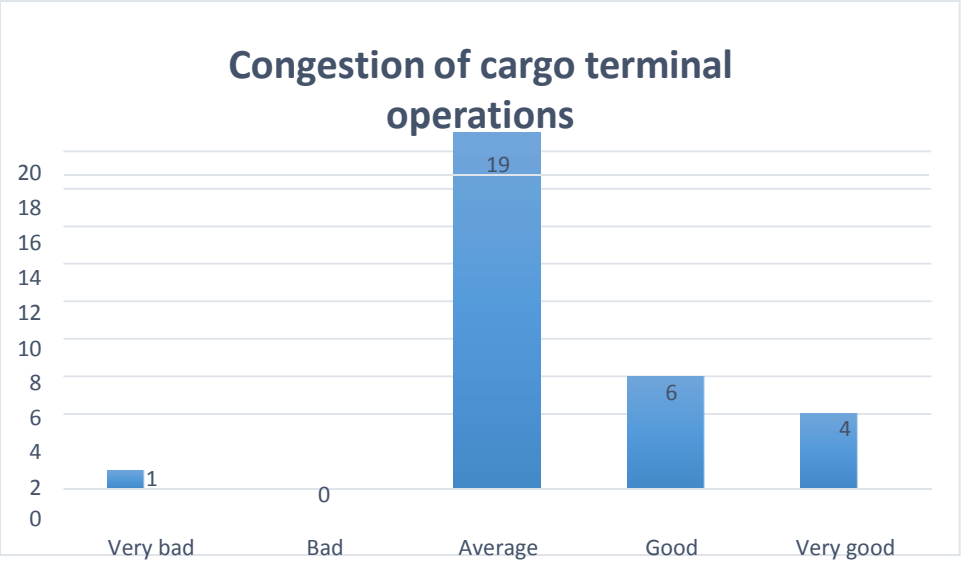


Figure 4.9 Congestion of cargo terminal operation in Modjo dry port

How do you have to describe the nature of congestion at Modjo dry port currently?

The study aimed to describe the current nature of congestion occurrence at Modjo dry port. The finding shows that 36.7% of the respondents describe the current nature of congestion occurring occasionally, 60% of the respondents describe it occurring sometimes, and 3.3% of the respondent describe it occurring frequently, while hardly ever and almost always were unanswered. Therefore, this suggests that the current nature of congestion at Modjo dry port occurs sometimes.

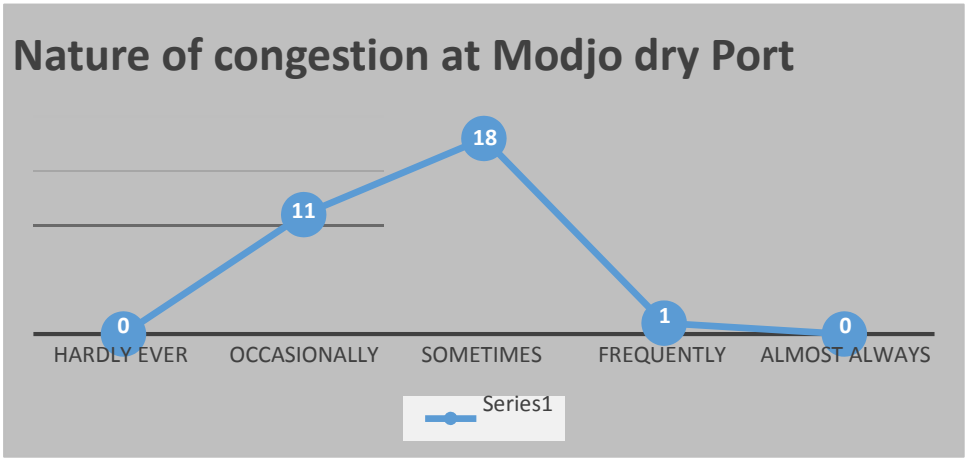


Figure 4.10: Nature of congestion at Modjo dry port

Generally, do you think by improving the Infrastructures will help minimize the congestion problem at Modjo dry port?

The study sought to get the view of respondents as to whether improving the infrastructure at the dry port will help minimize the congestion problem at Modjo dry port. The result gives that that 13.3% of the respondents say maybe, meaning they were uncertain to that, 86.7% of the respondents overwhelmingly say yes, while none of the respondent indicates no. This concludes that the congestion problem sometimes at the dry port can be minimized if only both infrastructures are improved.

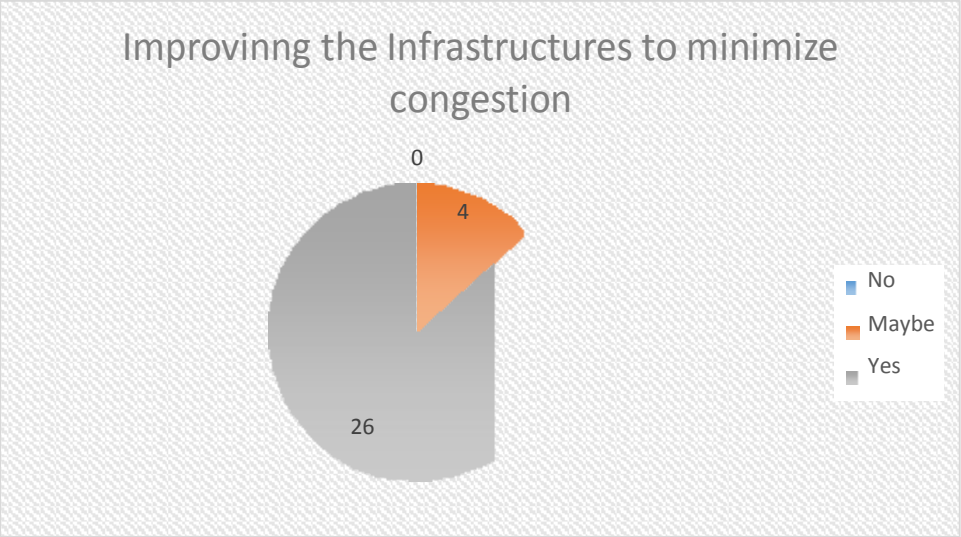


Fig 4.11: Improving the Infrastrctures to minimize congestion at Modjo dry port

How do you assess the competency of cargo terminal operators at Modjo dry port?

The study sought to assess the competency of cargo terminal operators at Modjo dry port. Finding reveals that out of 30 respondents, 80% of the respondents assess cargo terminal operators to be competent, 20% of the respondents assess cargo terminal operators to be highly competnt, while not competnt, some competent and some of them or uncertain were unanswered. This infers that cargo terminal operators are well trained and competent.

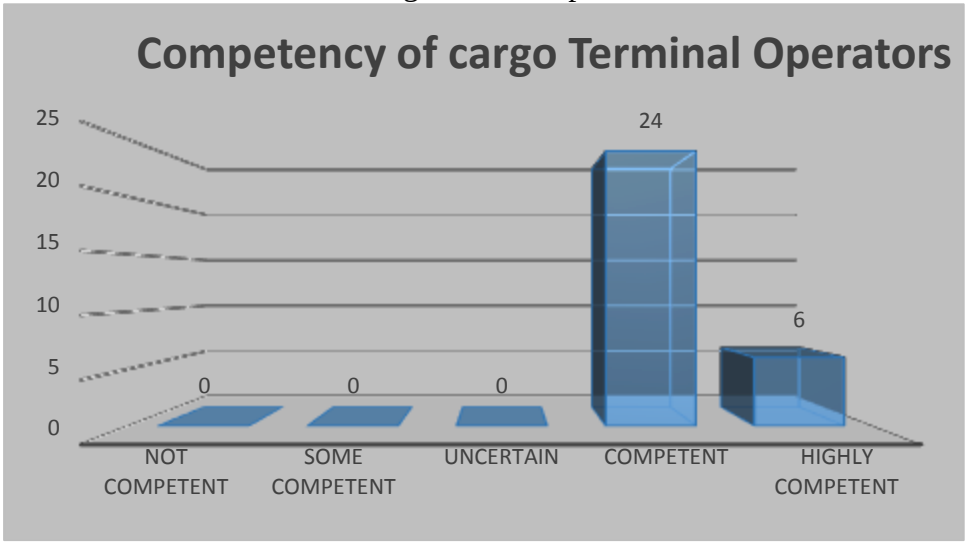


Figure 4.12: Competency of cargo terminal Operators at Modjo dry port

Custom Clearance

What is the average number of days used in clearing cargo at Modjo dry port currently?

The study sought to find out the current average number of days used in clearing cargo at Modjo dry port. Finding reveals that 20% of the respondents say within 24 hours, 20% of the respondents say 1 – 3 working days, 60% of the respondents say on average is 4 up to 6 working days, while 7 up to 9 and 10 up to 12 working days were unanswered. This shows that the average number of days used in clearing cargo at Modjo dry port is 4 – 6 working days; which is still below internationally acceptable standards of maximum 3 days dwell time.

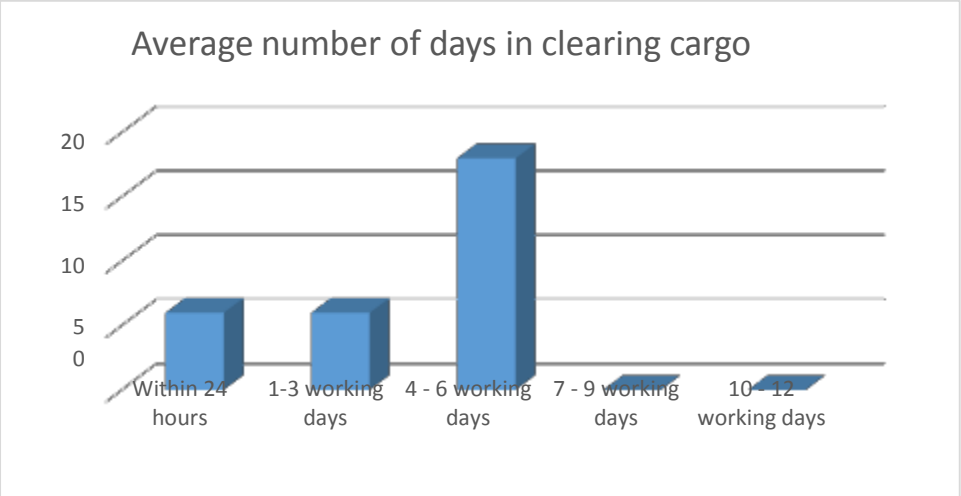


Figure 4.13 Average numbers of days for clearing cargo at Modjo dry port

How do you measure the effectiveness of custom clearance services at Modjo dry port?

The study sought to measure the effectiveness of custom clearance services at Modjo dry port. The result show that 10 percent of the respondents answer the effectiveness of custom clearance service ineffective, 56.7 percent of the respondents measure it on average, 30percent of the respondents measure it effective and none of the respondent measures it very ineffective. This implies that the effectiveness of custom clearance services at Modjo dry port is on average.

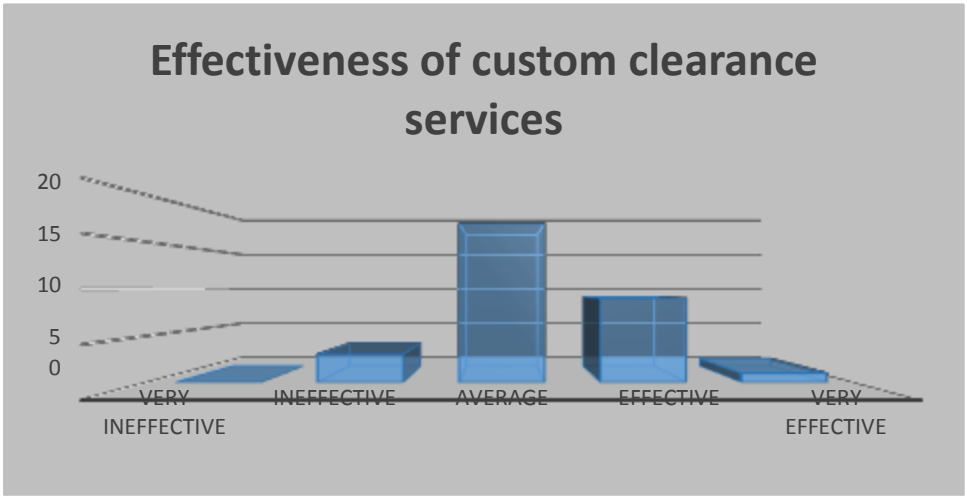


Figure 4.14 Effectiveness of custom clearance services at Modjo dry port

Do you agree or disagree that custom practices are indicators for measuring cargo terminal dwell time?

The study aimed to determine the extent of agreement and disagreement as to whether security and custom practices are indicators for measuring cargo terminal efficiency. 6.7% of the respondents disagree, 3.3% of the respondent was uncertain, 66.7% of the respondents agree, 23.3% of the respondents strongly agree, while none accounts for strongly disagree. This finding concludes that both security and custom practices are indicators for measuring cargo terminal efficiency in Modjo dry port.

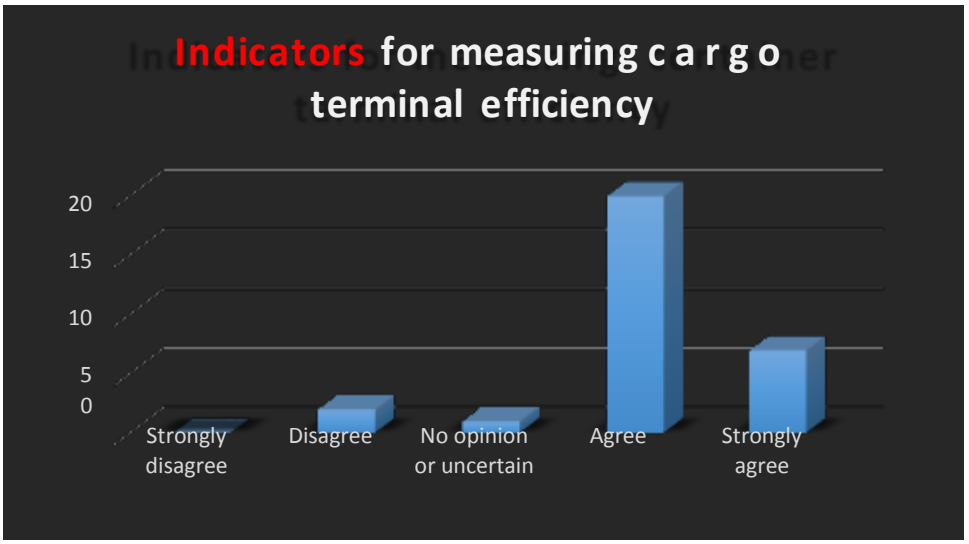


Figure 4.15: Indicators for measuring cargo terminal efficiency in Modjo dry port

Do you think that the lack of Integrated IT system poses substantial delays in custom clearance procedures at Modjo dry port?

The research gives to ascertain the opinion of respondents whether the lack of Integrated IT System poses substantial delays in custom clearance procedures. Finding shows that 3.3% of the respondents say no, 13.3% of the respondents say yes. This infers that the lack of Integrated IT System poses substantial delays in custom clearance procedures of Modjo dry port.

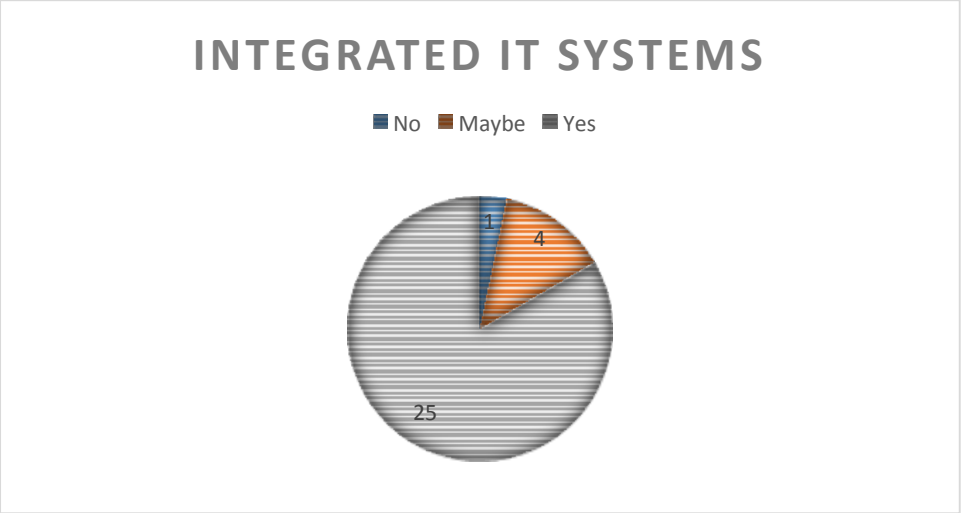


Figure 4.16 Integrated IT system of Modjo dry port

4.2 DISCUSIONS OF FINDINGS

How does Gantry crane machine affect cargo terminal?

Gantry Crane machine affect cargo terminal efficiency through three major factors: performance in terms of loading and unloading of containers, operational effectiveness and operational efficiency. Majority of the respondents representing 50% rank the performance of gantry crane machine at Modjo dry port as being good. 53.3% of the respondents grade the operational effectiveness of the current gantry crane at the terminal on average. Also the finding shows that 56.7% of the respondents measure the operational efficiency of the yard crane to be satisfactory.

What role does dwell time play on cargo terminal efficiency?

Dwell time plays major role in determining cargo terminal efficiency in dry port. 60% of the respondents strongly agree that dwell time is an indicator to assess the efficiency of cargo in dry port terminal. As it relates to the turnaround time of cargo at dry port, 60% of the respondent places it below average. With reverence to the frequency of containers calling at the dry port, 63.3% of the respondents point out frequently. This is due to it being the largest dry port in Ethiopia and its strategic location which serves other part of the countries. 66.7% of the respondents judge transactional dwell time at dry port to be on average. This is the total time taken to complete procedures of clearance processes. This is the decision based on allowing cargo to stay longer time in dry port

How does infrastructure influence cargo terminal efficiency in dry port?

Infrastructure for the purposes of this study refers to both physical (hard Infrastructure) and soft (Management of dry Port operations) which inversely influence cargo terminals. 60% of the respondents assess infrastructure to be very important. 63.3% of the respondents assess the congestion of cargo operations at dry port to be on average, due to limited yard capacity to store cargo before collection. 60% of the respondents indicate that congestion sometimes take place in dry port. This reflects the limited space available to hold cargo and trucks respectively. As a result of the congestion problems, major of the respondents accounting for

86.7% indicate that infrastructure needs to be improved in order minimize the congestion problems that sometimes occur at Modjo port.

What is the effect of clearance procedures on cargo terminal efficiency in Modjo dry port?

Findings from the study reveals that 60% of the respondents indicate that the average number of days used in clearing cargo at dry port currently is between 4 – 6 working days. This is still below an internationally acceptable standard of a maximum 3 days dwell time. Findings show that 56.7% of the respondents measure the effectiveness of custom clearance services at dry port to be on average. As it relates to security and custom practices being an indicator for measuring cargo terminal efficiency at dry port and 66.7% of the respondents agree. While majority of the respondents accounting for 83.3% agree that the lack of Integrated IT system poses substantial delays in custom clearance procedures at Modjo dry port.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY

The objective of the study was to assess Factors Affecting Cargo Dwell Time In Dry Port; a case study of the Modjo dry port. Previous studies have revealed that cargo dwell time is influenced by many factors which include but not limited to: Gantry crane machine, infrastructure, custom practices and security measures, container turnaround time, etc. The study thoroughly assessed these factors and discussed the extent to which they influence cargo dwell time within the logistics industry. The study targeted population included Modjo dry port workers, Main importers, Customs employee as well as dry port cargo terminal operators. Questionaire would be used as a major instrument to obtain primary data. The Questionnaire was designed using Likert scale ranging from 1-3, 1-4 and 1-5 respectively. A sample size of 50 respondents were used for the research of which 30 of the respondents participated in the study. The data were analyzed using Statistical Package for Social Sciences (SPSS) and Microsoft Excel 2007.

However, the findings revealed that cargo dwell time is measured by the level of increase in inputs and throughput of cargo at dry port. The results indicated that the volume of cargo handled at Modjo dry port is high and was revealed that expansion of the current cargo terminal will certainly increase the volume of cargo inputs and throughput to meet international standards. The findings also revealed that the performance of cargo terminal at Modjo dry port is on average.

Additionally, findings indicated that gantry crane machine performance in terms of loading and unloading of cargo at Modjo dry port is good. Also, findings indicated that the operational effectiveness of the current gantry crane at the terminal is on the average. On the other hand, the findings revealed that yard crane operational efficiency is satisfactory.
Moreover, findings indicated that cargo dwell time is an indicator to assess cargo terminal efficiency. Also, the results indicated that the turnaround time of containers at Modjo dry port is below average. The results further indicated that cargos are frequently called at Modjo dry port. This is due to it being the largest dry port in Ethiopia and its strategic location which serves as to the whole area in the countrie. The findings indicated that

transactional dwell time at Modjo dry port is on average. This is the total time taken to complete clearance processes. This is the decision based on allowing cargo to stay longer time at dry port.

As it relates to the significance of both physical and soft infrastructure in cargo terminal operation, findings revealed that it is very important. The results indicated that the congestion problem of cargo operations at Modjo dry port is on average. While findings revealed that the nature of congestion occurred sometimes. In reference to improving the infrastructure at the dry port in order to decongest cargo traffic, findings revealed that it is imperative.

Also, findings indicated that cargo terminal operators at Modjo dry port are competent and well trained. Furthermore, findings revealed that the average number of days used in clearing cargo at Moddjo dry port currently is between 4 – 6 working days, which is still below an internationally acceptable standards of a maximum 3 days dwell time. Findings revealed that the effectiveness of custom clearance services at Modjo dry port is on average. It was also revealed that security and custom practices are indicators for measuring cargo dwell time. Finally, findings indicated that the lack of Integrated IT System in Modjo dry port poses substantial delays in custom clearance procedures. This is also attributed to cargo dwell time efficiency in Modjo dry port.

5.2 CONCLUSION

This study aims to assess factors affecting cargo dwell time in dry port a case study of Modjo dry port. The researches try to answer the following questions:

1. To what extent does the system employed in dry port to receive and release cargos affect their dwell time?
2. To what extent does inadequate gantry crane machine affect the dwell time of cargo in dry port?
3. To what extent does infrastructure endowment affect cargo dwell time at dry port?
4. What is the effect of custom clearance procedures on dry port cargo terminal?

To accomplish the research objectives, a 1- 3, 1 -4 and 5-point Likert Scale questionnaire survey was conducted from the 29th of October – the 7th of November 2014, using quantitative survey. The questionnaire was printed out in hard copy. The hard copy questionnaire was created using Microsoft Word 2007. As the survey was about factors affecting cargo dwell time, the respondents were all employees who were knowledgeable about cargo operations at Modjo dry port.

The data was analyzed using SPSS and Microsoft Excel 2007 respectively. The research questions of the study have been answered in chapter 4. From the survey conducted, findings revealed that cargo dwell time is affected by the level of increase inputs and throughput of cargo. For the study quesstion "**How gantry crane machine affect cargo dwell time?"** The study gives that gantry crane machine affect cargo dwell time in dry ports through three major factors: efficiency in term of loading and unloading of cargos; its operational success as well as it operational efficiency.

For the third research question of this "**How does infrastructure influence or cargo dwell time performance in dry port?"** The study found out that infrastructure both physical (hard infrastructure) and soft (Management of dry port operations) inversely influence cargo dwell time. The major factors were associated with infrastructure: limited containing capacity to store cargo before collection, congestion problem due to over capacity. This have been overcome if the development of infrastructure is considered. From the very last research question **"What is the consequence of customs clearance procedure on cargo dwell time?"** The study found out that the delays in clearance procedures relating to the average number of days to clear cargo has effect

on cargo dwell time in dry port. With respect to Modjo dry port, it is 4 – 6 working days as revealed by the findings, which is still below internationally acceptable standards to maximum 3 days dwell time. The research found that the efficiency of custom clearance services has effect on container terminal efficiency. Also, the study found out that the lack of integrated IT System poses delays in custom clearance procedures which inversely affect dry port cargo dwell time.

From the above findings, the study concludes that the lack of adequate and performing gantry crane machine, container turnaround time, infrastructure both physical and soft, custom clearance procedure, and lack of integrated IT system in custom clearance procedure affect cargo dwell time in dry port.

5.3 RECOMMENDATIONS

After analysis of the research findings of all the collected data, the researcher is pleased to advance the following recommendations:

Gantry crane machine served as essential elements of the transshipment of cargo in the cargo terminal operation. It is therefore recommended that Ethiopian Shipping and Logistics Service Enterprise(ESLSE) have been clothed with the responsibility to "maintain, operate, improve and regulate Modjo dry port and considers continuous investments in modern gantry crane machine to supplement the current ones in order to continuously enhance productivity, increase cargo inputs and throughput respectively. This is indeed imperative due to the huge volume of cargo imports and exports to the dry port handles as well as being the major harbor for its neighbor areas and other part of the country. This in itself will make Modjo dry port to survive the global competition in Logistics industry which will subsequently boost economic growth for Ethiopia as a country.

Based on the findings from the survey, Government of Ethiopia needs huge investments in expanding the physical infrastructure such as adequate berthing facilities, yard capacity, railway, as well as expanding the hinterland road network. These physical infrastructures are the main factors of dry port productivity, agility and efficiency. Not only that also invest in the soft infrastructure especially the ICT infrastructure. The ICT infrastructure needs to be re-engineered and handle by IT specialists who will then integrate various internal systems as well as external systems to which Modjo dry port does business with. When both internal and external systems are integrated, it will streamline the dry port operations, business processes and reduce some of those barriers like long cargo dwell time, delays in custom and clearance processes etc.

Finally, it is recommended based on the findings that the Management of ESLSE at Modjo dry port invests more on training and development of staff and employees. This will also minimize some of the human errors and duplications of business processes that normally occur on the job site. It was revealed from the survey that majority of the respondents are diploma holders and are in higher positions with their respective department/sections and have worked with Modjo dry port for over 10 years. The level of education was compare with the position engaged had some implications when it comes to performance and output.

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Dear Respondent,

I am a student pursuing Master of Science (MSc) degree in Supply and Logistics Management at Addis Ababa University School of commerce. Currently, I am undertaking a research study on **"FACTORS AFFECING CARGO DWELL TIME IN DRY PORT; CASE STUDY OF MODJO DRY PORT** in partial fulfillment of the requirements for the award Masters Degree in Logistics and supply chain management.

You have been selected to participate in the survey and the researcher would highly appreciate if you assist him by responding to all questions as completely, correctly and honestly as possible. It is solely for academic purposes. Your opinions, responses and views are very important to this study and will be completely confidential. No respondent will be identified.

In case if you have any doubt or ambiguity while you are filling this questionnaire please don't hesitate to contact me via: phone number **0912767325** and E-mail **jemalch27@gmail.com**

Thank you very much for your participation, cooperation and understanding.

Regards

JEMAL CHEKIN NURI
RESEARCHER

SECTION A: BACKGROUND INFORMATION OF RESPONDENTS

1. Sex of Respondent:

(A) Male { } (B) Female { }

2. Age of Respondent:

(A) Less than 24 years { } (B) 25 – 29 years { }
(C) 30 – 45 year { } (D) 46 – 50^{+} year { }

3. Level of Education acquired:

(A) Diploma { }
(B) First Degree { }
(C)Post Graduate Degree{}
(D) Other (Specify)_____

4. Type of organization:

(A) Modjo Terminal Operations { }
(B) ERCA (customs) { }
(C) Other (Specify) _____

5. Name of Section/Department/Unit: _____

6. What is your position/status in your organization?

(A) Senior Manager { }
(B) Middle Manager { }
(C) Junior Manager { }
(D) Operator { }
(E) Other (Specify) _____

7. How many years have you worked in this organization?

(A) Over 10 years { } (B) 6 – 9 years { }
(C) 3- 5 years { } (D) less than 2 years { }

SECTION B: Cargo dwell time efficiency

8. Cargo dwell time efficiency can be measured by the level of increase in inputs and throughput.

1. Strongly disagree { } 2. Disagree { } 3. No opinion or uncertain { }
4. Agree { } 5. Strongly disagree { }

9. How do you assess the throughput of cargo at Modjo dry port currently?

A) Very low { } B) Low { } C) Moderate { }
D) High { } E) Very high { }

10. Do you think by expanding the current cargo terminal will increase the volume of cargo inputs and throughputs respectively?

A) Yes { } B) May be { } C) No { }

11. How do you grade the current performance of cargo terminal at Modjo dry port?

A) Very poor { } B) Poor { } C) Average { }
D) Good { } E) Excellent { }

SECTION C: GANTRY CRANE MACHINE

12. How do you rank the performance of gantry crane machine in terms of loading and unloading of cargos (containers) at Modjo dry port?

A) Very poor { } B) Poor { } C) Average { }
D) Good { } E) Excellent { }

13. How do you grade the operational effectiveness of the current crane machine at Modjo cargo terminal?

A) Very ineffective { } B) Ineffective { } C) Average { }
D) Effective { } E) Very effective

14. On average, how could measure yard crane machine operational efficiency?

A) Very poor { } B) Poor { } C) Satisfactory { }
D) Good { } E) Very good { }

SECTION D: DWELL TIME

15. Do you agree or disagree that dwell time is an indicator to assess cargo terminal efficiency?

A) Strongly disagree { } B) Disagree { }
C) No opinion or uncertain { } D) strongly agree { }

16. What position would you place the turnaround time of containers at Modjo dry port?

A) Very much below average { } B) Below average { }
C) Above average { } D) Very much above average { }

17. How do you assess transactional dwell time at Modjo dry port?

A) Very slow { } B) Slow { } C) Average { }
D) Fast { } E) Very fast { }

SECTION E: INFRASTRUCTURE

18. How do you assess the significance of both physical and soft infrastructure in Modjo dry port cargo terminal operation?

A) Not important { } B) Somewhat important { }
C) Important { } D) Very important { }

19. How do you assess the congestion of cargo terminal operation at Modjo dry port?

A) Very bad { } B) Bad { } C) Average { }
D) Good { } E) Very Good { }

20. How would you describe the nature of congestion at Modjo dry port currently?

A) Hardly ever { } B) Occasionally { } C) Sometimes { }
D) Frequently { } E) Almost always { }

21. Generally, do you think by improving the infrastructure will help to minimize the congestion problem at Modjo dry port?

A) Yes { } B) Maybe { } C) No { }

22. How do you assess the competency of cargo terminal operators at Modjo dry port?

A) Not competent { } B) some competent { } C) Uncertain { }
D) Competent { } E) highly competent { }

23. How do you measure the effectiveness of custom clearance services at Modjo dry port?

A) Very ineffective { } B) Ineffective { }
C) Average { } D) Effective { }

24. What is the average number of days used in clearing cargo at Modjo dry port currently?

A) Within 24 hours { } B) 1-3 working days { } C) 4-6 working days
D) 7-9 working days { } E) Above 10 days { }

25. Do you agree or disagree that security & custom clearing practices are indicators for measuring cargo terminal efficiency in Modjo dry port?

A) Strongly disagree { } B) Disagree { } C) No opinion or uncertain { }
D) Agree { } E) strongly agree { }

26. Do you think that the lack of integrated IT system poses substantial delays in custom clearance procedures?

A) No { } B) May be { } C) Yes { }

END OF QUESTIONNAIRE

Thanks for your time and participation!