ST.MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

ASSESSMENTOF THE PERCEPTION OF SERVICE QUALITY OF DRY PORT AND ITS DETERMIANTS: THE CASE OF MODJO DRY PORT

REDIET BEKELE

MAY, 2019

ADDIS ABABA, ETHIOPIA

ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

ASSESSMENT'SOF THE PERCEPTION OF SERVICE QUALITY OF DRY PORT AND ITS DETERMIANTS: THE CASE OF MODJO DRY PORT

A THESIS SUBMITTED TO THE GRADUATE STUDIES OF ST. MARYS UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR DEGREE OF MASTERS OF SCIENCE IN DEVELOPMENT ECONOMICS

BY

REDIET BEKELE SEFERA

ADVISOR:

MARU SEHETE(ASS.PRO)

MAY, 2019

ADDIS ABABA, ETHIOPIA

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Dr. MaruShete(Assoc.Professor). All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

REDIET BEKELE		
NAME	DATE	SIGNITURE

ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF AGRICULTURE AND DEVELOPMENT STUDIES

ASSESSMENT'SOF PERCEPTION OF SERVICE QUALITY OF DRY PORT AND ITS DETERMINANTS: THE CASE OF MODJO DRY PORT

BY

REDIET BEKELE SEFERA

APPROVED BY BOARD OF EXAMINERS

Dean, Graduate Studies	**Signature & Date**
Advisor	**Signature & Date**
External Examiner	**Signature & Date**
Internal Examiner	**Signature & Date**

ACKNOWLEDGEMENT

This study comes in to end with the help of the almighty GOD who gave me courage to go through all the difficult time. There are several people who have helped me in one way or another to achieve the completion of this thesis.

To begin with, I would like to thank my advisor, MaruShete (Assoc. Prof.), for his constructive comments, advice and outstanding help. His office was always open whenever I ran into trouble, needed his support or had a question about my research or writing.

Next my special thanks go to my dear father AtoBekeleSefera and mom W/roWubituBeri for their unconditional love and support. I also need to thank all my families and friends who helped me in moral and financial support, specially my sister Etu who scarifies her time to cover my duty.

My Sincere gratitude also goes to the employees Modjo dry port for their co-operation in data collection and helping me in acquiring the necessary data. I specially want to thank Ato Girum Getu, Ato Abel, Ato Tsegaye, Ato Kirubel Tmiru, Ato Amene Shewaand Ato Fisseha Zegeye. Without their help, the paper could not have been successfully conducted.

Thank you all!

TABLE CONTENTS

LISTS OF TABLES

LISTS OF FIGURES

LIST OF ACRONYMS

APICS: American Production and Inventory Control Society

DEA: Data envelopment analysis

ESLSE: Ethiopian Shipping and Logistics Service Enterprise

EMAA: Ethiopian Maritime Affairs Authority

IMF: International monetary fund

LLDCS: Land Locked Developing Countries

SCOR: Supply Chain Operation Reference

STATA: Statistical Package for Econometrics

TEU: Twenty Equivalent Units

UNCTAD: United Nations Convention on Trade and Development

ABSTRACT

Efficient and effective dry ports are crucial for the economic growth of a landlocked nation like Ethiopia. This study presents the assessment of perception of service quality of dry port and its determinantfactors by taking the case of Modjo dry port. Primary data were collected from 130 sample customers and 41 sample employees of the dry port, which were selected based on convenience sampling technique. The data were collected using questionnaire and were analyzed using descriptive statistics and ordinal logistics model. Accordingly, the overall findings showed that the perception of service quality of Modjo dry port was found at medium level. The result of study further indicated that, information capital, service cost, port machinery, port infrastructure and reliability were functioning at medium level . Human capital was found at low level whereas the size of the port was functioning at higher level . The findings of study implied that there is a possibility of improving the service quality of Modjo dry port through capacitating human resources, ICT infrastructure, the size of the port and reconsidering the service cost and its reliability. Therefore, the study recommends the strategic leadership on the interventions of improving the service quality of Modjo dry port.

Key words: Dry port, performance, determinants, Modjo dry port, ordinal logistics regression,Ethiopia

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Land lockedness refers to the geographical situation of a country without direct access to the sea (Arvis et al. 2014). According to this definition, there are 44 landlocked countries in the world and of these, the United Nations lists 32 as landlocked developing countries (LLDCs) that are low and middle-income countries based on the World Bank country classification with a population of nearly 440 million. Due to the lack of direct access to the sea Landlocked Developing Countries (LLDCs) are marginalized from major transportation and services (logistics, information technology) networks (World Bank-United Nations, 2014).

Ethiopia is a landlocked country with a land area of about 1.13 million sq. km and a population of about 108,386,391 million (July 2018 est, world fact book). Since the independency of Eritrea in 1991, Ethiopia became landlocked. Before the 1998 dispute between Ethiopia and Eritrea, port Asseb was used to handle about 85% of the Ethiopian maritime traffic through the red sea while Djibouti covered only 15% (Nathan Associate Inc., 2014). Ethiopia turned to Djibouti after May 1998, were both countries signed a formal agreement. As a result, the country has been compelled to use neighbor countries for its imports and exports.

Efficient dry ports could help reduce these transport costs and make them better able to compete commercially (Gujar, 2011). To maintain the commendable economic growth that has been registered in the country over the last several years, one of the strategic measures taken by the Federal Government of Ethiopia is merging the former three public enterprises that have until recently been operating separately in a rather similar and interdependent maritime sub-sector; namely, Ethiopian Shipping Lines S.C, Maritime and Transit Services Enterprise and Dry Port Enterprise.

The Ethiopian Shipping and Logistics Services Enterprise (ESL for short) is the result of this merger. This newly amalgamated enterprise came into being following the issuance of Regulation by the Council of Ministers (Regulation No. 255/2011), and is vested with the huge responsibility of rendering sea-transport & logistics services to the country's importers, exporters, and investors in a more effective and efficient way, by reducing transit time, cost and handoffs. Besides, a truck operating company named Comet Transport SC has recently been transferred to ESL following a government decree issued in the mid of 2014.

In order to ease some of the problems in the transit countries, Ethiopia has started constructing dry ports in its hinterland along the transit corridors. This will help the country to save foreign currency by mitigating demurrage charge that are paid at Djibouti port. ESLSE also offers on carriage possibilities to inland dry ports such as Modjo/Adama, Semera, Kombolcha, Dire Dawa, Mekele, gelan and Comet (Addis Ababa).Among the dry ports, Modjo Dry port which is located approximately 70 kilometers southeast of Addis Ababa started its commercial operation in 2009 under the former Ethiopian Dry port Enterprise.

Dry ports could be a solution to this problem as it facilitates the international trade of the country with the rest of the world (IMF, 2013). With a dry port, goods being transported to a landlocked country, rather than undergoing customs procedures at the sea port, would instead be transported directly to the country's dry port, where customs clearance would take place (Gujar, 2011).

According to Brooks and Pallis (2011) port users are able to see how ports perform on the various dimensions of port performance and are also able to identify factors which have impact on port performance. Hence, addressing user's perception on service quality and determinants is important and the findings could assist ports in benchmarking their performance against others they see as competitors, and therefore guide them in improving the quality of their services, which will be a significant benefit to the port users in particular and to overall economy in general. Kasypi and Muhammad (2006) noted that, the port performance is the lifeblood of ports which deserves maximum attention from port operators. Therefore, the study of factors which drive the service quality of dry ports is important when considering building a new port or upgrading an existing one and for achieving higher levels of competitiveness.

1.2. Statement of the Problem

Annually, Ethiopia paid for port services to Djibouti 2 billion birr in 2006 (Robera, 2011:51), US$ 700 million in 2009 (UN, 2013:17), and $850 million in 2010 (Getachew, 2017:5) for port services.As noted by (IMF,2014) Exporters, importers, ocean carriers, marine terminal operators, truckers, and railroads all experience additional costs when cargo and equipment does not move efficiently through the terminals and when there is congestion. Port congestion can arise from multiple causes, and those causes may vary by port or by marine terminal. These include; labor productivity issues, operators' schedule reliability, inefficiency of the transportation infrastructure connecting a marine terminal to rail and roadways, the amount of land that the port facility has to store containers and conduct operations and shortages of various types of equipment. Those factors are hardly an exclusive or exhaustive list of reasons for port congestion, but it illustrates that the problem is not caused by a single or simple set of factors.

The increased time for clearing imports worsening congestion at Djibouti port and Ethiopia's main dry port Modjo dry port .Dry port users frequently complained about the slow pace goods and service delivered by Modjo dry port that leads to a serious congestion problem in the dry ports which has, in turn, resulted in substantial operating costs for the port and to the customers. SeidMohammed(2014)

There are different studies made on port service qualityland determinants.(eg. Yodit 2016; Hiwot 2014; Elshday 2016; Seid 2014;Feng, Mengying 2010; Khalid (2015);).However, the studies are analyzed using descriptive statistics.The importance of measuring port service quality, and lack of previous research on factors influencing port service quality have resulted the researcher to conduct this study.

1.3. Objectives of the Study

1.3.1. General Objectives

The general objective of the study is to assess the perception of service qualityof Modjo Dry Port.

1.3.2. Specific Objectives

- To identify the determining factors of Modjo dry port.

1.4. Research Questions

To address the above objectives, the following research questions are raised:

- How do the customers of Mojo dry port perceive about the service quality?
- What are the determining factors of service quality of Mojo dry port?

1.5. Significance of the study

Dry port concept is a recent phenomenon to Ethiopia even though, Modjo dry port is supporting the economy by saving foreign currency that was paid as a demurrage for Djibouti. Modjo dry port which is the largest of other dry ports receives and delivers cargoes, load and unload cargo, Stuff and un-stuff container goods, temporarily stores for import and export cargoes, controls customs and clearance, Banking and Insurance. Hence, Assessing the performance and determinants of this dry port can lead the services more efficient and convenient to importers and exporters and play a crucial role in the logistics value chain, which is the back bone of the economy.

Based on the research findings, government and other concerned bodies can implement corrective actions to improve service to their customers. The study can also be used as a reference for other researchers who would like to conduct further studies at Modjo dry port.

Despite the obvious significance of port efficiency and as dry port is a new phenomenon to the country there are few studies conducted in the area. Hence, in view of the important role those dry ports have to the whole supply chain and to entire economy of the country it will have practical importance to governments, port authorities and other stakeholders by providing information and guidelines for the implementation of port policies and organizational reforms which enhance the performance of the dry ports.

1.6. Scope and Limitation of the study

The study was aimed to be conducted not only on Modjo dry port but also on Glean dry port. But currently Glean dry port is not functional in handling containers because of the poor capacity of the land in handling heavy containers. As result the research is conducted only on Modjo dry port.

The researcher couldn't get registered and well organized quantitative data as was needed. As a result the study is conducted based on the perceptions of the dry port stakeholder (employees, transistors and traders) to gauge the factors that determine its current performance. Identification of the sampling frame and the total population of importers and exporters, and transistors was very difficult and thus, the study was forced to adopt non-probability sampling technique. The respondents were asked to fill the questionnaire when the researcher met them at the point of the port when they were around seeking for port services. Therefore, the findings of the study may not provide a representative picture for all the customers, and users of this research should carefully utilize it. Furthermore, the study would have benefited from quantitative data records from secondary source in a time series manner. However, time series secondary data on the independent variables were not available and the researcher is forced to depend on cross-sectional data generated from stakeholder.

1.7. Organization of the thesis

The research report will consist 5 chapters and it will be organized as follows. The first chapter will be an introductory part in which background of the study, statement of the problem, basic research questions, objectives of the study, hypothesis of the study, definition of terms, significance of the study, and scope of the study will be presented. Chapter 2 will present review of both theoretical and empirical literature on determinants of port performance. Subsequently, methods of the study will be presented in Chapter 3. Then, Chapter 4 will summarize and discuss the finding of the study. Finally, on Chapter 5, the main findings of the study will be summarized and conclusions will be drawn based on the results of the study and at last, the paper will forward appropriate recommendations and policy implications.

CHAPTER TWO

2. LTERATURE REVIEW

2.1. Theoretical Literature Review

2.1.1. Definition and the concept of dry port

The first shipping container was invented and patented in 1956 by an American (USA) named Malcolm Mc Lean. From that moment on, the container shipping industry has improved its performance at an impressive pace, with containers production reaching high numbers, megacarrier container ships reaching 14000 TEU (World Cargo News, 2006). Since then container shipping industry expanded and widely used around the globe; the concept of dry port has emerged due to global changes. Significant global changes the period between 1970s and 1990s, such as liberalization of trade, deregulation of many economies, and emergence of economic integrations of countries and regions resulted in an increased volume of trade, the cargo transported by sea, and the number of shipping vessels (Werikhe and Zhihon, 2015). The same source indicated that this on the other hand putting pressure on existing sea ports.

Dry ports were introduced as a way of accessing the hinterland and also reduce the pressure on the bottle necked, congested and inefficient sea ports. The adoption of dry port concept began in Europe and North America, followed by Asia, South America and then Africa (Werikhe and Zhihon, 2015). As Bergqvist et al. (2013) noted that the term dry port also known as "inland port" has been more widely used in America and the concept came up mainly for two purposes: as a way to expand a port's hinterland in order to serve additional inland markets, or to consolidate cargo from the adjacent inland region for shipping to/from a port by rail. Another source also confirmed that depending on the role and the offered services, the transport industry operates this kind of terminals under different names (Roso et al., 2008). Different sources defined dry port with similar concepts. For instance UN ECE (1998) defined dry port as an Inland Freight Terminal and it is "any facility, other than a port or an airport, operated on a common user basis, at which cargo in international trade is received or dispatched". According to the Economic Commission for Europe (ECE, 2001), a dry port is simply "an inland terminal

which is directly linked to a maritime port". Harrison et al. (2002) also stated dry port as Inland Port, which is located inland, generally far from seaport terminals; they supply regions with an intermodal terminal offering value added services or a merging point for different traffic modes involved in distributing merchandise coming from ports. A dry port definition by Roso, Woxenius and Lumsden (2009) is: "A dry port is an inland intermodal terminal directly connected to a seaport, with high capacity traffic modes, preferably rail, where customers can leave and/or collect their goods in intermodal loading units, as if directly to the seaport."

A dry port is an inland intermodal terminal directly connected to seaport(s) with high capacity transport means, where customers can leave/pick up their standardized units as if directly to a seaport (Leveque and Roso, 2002). Dry ports are one type of inland terminals and they have been playing a significant role in the expansion capacity of seaport (UNCTAD, 2004). Overall, the dry port concept is based on a seaport directly connected with inland intermodal terminals where goods in intermodal loading units can be turned in as if directly to the seaport (Woxenius et al., 2004). A specific class of terminals has evolved around the need for connecting inland conurbations with seaports (Roso et al., 2008). According to Roso (2008), "A dry port is an inland intermodal terminal directly connected to a seaport by rail, where customers can leave and/or collect their standardized units as if directly to the seaport". Between the seaport and the inland terminals, here denoted dry ports, relatively large goods' flows are being concentrated, giving room for other traffic modes than road (Woxenius et al., 2004).

2.1.2. Purpose and economic contribution of dry ports

Dry port-seaport dyads are a complex system. They are composed of different parties, dealing with different activities and offering a large variety of services. Today the rise of containerization flow in multimodal transportation require the integration of logistics strategies into the seaport industry in order to stay competitive (Bentaleb et al., 2015). Ports constitute an important economic activity in coastal areas. The higher the throughput of goods and passenger's year-on-year, the more infrastructures, provisions and associated services are required. These will bring varying degrees of benefits to the economy and to the country. Ports are also important for the support of economic activities in the hinterland since they act as a

crucial connection between sea and land transport. As a supplier of jobs, ports do not only serve as economic but also a social function. In terms of load carried, seaway transportation is the cheapest and most effective transportation system compared to other systems. Industries require a safe and cheap means of exporting finished goods and importing raw materials. Hence the majority of industries in the world are located in the coastal belts, in the vicinity of major ports. These industries in turn, influence the lives of the employees and indirect benefactors (ICWRCOE, 2015). UNCTAD (1991) identified the potential benefits of dry ports and the summary is presented in Table 2.1 below.

Table 2.1: Potential Benefits of Dry Ports

Increased trade flows	Beneficial to a region or to the country as a whole.
Avoidance of clearing and forwarding agents' fees at sea ports	The consolidation of consignments and the greater use of containerization can contribute significantly to the introduction of lower through-rates. Containerization offers numerous advantages.
Avoidance of storage, demurrage and late documentation fees	In traditional transit systems, goods are frequently held up at maritime ports or at land borders owing to the absence of documentation (such as ocean bills of lading or commercial invoices), minor irregularities in existing documentation, prepayment of handling charges in foreign currency, lapse of a bond, non-availability of onward transport, etc.
Better utilization of capacity:	A dry port can reduce empty rail wagon or truck movements by acting as a consolidation center for return loads of export cargo. The consignment increase in load factor may enable some savings to be made in overalltransportcosts.
Lower customs staff costs:	As dry ports allow customs clearance to be concentrated at a few sites, it may be possible to affect the same volume of clearance with reduced customs involvement, especially where a dry port is accessed by two or more gateway ports.
Lower door-to-door freight rates	The consolidation of consignments and the greater use of containerization can contribute significantly to the introduction of lower through-rates. Containerization offers numerous advantages.
Greater use of containers	The establishment of a dry port with container-handling facilities can encourage greater use of containers.
Lower customs staff costs	As dry ports allow customs clearance to be concentrated at a few sites, it may be possible to affect the same volume of clearance with reduced customs involvement, especially where a dry port is accessed by two or more gateway ports.

Source: UNCTAD (1991)

Port implementation generates set of advantages for the actors of the transport systems, as presented in Table 2.2; the most obvious benefit from environmental perspective comes from movement of containers from road to rail which results in less congestion on roads as well as at sea port terminals, reduced emissions; and by that in reduced environmental effects.

Table 2.2: Benefits for the actors of the system

Actors	**Distant**	**Midrange**	**Close**
Seaports	- Less congestion - Expanded hinterland - Interface with hinterland	- Less congestion - Dedicated trains - Depot - Interface with hinterland	- Less congestion - Dedicated trains - Depot - Interface with hinterland
Shipping lines and forwarders	- Improved service	- Improved service	- Improved service
Rail and intermodal operators	- Economies of scale - Gain market share	- Day trains - Gain market share	- Day trains - Gain market share
Society	- Modal shift - Less infrastructure - Lower environmental impact - Job opportunities	- Modal shift - Less infrastructure - Lower environmental impact - Job opportunities	- Lower environmental impact - Job opportunities

Source: Roso (2008)

2.1.3. Classification of dry ports

Roso (2009) classifies dry ports as it follows: close dry ports, mid-range dry ports and distant dry ports. Woxenius et al. (2004) describes distant, min-range and close dry ports as follow. Distant dry port is the most conventional of the three and beneficial for opening up new markets by increasing seaports' access to areas outside their traditional hinterland. A mid-range dry port is consequently situated within a distance from the seaports generally covered by road transport and creates value by serving as a consolidation point, whereas a close dry port consolidates road transport to and from shippers outside the city area offering a rail shuttle service to the port relieving the city streets and the port gates. Figure 2.1 below explicitly presented a comparison between conventional hinterland transport and an implemented 3 types of dry port concept.

Distant dry port: its located 500 kilometers or more from the seaport . The major gain of this dry port is the aptitude to transport over long distances.In this case, rail is cheaper than road transport

mode. Some profits relate to the modal transfer from road to rail is reduce congestion and environmental impacts.

Close dry port: it's located near the seaport at less than 100 km distance . This dry port presents a larger storage space to seaports. It proposes a consolidation for road transportation to and from the seaport.

midrange dry port: it's located between the close and distant dry ports.The distance from the seaport is about 100-500 km .

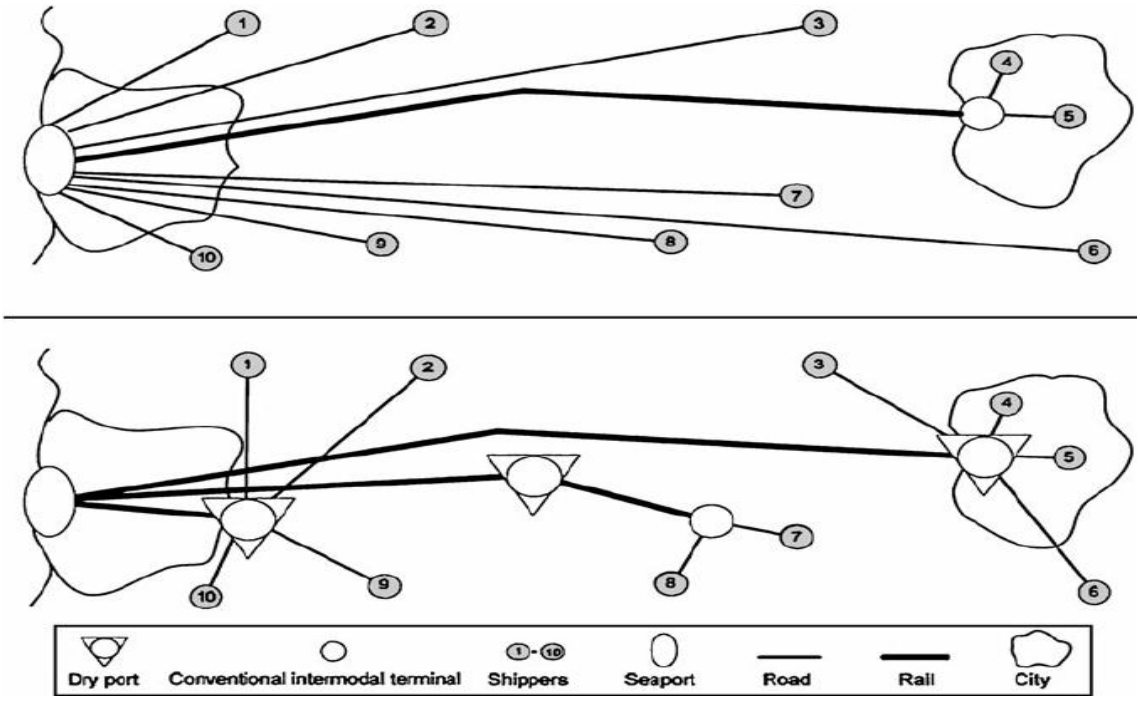

Figure 2.1: Comparison between conventional hinterland transport and an implemented 3 types of dry port concept

Source: Roso et al. (2009)

However, as Gabriel stated that as this classification is based on the distance between the seaports that dry ports are servicing and the dry ports themselves, it could not be sufficient in order to get a clear classification of the dry ports. There is still a wide area for research regarding the concept and we will mention other criteria of classification as it follows:

- According to size (meaning how many TEU it can handle per year): small, medium, large and mega dry ports, which can be implemented in land-locked countries.
- According to means of access: depending on how many rail tracks and roads are in and out of facility.
- According to value added services: as stuffing / stripping of containers, maintenance of container, handling and storage of refrigerated / frozen and dangerous goods.

2.1.4. Service quality Concept

Service quality is considered an important tool for a firm's struggle to differentiate itself from its competitors (Ladhari, 2008). The relevance of service quality to companies is emphasized here especially the fact that it offers a competitive advantage to companies that strive to improve it and hence bring customer satisfaction.

Service quality has received a great deal of attention from both academicians and practitioners (Negi, 2009) and services marketing literature service quality is defined as the overall assessment of a service by the customer (Eshghi et al., 2008). Ghylin et al., (2008) points out that, by defining service quality, companies will be able to deliver services with higher quality level presumably resulting in increased customer satisfaction.Understanding service quality must involve acknowledging the characteristics of service which are intangibility, heterogeneity and inseparability, (Parasuraman et al., 1985); (Ladhari, 2008). In that way, service quality would be easily measured. In this study, service quality can be defined as the difference between customer's expectation for service performance prior to the service encounter and their perception of the service received. Customer's expectation serves as a foundation for evaluating service quality because, quality is high when performance exceeds expectation and quality is low when performance does not meet their expectation (Asubonteng et al., (1996). Expectation is viewed in service quality literature as desires or wants of consumer i.e., what they feel a service provider should offer rather than would offer (Parasuraman et al., 1988). Perceived service is the outcome of the consumer's view of the service dimensions, which are both technical and

functional in nature (Gronroos, 1984). The customer's total perception of a service is based on his/her perception of the outcome and the process; the outcome is either value added or quality and the process is the role undertaken by the customer (Edvardsson, 1998).Parasuraman et al, (1988) define perceived quality as a form of attitude, related but not equal to satisfaction, and results from a consumption of expectations with perceptions of performance. Therefore, having a better understanding of customer attitudes will help know how they perceive service quality in dry port and terminal. Negi (2009) suggests that customer-perceived service quality has been given increased attention in recent years, due to its specific contribution to business competitiveness and developing satisfied customers.

Benefits of measuring service quality

According to Parasuraman et al. (1997) and Ham et al. (2003), information on service quality gaps can help managers to diagnose where performance improvement can best be targeted.Identifying the largest negative gaps, combined with assessment of where expectations are highest, facilitates prioritization of performance improvement. Equally, positive gap scores will imply expectations are not just being met but exceeded. This information will allow managers to review whether they may be "over-supplying" this particular feature of the service and whether there is potential for re-deployment of resources into features which are underperforming (Shahin, 2008)

.

2.2. Empirical Literature

2.2.1. Determinants of dry port performance in developing countries

In the literature, several studies identified significant factors that determine dry port performance using different method of performance appraisal method. For instance Gujar (2011) conducted a case study to identify important factors that determine port performance in India. Gujar analyzed the performance of dry ports in the(Acronym) JNPT region of India with the help of a used the DEA method to ascertain the efficiency of dry ports located in the western and northern region of India by regression model using ordinary least squares (OLS) estimation. He used annual throughput as dependent variable to measure port performance. Among the variables he used to assess the performance of port performance, manpower quantity and tariff rates were the only significant factor impacted which is port performance, the other seven factors such as number and quality of equipment, customer relationships, size of the dry port or availability of rail connectivity had not any significant impact on the annual throughput.

Among the east Africa port Mombasa entry port in Kenya is also one of the port taken in to account to learn empirical knowledge on dry port performance. The study was conducted by using an exploratory approach using a descriptive survey design to identify important determinant factors influencing port performance. The findings as per the study revealed that factors such as inadequate quay/gantry crane equipment, reducing berth times and delays of container ships, dwell time, container cargo and truck turnaround time, custom clearance, limited storage capacity, poor multi-modal connections to hinterland and infrastructure directly influencing container terminal efficiency.

Feng (2010) conducted a comparative study to compare dry ports and their Hinterlands in China and the UK. In his study he explains the speed of cargo handling, proximity, safety, logistics services and shipping services port infrastructure, government support and feeder services that were significant factors that determine Port Performance and Choice of Xiamen and Humber.

JOSE L. TONGZON (1994) studied determinants of port performance and efficiency and his attempt was made to integrate and empirically test the various hypotheses of port performance and efficiency. He measured in terms of the number of containers moved through a port (throughput) on the assumption that ports are throughput maximizes. And he stated port performance was influenced by several factors, some of which are beyond the port authorities' control such as the level of economic activity, geographical location, and frequency of ship calls.

Khalid (2012)also conducted a study on Malaysian dry ports .His study takes into account as there are differences among the dry port in many aspects such as business strategies, clientele, connectivity, efficiency, layout, location, and productivity and tariff structures. And he states performance of container ports is usually indicated by their ability to handle ships and cargos in a cost competitive way.

2.2.2. Determinants of dry port performance in Ethiopia

In Ethiopia, limited number of studies has been conducted to assess dry ports performance and their determinants. Most of them conducted by taking one or two dry port using descriptive statistical methods.Abdurezak (2016) conducted a study to examine factors that influence the performance of dry ports from port users' perceptions by taking Modjo dry port as a case study. The findings of study revealed that cargo handling equipment, customs operations, port infrastructure, size of dry port, port staff, reliability of port operations and quality of logistics service are found to be important factors in determining the performance of Modjo dry port.

Another study by Elshaday (2016) examined the performance of two of the major dry ports in the country (Mojo and Kality) using Supply Chain Operation Reference Model (SCOR) and Queue analysis in relation to the intermodal transportation system. The result of her study accordingly indicated that problems such as delay on delivery of shipments, wrong dry port location and lack of proper tracking means that were occurred due to lack of trucks, proper system automation and coordination. Moreover, the study noticed that the obvious absence of understanding the value of time at each level of process for customs and dry port clearance, dwell time at Djibouti and dry ports has a major effect on the responsiveness of the organization.

Yodit (2016) conducted a comparative study on dry ports service quality in Ethiopia using the case of Modjo and Kaliti dry ports and terminals. She captured data on the customers' perception of service quality through SERVQUAL model. Her finding revealed that there is low level of expectation among customers and a corresponding low level of perceived service quality in both dry ports and terminals. Added to this she found out that Kaliti dry port and terminal performed worse than Modjo. Similar study by Seid (2014) was conducted to assess the customers' perception on service quality of the Modjo dry port of Ethiopia using SERVQUAL model. The finding showed that the overall service quality perceived by customers was not satisfactory implying Mojo Dry Port which is not providing the level of service quality demanded by customers.

A study on evaluation of performances of intermodal import-export freight transport system in Ethiopia by Girma (2015) indicated that majority of customers were either dissatisfied or very dissatisfied with many of the performance indicators. According to the study, the employees evaluated their organization as well performing relatively on more performance indicators. Both customers and employees evaluated the documentation performances as satisfying but cost and convenience as dissatisfying performances. Customers identified repetitive custom checking and waste of time in custom inspections process as the most severe problem in freight transport logistics in Ethiopia.

Fekadu (2013) documented the practices of logistics in Ethiopia. He put forward the most important criteria, such as customer orientation, low level bureaucracy at customs and trade facilitations expedite goods flow, availability of skilled manpower, conducive labor regulations and business environment promotes economic activities to evaluate the Ethiopian logistics system against. Accordingly, he found out that the system as very poor such that in depth study is needed on the problems to suggest key intervention for better performance.

KalkidanWaktole (2017) in her study, she indicates freight transport delay is the major contributing factor for low level of logistic performance in Ethiopia. She describes as delay affects trade performance of a country in terms of cost, time, reliability, predictability and

customer services. Waktole's study states causes of delay were factors related to Djibouti port management problems, Poor condition of Djibouti-Addis Ababa road, bureaucracy, long clearance time at dry ports and check points, poor information flow and lack of integration between stakeholders.

Furthermore, the study identifies the impact of freight delay to different bodies and realizes that delay can affect driving behavior, motivation and performance of truck drivers. Likewise, it can reduce truck transaction, performance of freight transporters and customer service and it can even cause waste of time and extravagancy to the driver, can increases storage cost, market price, can reduce goods quality and even perishable goods .can be out of date due to delay. Further the findings showed that most of the respondents were found neutral when examining the shipping services and the multimodal transport regulatory aspects performances level. Hence, based on the findings of the research it is possible to conclude that shortages of dry port spaces, port handling equipment and facilities, freight transport vehicles and multimodal experts are the major challenges of the system.

2.3. Conceptual Frame Work

Improving logistics performance is at the core of the economic growth and competitiveness agenda (Arvis*et al.* 2014). Hence, identifying those factors which influence the performance of dry ports is crucial. For the purpose of this study, the researcher developed conceptual framework based on the research works of Bentaleb et al. (2015) and APICS (2018). Therefore, the research will be guided by the conceptual framework that is indicated in below diagram (Figure 2.2).

Independent Variables **Dependent Variable**

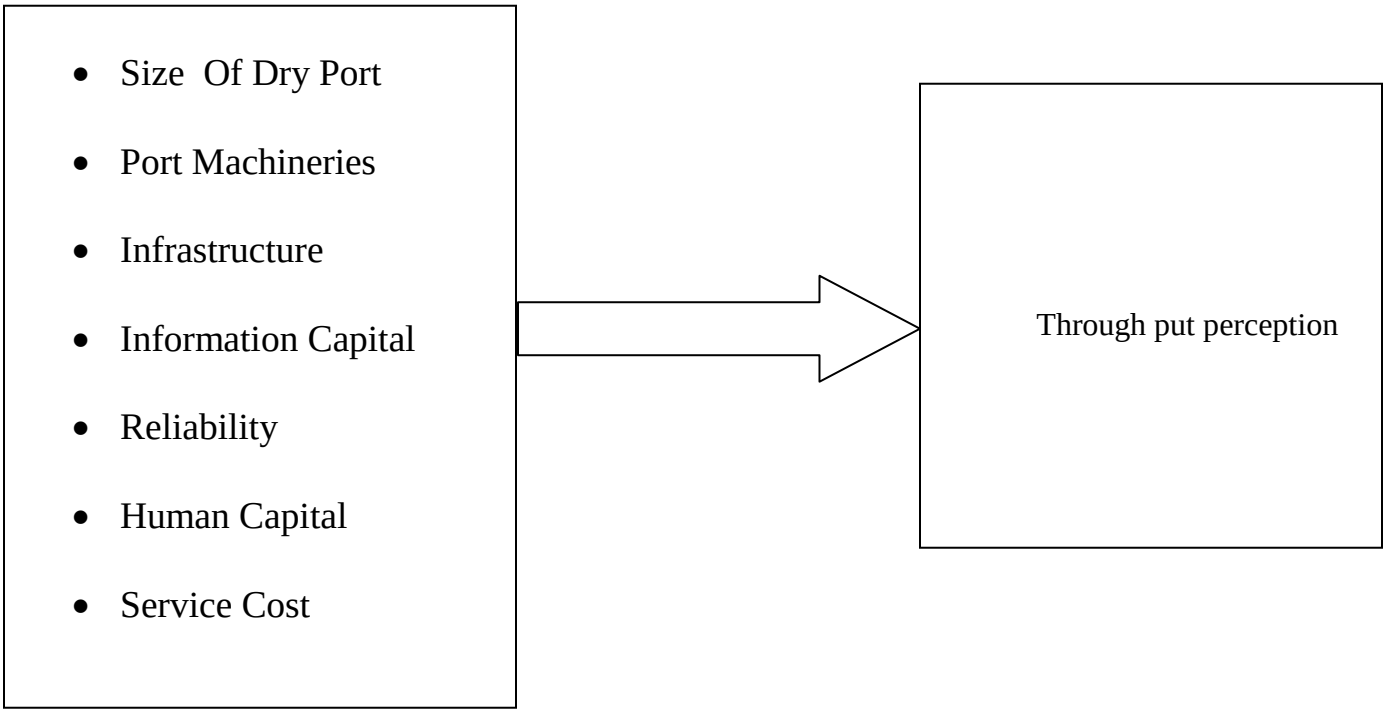

Figure 2.2: Conceptual Framework for the Study

Source: Adapted from the research works of Bentaleb et al. (2015) and APICS (2018)

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Research Approach

The research design can be thought of as the logic or master plan of a research that throws light on how the study is to be conducted. It shows how all of the major parts of the research are done. The current study adopted explanatory research design since the objective requires to find out the factors that explain the performance of Modjo dry port. The study used a mixed research approach in which both quantitative and qualitative data were collected to answer the research various research questions posted.

3.1.2. Data Source and methods of collection

Data were collected from primary and secondary sources. The respondent categories for primary source are the customers (importers/exporters and transistors) In addition to the primary sources of data, the researcher also utilize secondary data related to current performance and determinants of dry port performance of Modjo dry port and it was collected from company publications.

3.1.3. Sample Design

The study has a population group of Modjo dry port customers (importers, exporters and transistors). Therefore, samples were drawn from the population groups. Since the total population of the study is undefined, data were collected from 130 sample customers who were identified using convenience sampling. Apart from these, further data were collected from 41 randomly identified employees of the port.

3.2. Data Analysis Technique

According to Cooper and Emory (1995:67), data analysis usually involves reducing accumulated data to a manageable size, developing summaries, looking for patterns, and applying statistical techniques. This section explains how the data is to be captured and analyzed. The data obtained were analyzed with the aid of the statistical package for econometrics (Stata) computer software. Multiple regressions were used to measure determinants of the dry ports performance. Apparently, ordered logistic regression model was estimated to identify the factors that affected the throughput performances of Modjo dry ports.

Model specification: Ordinal Logistic Regression

According to Sarkisian (2004) whenever the dependent variable has ordered categories, i.e., meaningful order but the distances between them are arbitrary, it is possible to use Ordered Logit. For some variables, the order is much clearer than for others, but always it is important to take care of whether it is the only possible order or if something else is there which makes sense better. Ordinal dependent variable treated in four different ways. The first option is treating the variable as continuous and uses techniques for continuous variables. The second option was ignoring the ordinality and treating the variable as nominal, i.e. uses Multinomial Logit techniques. Thirdly, treat the variable as measured on a true ordinal scale like the professorial ranks of Full Professor, Associate Professor and Assistance Professor, they are ordered but it may or may not reflect crude measurement of some underlying continuous variable; the last option was treating the variable as though it were measured on an ordinal scale, however, the ordinal scale represent crude measurement of interval/ratio scale; For example, the categories "High, Medium, Low". Accordingly, this study considers the dependent variable as true ordinal scale (Williams, 2015).

Therefore, under this research throughput performance was measured using a single-item measure. Respondents were asked to rate the performance of throughput volume on a five-point Likert scale. Since the outcome variables for throughput performance is ordered and categorical,

the most appropriate econometric estimation method to apply is ordinal logistic regression (Green 2000). The ordered logit models have come in to wide use as a framework of analyzing ranked responses (Parasuraman *et al.* 1988). Furthermore, according to Williams (2008) Ordered logit models are among the most popular ordinal regression techniques. Hence, for the purpose of this study ordinal logistic regression model was employed and the functional form of ordered Logit Model for customer satisfaction is specified as follows:

(1)

Y*= is a continuous, unobserved and unmeasured latent variable whose values determine what the observed ordinal variable Y equals

Ɛ= is a random disturbance term with zero mean and a standard normal or logistic distribution: Ɛ~N (0, 1). The continuous latent variable Y* has various threshold/cut-off points. (κ is the Greek small letter Kappa.).

The value on the observed variable Y depends on whether or not you have crossed a particular threshold/cut-off points. Thus, when M=3, what we do observed is;

$$\left.\begin{array}{l} Y = 1, \text{ if } Y^* \leq \mu_1 \\ Y = 2, \text{ if } \mu_1 < Y^* \leq \mu_2 \\ Y = 3, \text{ if } \mu_2 < Y^* \leq \mu_3 \end{array}\right\} \quad (2)$$

Where: Y, is observed in j number of ordered categories, μs are unknown threshold/cut-off point parameters separating the adjacent categories to be estimated with βs. The continuous latent variable Y* can be rewritten as;

(3)

The Ordered Logit Model estimates part of the above:

(4)

Note that, because of the random disturbance term, the unmeasured latent variable Y* can be either *higher* or *lower* than Z. Note also that there is no intercept term. You then use the estimated M-1 cut off terms to estimate the probability that Y will take on a particular value. In this case since M=3, the formulas are:

The cumulative probabilities can also be computed using the form:

$$Prob\ (Y = j) = 1 - L\ (\mu_{j-1} - \ )$$

Where: L (.)represents cumulative logistic distribution

3.2.2. Methods of data collection,variables and research hypotheses

Taking notes of records, conducting semi-structured questioners, in-depth interviews, and employing organizational survey on level of satisfaction in port services. Once the total sample size from each population was determined, the required techniques was employed, i.e. both primary and secondary methods, in order to gather relevant information regarding how the service delivery process is executed in the sector, how performance techniques applied, and what was the overall level of users‘ satisfaction.The primary data required from staff members were collected through a structured questionnaire as well as personal interview was made. The questionnaire consisted of closed ended and open ended types. The closed-ended questionnaire was used for surveying the level of organizational satisfaction in port services. The other source was secondary data. Information related to the entire process as well as the development activities operated each month was collected from different sources. Additionally books, internet, annual operation reports of the dry port.

Table 3.1: Variables and Hypotheses

Variables	Type	Definition	measurement	Expected sign
Throughput perception	Dependent variable	Number of containers passed through the dry port	Through put volume	
Size Of Dry Port	independent variable	Total holding capacity of the port	• port premises for pick-up and delivery (gate congestion) • storage capacity	+
Port Machineries	independent variable	Machineries used by the port such as crane.	• Availability of machineries • Operational effectiveness	+
Infrastructure	independent variable	Infrastructural facilities	• Quality of port infrastructure • Quality of telecommunication and IT service	+
Information Capital	independent variable	IC infrastructural facilities	functionality, compatibility and accessibility in operation	+
Reliability	independent variable	Secure, free of theft ports	7.1Incidence of cargo damage ,cargo theft, delays(lead time), Port security	-

Human Capital	independent variable	Employees skill, knowledge and capability performance	• workforces' knowledge and skills • commitment and loyalty, • training and education opportunities, • safety and security materials	+
Service Cost	independent variable	Service due charge	• Satisfaction with cost of goods storage • Satisfaction with Cost of (loading/unloading, Stuffing/Unstuffing,warehouse charge)	-

Source: Own compilation, 2019

CHAPTER FOUR

4. RESULT AND DISCUSSION

4.1.Profile of the Respondents

Based on Table 4.1, among the total number of respondents 114 respondents (about 87.7 %) are male and 12.3% of the total respondents are female. Majority of the respondents were importing consumption goods, 16.9 percent of the respondents were engaged on importing of construction materials, 15.4 percent of the respondents were importing pharmaceuticals and the rest 10.8 percent of the customer respondents were spare part importers. Furthermore, more than 50 percent of the respondents had experience of 1-3 years in clearing customs in dry ports, 32.3 percent of the respondents had more than 3 years' experience on clearing of customs in the dry

port; the rest 14.6 and 1.5 percent of the respondents had an experience of below a year and above 5 years in custom clearing on the dry port respectively.

Table 4.1: Profile of respondents

Characteristics		Frequency	Percent
Sex of respondents	Male	114	87.7
	Female	16	12.3
	Total	**130**	**100.0**
Sector of your import/export	Health sector	20	15.4
	Agricultural sector	72	55.4
	Spare parts	14	10.8
	Construction Materials	22	16.9
	industrial inputs	2	1.5
	Total	**130**	**100.0**
Experience on clearing customs in Dry port	less than a year	19	14.6
	Between 1-3years	67	51.5
	Between 3-5years	42	32.3
	More than five years	2	1.5
	Total	**130**	**100.0**

Source: Own survey, 2019

4.2. Perception of service quality of Modjo Dry Port using Throughput Criteria

Throughput volume concerns the performance of the dry port in terms of entertaining as many containers as possible. Accordingly, more than 48 percent of the respondents replied that the container throughout put volume of the dry port is high; on the other hand, close to 22 percent of the respondents confirmed that the dry port containers throughout put volume were low;

additionally, 23.08 percent of the respondents rate at medium level. Furthermore, the mean score of 3.46 implied that the throughput volume of the port is high (Table 4.2).

Table 4.2: Description of throughput performance

	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Container throughput volume	4.67	17.69	29.23	23.08	25.35	3.46
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Own Survey, 2019

Although the researcher evaluates the throughputvolume indirectly collected from primary data, a four monthly secondary data were also generated. The monthly data converted to yearly and presented here. Since the year 2008 to 2009 the throuhputvolume is significantly increasing; however the rate shows a slow increment rate after the year 2009 and lastly the goes down (Figure 4.1).

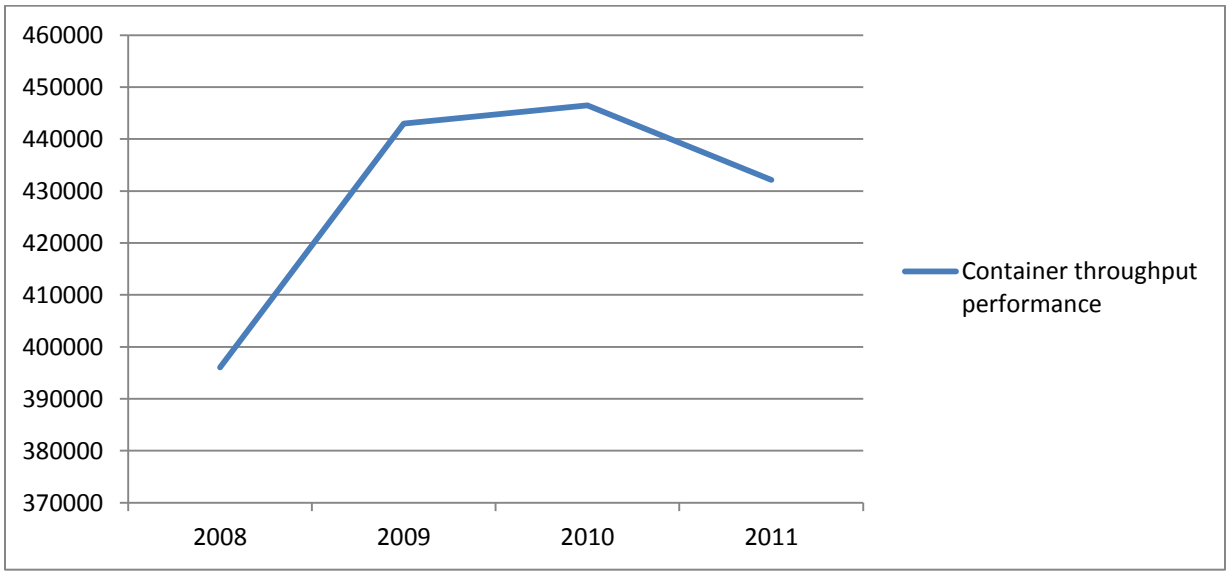

Figure 4.1: Container throughput performance

Source: Modjo dry port (2008-2011)

The above graph shows a yearly data of container throughput volume, which implied the total number of output pass through the port. Here under this topic the monthly data are presented. In the year 2008 a total of 396,015 containers were passed through the port, whereas 442,496 and

446,460 containers were passed through the dry port in 2009 and 2010 respectively. Apart from these a lesser amount of containers were transferred in the year 2011, a total of 432,112 containers were delivered through the dry port. On average 39601.5 containers per month were delivered in 2008, and 44296.8 containers were delivered in the year 2009. On average 44646 and 43211.2 containers per month were transferred in the year 2010 and 2011 respectively. Overall, within these four years 1,717,555 containers were delivered through the port.

Table 4.3: Modjo dry port container through put performance

Month	Container through put performance				
	2008	**2009**	**2010**	**2011**	**Total**
July	32,156	43,305	53,304	39,890	168,655
August	37,180	51,935	55893	42,660	187,668
September	39,170	47,957	52,037	40,151	179,315
October	38,844	46,266	50,218	41,429	176,757
November	43,255	48,186	49,572	45,805	186,818
December	37,816	42,159	45,177	49,613	174,765
January	36,549	41,501	40,284	45,803	164,137
February	41,773	47,181	36,911	49,441	175,306
March	41,942	35436	33,242	37,025	147,645
Aprile	47,330	39,042	29,822	40,295	156,489
Total	396,015	442,968	446,460	432,112	1,717,555
Mean	**39601.5**	**44296.8**	**44646**	**43211.2**	**171755.5**

Source: Modjo dry port (2008-2011)

4.2.1. Descriptive Statistics on the Determinants of Dry Port Perception

4.2.1.1. Information capital

Under this sub-topic to what extent the information capital was the concern of customers of the dry port. Close to 30 percent of the respondents said that the networks for internal and (or) external communication were poor, on the other hand more than 35 percent of the respondent replied that the networks for internal and (or) external communication was good. Furthermore, more than 35 percent of the rest of the respondents the in the dry port the IT infrastructure system in terms of functionality, compatibility and accessibility in operation is low, on the other hand, around 29 percent of the respondents mentioned that IT infrastructure system in terms of functionality, compatibility and accessibility in operation was high. More than 30 percent of the respondents also said that the databases, in particular, application for promoting analysis, interpretation and sharing of information and knowledge was at high extent as well as the capability to adopt service to meet customers' specifications. Furthermore, the mean of information capital was 3.02 which was rate at medium level.

Table 4.4: Description of information capital at dry port

Information capital	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Networks for internal and (or) external communication is:	12.31	17.69	33.85	20.77	15.38	3.09
IT infrastructure system in terms of functionality, compatibility and accessibility in operation is:	14.62	21.54	34.62	22.31	6.92	2.85
Databases, in particular, application for promoting analysis, interpretation and sharing of information and knowledge is:	16.15	21.54	32.31	18.46	11.54	2.87
Having capability to adopt IT based service to meet customers' specifications	8.46	17.69	30.77	23.08	20	3.28
Total	**12.885**	**19.615**	**32.8875**	**21.155**	**13.46**	**3.0225**
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Owen survey, 2019

4.2.1.2. Human capital

In any organization the human capital quality is the critical factors for the success and performance of the organization. 18.46 & 23.08 percent of respondents rate very poor and poor. The workforces' knowledge and skills to perform their job; whereas, 15.38 and 17.69 percent of the respondents rate at high and very high level the employee's knowledge and skills to perform

their job. The rest 25.38 percent of the respondents replied that the knowledge and skill of employees to accomplish their job was medium. Apparently, more than 27 percent of the respondents confirmed that employees are loyal and committed; however, 35.39 percent of the respondents rate the employee's commitment and loyalty at poorest level; the rest 36.92 percent of the respondents replied that there is a medium level commitment and loyalty in the dry port. In the dry port the work forces of the organization strive to upgrade and enhance the capability work performance in pursuit of meeting customer expectation; this was confirmed by more than 27 percent of the respondents; on the other hand, around 43.8 percent of the respondents didn't see any effort made by the employees to enhance work performance that could meet customer expectations. In this regard 30 percent of the respondents rate the commitment and effort made by employees at medium level.

Generally, more than 28 percent of the respondents had a positive observation towards the human capital of the organization, around 40 percent of the respondents had a complaint on the human capital of the organization, and the rest 30.76 percent of the respondents put at medium level the human capital of the organization in terms of service delivery. Furthermore, the mean score of human capital is 2.77 which lies between poor and medium level; however, in most literature below 2.8 is considered as poor level; therefore, overall the human capital of the organization was rated as poor level (Table 4.5).

Table 4.5: Human capital at the dry port

Human capital	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Workforces' knowledge and skills to perform their job is:	18.46	23.08	25.38	15.38	17.69	2.90
Workforce's commitment and loyalty is	22.31	13.08	36.92	19.23	8.46	2.78
Work forces strive to upgrade and enhance the capability work performance	23.85	19.23	30	21.54	5.38	2.65
Total	**21.54**	**18.46**	**30.767**	**18.71**	**10.51**	**2.77**
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Owen survey, 2019

4.2.1.3. ServiceCost

For any trader cost is a sensitive issue since it had a direct implication on the profitability of the business. In related with this around 33.08 percent of the sampled customers were not well satisfied with the charge made for goods storage; on the other hand, majority (36.16%) of the respondents were replied that the service charge made for storage of goods were proportional and good; the rest 30.77 percent of the respondents rate the cost of goods storage at medium level. Apparently, customers were also assese on additional costs such as loading, unloading and stuffing unstuffing costs, with regard to this 37.22 percent of the respondents were not happy, this implies customers perceived that the amounts they pay for those services are high; on the other hand more than 27 percent of the respondents confirmed that the service delivery payment is proportional and it deserves for the job; on the other hand 35.38 percent of the respondents perceive the loading and unloading related payments at medium level. The dry port terminal also charge for cargo handling; close to 24 percent of the respondents replied that the cargo handling payment satisfied them, conversely, 50 percent of the sampled customers didn't well satisfied with cargo handling payment. Considering the service payment close to 40 percent perceive the payment negatively, around 29 percent of the sampled customers perceive the payment positively and the rest 29.80 put the charge of service cost at medium level. Furthermore, the mean of service cost was 2.81 which lies between poor and medium level; however it approaches to medium level (Table 4.6).

Table 4.6: Perception towards service cost

Service Cost	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Satisfaction with cost of goods storage	10	23.08	30.77	21.54	14.62	3.07
Satisfaction with cost of (loading/unloading, Stuffing/Unstuffing,warehouse charge)	16.15	20.77	35.38	17.69	10	2.84
Satisfaction with cost of cargo handling charge of a terminal.	22.31	27.69	26.15	14.62	9.23	2.60
Satisfaction with total service cost	15.38	29.23	26.92	20.77	7.69	2.76

Total	**15.96**	**25.1925**	**29.805**	**18.655**	**10.385**	**2.82**
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Owen survey, 2019

4.2.1.4. Size of dry port

The size of the port obviously determine the storage capacity of the dry port; accordingly, more than 64 percent of the respondents replied that the storage capacity of the dry port is good; on the other hand, 10 percent of the respondents confirmed that the dry ports storage capacity is not good enough and rated a low level; the rest 26.15 percent of the rated the storage capacity of the dry port at medium level. The customer respondents were also asked about the availability of warehouse and container fright station; greater than 60 percent of the customers replied that there is enough warehouse and container fright station. To measure the size of the dry port two questions were used and the grand statistics shows that the capacity of the dry port rated very poor by 1.92 percent of the customers, by poor by 9.61 percent of the respondents, medium by 31.53 percent of the respondents, high by 34.61 percent of the respondents and very high by 22.30 percent of the respondents. In addition to these, the mean of dry port size was 3.65 which imply customers are well satisfied with the size and capacity of the dry port (Table 4.7).

Table 4.7: Perception toward size of the dry port

Size of Dry port	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Storage capacity	0	10	26.15	38.46	25.38	3.79
Availability of warehouse and container fright station	3.85	9.23	36.92	30.77	19.23	3.52
Total	**1.92**	**9.61**	**31.53**	**34.61**	**22.30**	**3.65**
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Owen survey, 2019

4.2.1.5. Port machineries

This part assesses the situations of part machineries; more than 40 percent of the customer respondents responded that in the dry post container handling machineries and equipment's are available at enough extent. On the other hand, 32.12 percent of the respondents confirmed that there are no enough containers handling equipment in the port. The rest 26.92 percent of the respondents neither agree nor disagree with regard to availability of container handling mechanism. Around 34 percent of the respondents also mentioned that the operational effectiveness of machineries are very high; on the other hand, more than 30 percent of the respondents replied that the operational effectiveness of machineries are low; in this regard around 36.15 percent of the respondents neither agree nor disagree. Furthermore, 32.54 percent of the respondents confirmed that the dry port machineries are well functional; on the other hand more than 32 percent of the respondents responded that the dry port machineries are not well functional. In this regard, 36.15 percent of the respondents were neither agree nor disagree. Summarizing the whole questions in to one concerning the port machineries 12.56 percent of the customer respondents rate very poor, 18.97 percent of the respondents rate poor, 18.97 percent of the respondents rate medium, 25.38 percent of the respondents rate high and the rest 10 percent rate very high. Furthermore, the port machinery had a mean score of 3.01 which implies the in terms port machineries the dry port rated at medium level (Table 4.8).

Table 4.8:Accessibility of port machineries

Port machineries	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Availability of container handling equipment's	12.31	20	26.92	27.69	13.08	3.09

Operational effectiveness of machineries	13.85	16.15	36.15	25.38	8.46	2.98
Functionality of dry port machineries	11.54	20.77	36.15	23.08	8.46	2.96
Total	**12.56667**	**18.97333**	**33.07333**	**25.38333**	**10**	**3.01**
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Owen survey, 2019

4.2.1.6. Dry Port Infrastructure

Infrastructure in this research context means that to what extent the dry port had enough infrastructural facilities. More than 45 percent of the sampled customers replied and rated the availability of port infrastructure at high level; on the other hand 23.08 percent of the respondents rate the port infrastructure at low level. With regard to port infrastructure 31.54 percent of the respondents rated at medium level. 29.23 percent of the respondents also mentioned that the quality of telecommunication infrastructure and IT service can be rated at high level; whereas 36.93 percent of rated at poor level; the rest 33.85 rated at medium level. In general, 11.15 percent rated the port infrastructure at very poor level, 18.85 rated at poor level, 32.69 rates at medium level, 23.46 percent rate the port infrastructure at high level and the rest 13.84 rate at very high level. In addition to these, 3.09 was the mean of port infrastructure which lies on medium level; this implies the ports infrastructure leveled at medium level (Table 4.9).

Table 4.9: Infrastructure and facilities at the dry port

Infrastructure	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Availability of port infrastructure	8.46	14.62	31.54	26.92	18.46	3.32
Quality of telecommunication and IT service	13.85	23.08	33.85	20	9.23	2.87
Total	**11.15**	**18.8**	**32.69**	**23.4**	**13.84**	**3.095**

	5	**5**	**5**	**6**	**5**	
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Owen survey, 2019

4.2.1.7. Reliability of Modjo Dry Port Service

More than 41 percent of the respondents replied that there is high rate of incidence of cargo damage; on the other hand around 30 percent of the respondents rate at low level the incidence of cargo damage in the dry port. The rest 27.69 percent of the respondent rates the incidence of cargo damage at medium level. Apparently, there is high rate of cargo theft; this was confirmed by 30.77 percent of the customers; on the other hand more than 47 percent of the respondents rate the cargo theft in the dry port at low level; the rest 22.31 percent of the respondents rate the cargo theft level at medium extent. In addition to these, 35.38 percent of the customers replied that cargos are delayed at higher extent in the dry port; on the other hand, more than 42 percent of the respondents replied that cargos didn't delay. The rest 22.31 percent rate at medium level that the delay of cargos. Apart from these, the dry port security is good, this was confirmed by around 23 percent of the respondents; on the other hand close to 34 percent of the respondents rates the security at low level; whereas 43.08 percent rate at medium level. Generally, 19.04 percent of the respondents rate the reliability at very poor level, 19.42 percent of the respondents rate at poor level, 28.84 percent of the respondents rate the reliability ate medium level and the rest 18.62 and 14.03 percent of the respondents rate the reliability at high and very high level. Furthermore, the grand mean score of reliability was 2.88; the mean score indicates that the reliability of the dry port is rated at medium level (Table 4.10).

Table 4.10: Description of port service reliability

Reliability	Scale					
	1	**2**	**3**	**4**	**5**	**Mean**
Incidence of cargo damage	13.85	16.92	27.69	19.23	22.31	3.19
Incidence of cargo theft	27.69	19.23	22.31	20	10.77	2.66
Delay(Dwell time and turnaround time)	22.31	20	22.31	19.23	16.15	2.86

Dry port security	12.31	21.54	43.08	16.15	6.92	2.83
Total	**19.04**	**19.4225**	**28.8475**	**18.6525**	**14.0375**	**2.885**
1 = Very poor 2= Poor 3= Medium 4= High 5=Very-high						

Source: Owen survey, 2019

4.2.2. Employee's perception on Determinants ofModjo Dry Port

In support of the data collected from customers data was also collected from employees of the dry port to measure the perception and determinants of the dry port.

4.3.2.1. Information capital

The first point rose was the extent of applying networks for internal and external communication; As shown on Figure 4.2more than 46 percent of the respondents rate the network application as poor level, 29.3 percent of the sampled employee rate as medium and the rest 24.4 percent of the respondent rate the network application for internal and external communication is low. The next questions raised for employees were the extent of IT infrastructure system in terms of functionality, compatibility and accessibility in operation; with regard to this, 41.7 percent of the respondents replied that the application of databases for promoting analysis, interpretation and

sharing of information and knowledge is low; on the other hand, 36.6 percent of the sampled employee respondents put the application of database for interpretation and sharing of knowledgeat higher extent. The rest 22 percent put the application at medium rate. 26.8 percent of the employee's respondents rate the effort of employees to adopt the service to meet customers' specificationsat low level.

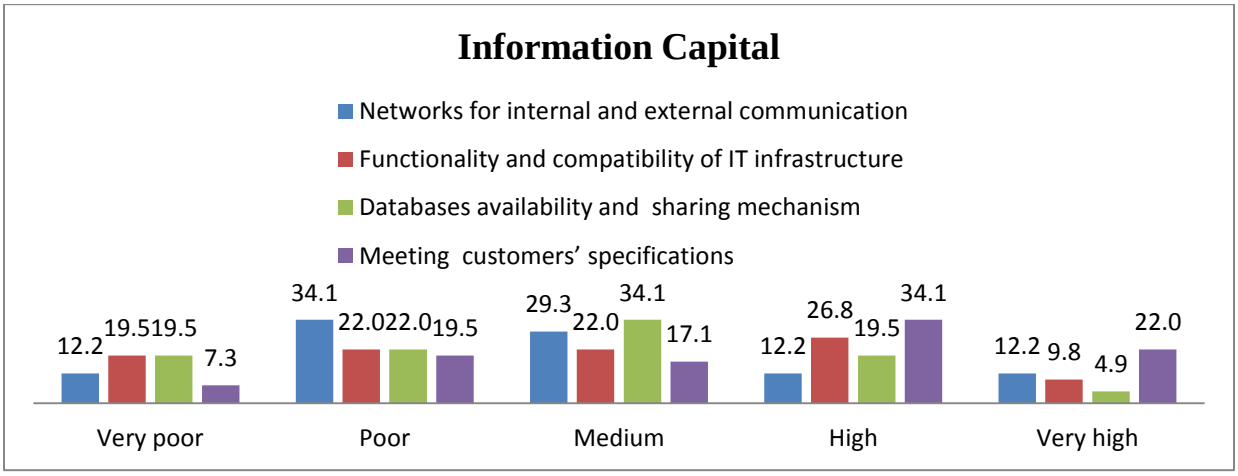

Figure 4.3: Employee perceptions towards information capital

Source: Own computation, 2019

4.3.2.2. Dry port size

Employees were also asked to rate the situations of the port size, only 17.1 percent of the respondents rate at poor level the storage capacity of the dry port; 43.9 percent of respondents rate at good level the storage capacity of the dry port. The rest 39 percent of the sampled employees rated at medium level the storage capacity of the port. Furthermore, 21.9 percent of the respondents rate the availability of warehouse and container fright station at poor level. On the other hand, 36.6 percent of the respondents rate the dry port size at high level;the rest 39 percent of the sample employees rate the dry port size at medium level.(Figure 4.4)

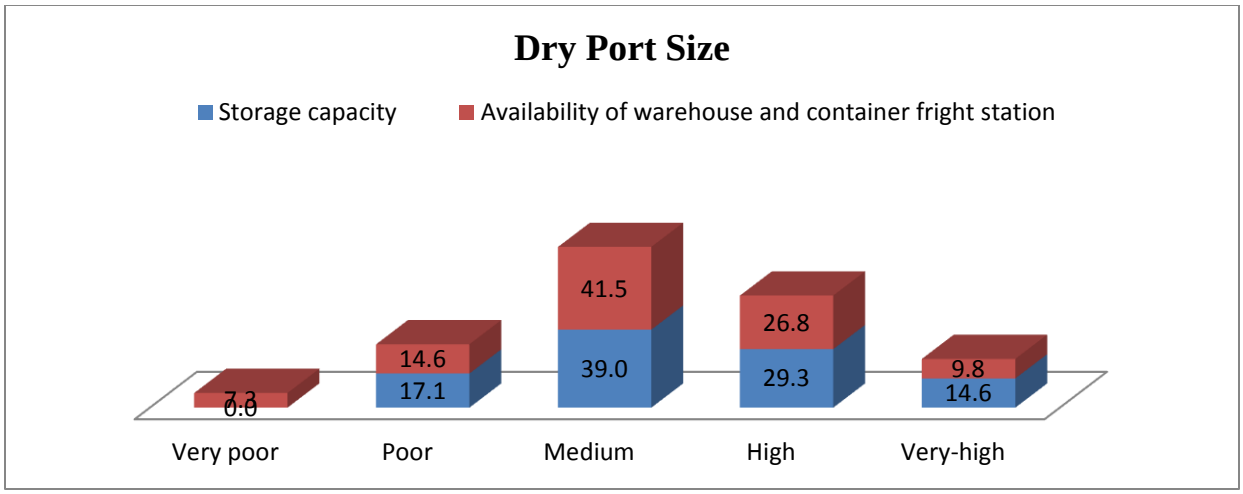

Figure 4.5: employee perceptions towards dry port size

Source: Own computation, 2019

4.3.2.3. Port Machinery

Do the dry porthad enough machinery to operate its activities?is the main concern of this sub-topic. Accordingly, the availability of container handling equipment's were rated at poor level, this was responded by 17.08 percent of the respondents. On the other hand more than 44 percent of the respondents rated the availability of container handling equipment as high level;the rest 39.02 percent of the respondents rate the availability of container handling equipment as medium level. furthermore, more than 26 percent of the respondents replied that the operational effectiveness of machineries are high; conversely, 48.78 percent of the respondents replied that the operational effectiveness of the machineries are low; the rest 24.39 percent of employee respondents replied and rated the operational effectiveness of the machineries at medium level. Apart from these, with regard to port machineries 19.52 percent of the employee respondents

said that the functionality of dry port machineries are high; on the other hand 24.39 percent of the respondents rate the functionality of the dry port machineries at low level; the rest 41.71 percent of the respondents rate the functionality of the ports machineries at medium level.(Figure 4.6)

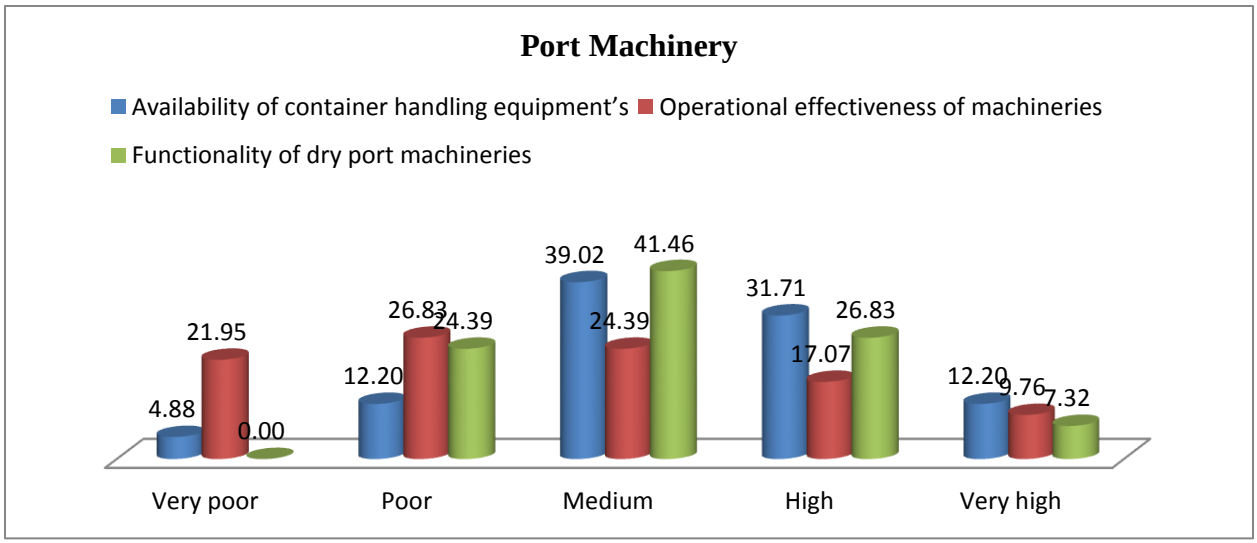

Figure 4.7: Employee perceptions towards port machinery

Source: Own computation, 2019

4.3.2.4. Reliability

This sub-topic concerns to what extent the dry port is reliable in terms of security, delay, cargo theft and damage. Accordingly, 34.14 percent of the respondents put at high level the security of the port; conversely, 36.58 percent of the respondents put the security situation at low level; the remaining, 29.27 percent of them put at medium level. Only 12.20 percent of the respondents said there is high incidence of cargo theft; whereas, more than 60 percent of the respondent confirmed the cargo theft incident at the dry port is very low. In this regard, 26.83 percent of the respondent put at medium level. Apparently, only 19.51 percent of the respondents replied that there is high level of cargo damage at the dry port; on the other hand, 43.91 percent of the sample employee respondents confirmed that there is low rate of cargo damage; the rest 36.59 percent of the employees put at medium level the cargo damage level.(Figure 4.8)

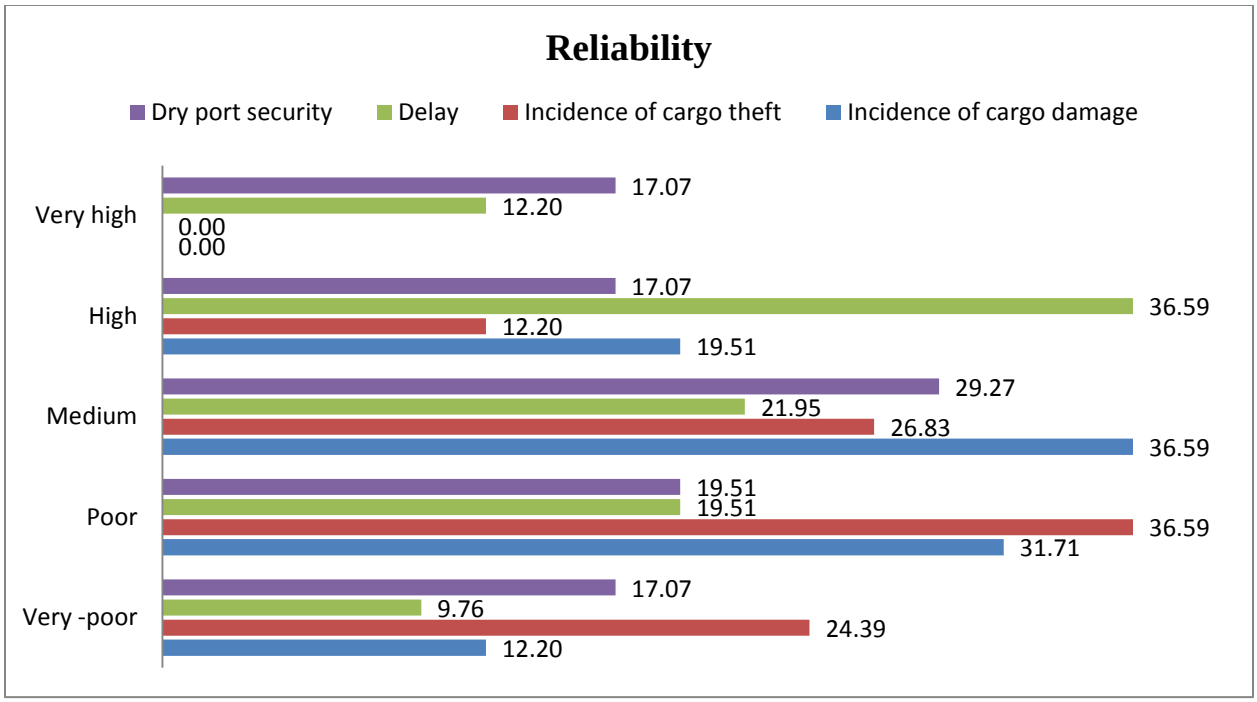

Figure 4.9: Employee perceptions towards Reliability

Source: Own computation, 2019

4.3.2.5. Infrastructure

There is enough port infrastructure in the dry port, this was confirmed by only 14.63 percent of the respondents; on the other hand, more than 48 percent of the respondents said that there is no enough infrastructural facilities in the dry port; Concerning infrastructural facilities, 36.59 percent of the respondent's rate at medium level. Apart from these, the quality of telecommunication infrastructure and IT services are good, this was confirmed by 26.83 percent of the sample employees. In this regard 21.95 percent of the respondents rate the IT infrastructure rate medium level; the rest 51.22 percent of the sample employees rate the telecommunication infrastructure at low level.(Figure 4. 10)

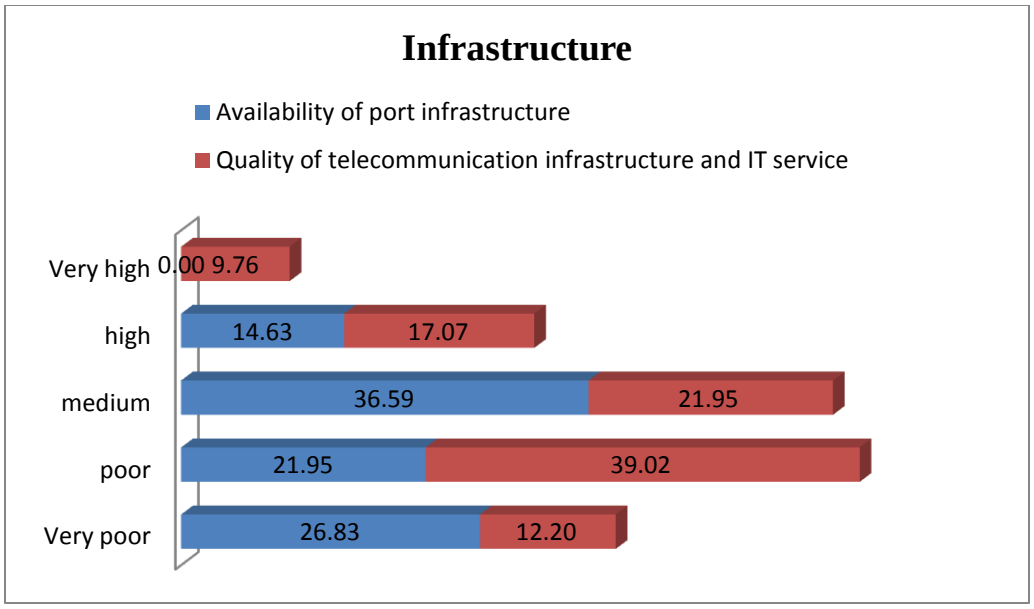

Figure 4.11: Employee perceptions towards infrastructure

Source: Own computation, 2019

4.3.2.6. Human capital

Human capital is critical factors for most companies' profitability and their performance; employees of the dry port were asked about the concern of human capital. Accordingly, only 17.1 percent of the employees said that there is high access of training and education opportunities that helps to enhance the work forces capability; on the other hand, 64.6 percent of the respondents said that in the dry port there is low access of training and education opportunities; the remaining 17.1 percent of the employee respondents rate the training and education opportunities at medium level. 43.9 percent of the employee respondents confirmed that the dry port employee's knowledge and skill is high which helps to perform their job well; conversely, 34.1 and 22 percent of the employees rate the knowledge and skill of the employees as low and medium respectively. 34 percent of the respondents also confirmed that employees of

the organizations are committed and loyal; conversely, around 48 percent of the respondents said that the employees of the organizations are not loyal and committed.(Figure 4. 12)

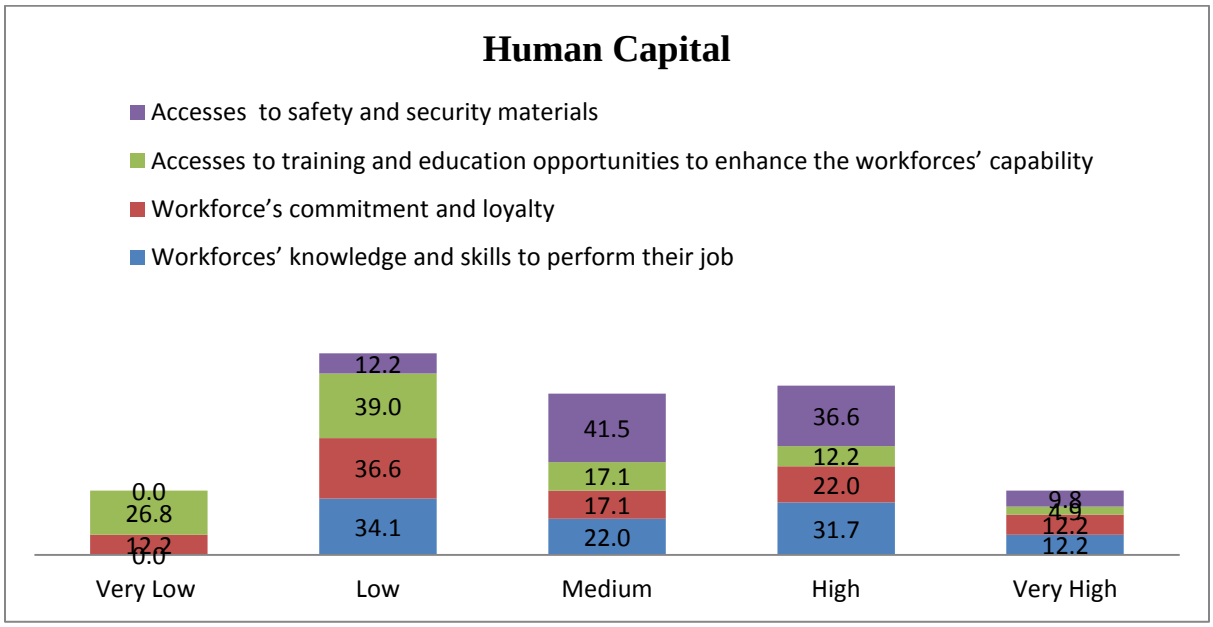

Figure 4.13: Employee perceptions towards human capital

Source: Own computation, 2019

4.3.2.7. Throughput performance

Transferring containers are the main task of the dry port; however, to what extent the dry port is performing in terms of transferring as many as possible containers as well as their due times. Accordingly, 12 percent of the sampled employees put the container throughput performance of the dry port at poor level, 27 percent of them put at medium level and the rest 34 and 27 percent of the sampled employees put the container throughput performance of the dry port as high and very high level respectively.(Figure 4.14)

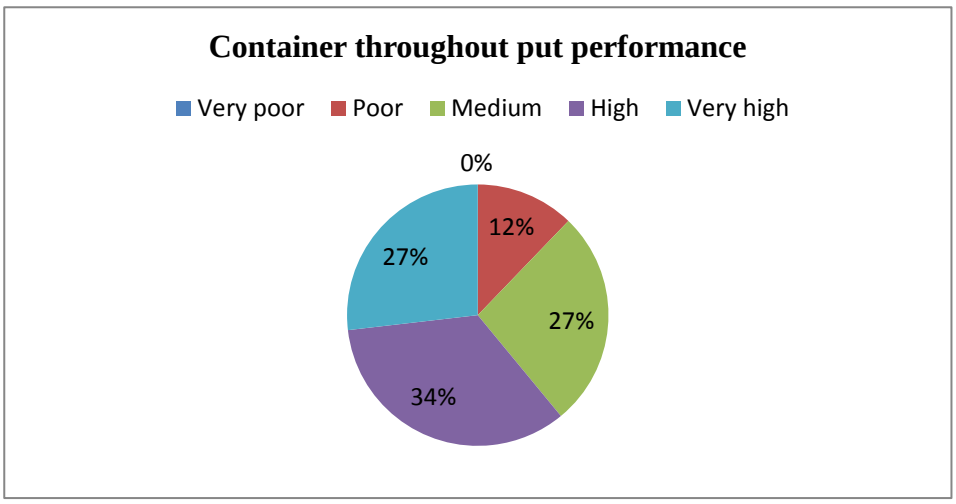

Figure 4.15: Employee perceptions towards throughput performance

Source: Own computation, 2019

4.3. Determinants of Modjo Dry Port

4.3.1. Regression Estimation Result

One of the assumptions underlying ordered logistic regression is that the relationship between each pair of outcome group is that same, in other words, ordered logistic regression assumes that the coefficients that describe the relationship between, say, the lowest versus all higher category of the response variable are the same as those that describe the relationship between the next lowest category and all higher category etc. and this is called proportional odd assumption. In order to test the proportional odd assumption brant test was performed; accordingly, if the variables become significant it is the indication of the assumptions are violated; however if the

variables are not significant it means that the assumption is not violated; accordingly, this assumptions are fulfilled.(Table4.11)

Table 4.11: Ordinal logistic model test

	Brant test of parallel regression assumption		
	chi2	p>chi2	df
All	14.81	0.832	21
Information capital	17.61	0.501	3
Human capital	16.11	0.301	3
ServiceCost	2.74	0.434	3
Size	1.19	0.755	3
Machinery	2.68	0.444	3
Infrastructure	1.18	0.757	3
Reliability	11.92	0.108	3

Source: Own computation, 2019

4.3.2. Regression Estimation Result

As shown in the previous sub topic all of the assumption was fulfilled except throughout put perception was estimated using ordered logit model. The dependent variable portperceptionwas represented by throughputvolume. The increased use of containerization and supply chains, the development of new production-distribution-consumption systems, and the increased specialization of the different port markets have all affected port organization management and operation. Understanding the levels of service quality achieved is at the core of the strategy of port authorities and operators, in order to deploy strategies that address the needs of port users, increase competitiveness, and thus market shares. The majority of the indicators, or relevant exercises, applied are constructs dealing with the operational productivity of the assets, equipment and productivity factors available (Brooks and Schelling, 2013).

The regression finding, as presented in Table 4.12, shows that among seven independent variables five of them had shown a significant effect on throughout put perception and all of the variables information capital, human capital, service cost, size of port and reliability has shown a significant and positive effect on throughput perception.

Information capital had a significant and positive effect on throughput perception of the dry port. As observed in the table below the coefficients of this variable is positive as well as the odds ratio is greater than one. Furthermore, given all the other variables in the model held constant, odds ratio greater than one suggested that, the dry port is more likely perform as the information capital increases. Along with the regression analysis the perception of the employees were also considered, although the regression output indicates information capital determines highly the throughput volume, the descriptive analysis coming from employee's shows a moderate response of human capital towards throughputperception. The description shows the networks data base is applied for internal and external communication at moderate level; while the application of databases for promoting analysis, interpretation and sharing of information and knowledge is at its developing stage.

Human capital also had a positive and significant effect on throughout put perception the variable human capital had a positive coefficient and odds ration greater than one. Considering other variables in the model held constant as the human capital of the dry port increases it has more likely performance of throughout put volume. Human capital is critical factors for most companies' profitability. In line with the regression analysis the information generated from employees in a descriptive form shows in the dry post there is high access of training and education opportunities that helps to enhance the work forces capability which ultimately shown on the human capital development of the port; apparently, the dry port employee's knowledge and skill is high which helps to perform their job well and the commitment of the employees also appreciable. The combination of good training and skill development program supported by the commitment of the employees makes to have a difference on the throughput performance of the dry port. According to Amah, (2006) the goal of human capital management is to make available to the organization qualified manpower to carry out its activities, so that the organization's goal can be achieved. Of all the resources an organization needs to function properly, human capital is

the only resource that can be motivated, taught, developed and appraised to obtain maximum performance. EletuandUkoha (2017) also found out that development is significantly associated with corporate performance; this implies that skills development is considerably important in enhancing corporate performance and expressions towards work in the organization. The nature of services provided by shipping companies forces them to be transnational companies serving more than one country. In general, these companies have access to international capital markets and they are able to hire the best workers from all over the world, although under some restrictions sometimes (Clark, Dollar, and Micco, 2001).

Service cost had also a significant and positive effect on throughout put performance; in addition to this variable has an odds ration greater than one which implies that as the service charged by the dry port increases its throughout volume more likely to be high. Strandenes& Marlow (2016) states that changes in port pricing have implications for competitiveness of short shipping. Efficient ports strengthen short sea shipping competitiveness with respect to road transport. Thus, port pricing strategies that give incentives to increase port efficiency seem appropriate. Port efficiency is an important determinant of handling cost. Countries with inefficient ports have higher handling costs. Also, countries with good infrastructure have lower seaport costs. The clear negative relationship shows that countries where ports are considered the most efficient are at the same time the ones whose ports charge the least for their. In turn, some countries are the worst ranked in term of their efficiency and also present the highest charges per services (UNIDO, 2016). Ports are congested at times and congestion pricing has been advocated to obtain efficient exploitation of port capacities. The main part of the congestion costs is, however, related to the opportunity cost of vessel time. This reflects both the alternative income that the vessel forgoes by postponing the next fixture and the capital costs of the cargo. The latter of course depends on whether selling the goods is postponed or whether port congestion merely implies that storage time on board the vessel replaces storage time on land (Strandenes& Marlow, 2016).

The size of the port also contributing positively for the throughput volume; this variable had a positive and significant effect Moreover, the odds ratio greater than one suggests as the size of the port increases it's throughout put performance are more likely to increase. In support of this,

the descriptive data collected from employees shows that the storage capacity of the dry port is rated at good level which is also supported by availability of good warehouse and container fright station. The combination effects of the good port size and good storage facilities make the port to have a significant contribution for its throughputvolume. Most ports of the world have to provide covered transit warehouses for break-bulk cargo, container freight stations for Less than Container Load (LCL) cargoes, tanks for liquid bulk storage yards for open storage, space and warehouses for long term storage. The facilities have costs for initial capital outlay, maintenance and operations. Space requirements for shed and open storage capacity are always difficult to determine because of the different characteristics of cargoes presented, and the time cargo will dwell in storage. The port's commercial strategy will also determine the amount of transit space required/If transit space is readily available the port will attempt to attract cargo by offering a low tariff on storage. Alternatively if transit space is limited or expensive the port will impose extra dues on storage to speed up delivery times and reduce time in transit (Indian Ports Association, 2013).

Reliability of the port also had a positive effect on throughout putvolume.. The analysis suggests that odds ratio greater than suggests that as the reliability of the port increases the throughout put volume is more likely to increases. In support of the regression analysis the port is reliable in terms of security, delay, cargo theft and damage; this means in the dry port there is minimum rate of cargo theft, high security, and damage of containers and products. The low number of cargo theft incidents reported signals either that the utilization of freight is systematically low among goods owners who report incidents, or that the security levels at maritime transport facilities are relatively higher than those at other relevant target transport chain locations from the perpetrators' point of view. The first conclusion is less likely than the second is, as the majority of reports come not from different parts. This would signal that the low numbers of incidents represent a relatively low risk for cargo theft at maritime transport facilities in general (EP, 2007).

Table 4.12: Ordered logistic regression estimation result

Ordered logistic regression Log likelihood = -98.749589				
Throughout put	Coef.	Std. Err.	Z	P > z
Information capital	.0787596	.0336052	2.34	0.019
Human Capital	.0908914	.0386255	2.35	0.019
ServiceCost	.1253339	.0558147	2.25	0.025
Sizeof the port	.2281823	.076416	2.99	0.003
Machinery	.003225	.1060699	0.03	0.976
Infrastructure facility	-.1091646	.112936	-0.97	0.334
Reliability	.4894916	.1119115	4.37	0.000

Source: Own computation, 2019

CHAPTER FIVE

5.CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The dry port concept is based on a seaport directly connected by truck or rail to inland intermodal terminals, where shippers can leave and/or collect their goods in intermodal loading

units as if directly at the seaport. In addition to the transshipment that a conventional inland intermodal terminal provides, services such as storage, consolidation, depot, maintenance of containers, and customs clearance are also available at dry ports. The dry port implementation itself certainly is not a straightforward solution for seaport terminal congestion or for better seaport inland access; however, it could be part of the solution. As the dry port is key logistics channel to the country it contributes to overall poor logistics performance of the country. Thus, the focus of this research was to assess the perception of service quality of dryport and determinants of Modjo dry port.

As a methodology explanatory research design were employed and data were collected both from customers and employees. Both descriptive and inferential statistics were used to analyze the data.The findings of the study generated from the descriptive statistics revealed that human capital of the dry port is rated at poor level; however, information capital, service cost, port machinery, port infrastructure and reliability were rated at medium level. The findings of the study further revealed that the size of the port was rated at higher level. Apart from these the regression analysis of the study suggests that except infrastructure and machinery the other entire variable had a positive and significant effect. Accordingly, the variables information capital, human capital, service cost, size of the port and reliability had a positive and significant effect on throughput performance of the dry port.

The overall assessment of the performance of Modjo dry port was found as moderate, implying it is still functioning with limited capacity. This further indicates that the contribution of the dry port to the overall economy is below its expected capacity.

5.2. Recommendation

Based on the findings, the researcher forwards the following recommendations:

- The ICT infrastructure of the port needs to be re-engineered and handle by IT specialists who will then integrate various internal systems as well as external systems. When both internal and external systems are integrated, it will streamline the port operations, business processes

and reduce some of those barriers like long cargo dwell time, delays in custom and clearance processes, long waiting time of vessels etc.

- The dry port should have to iterative training, which can be short and long term training for employees. The training should be actual skill and knowledge gap.
- In order to increase the reliability of Modjo dry port, the management should have to focus on decreasing cargo damage and cargo theft that leads to high financial risk on customers and also the dry port.
- In order to increase the throughput volume, customers should have to receive their containers early .To do so they should have to afford the cost for the service. So the dry port service charges which the port always attempt to negotiate for a lower price are a key driver to attract customers.
- Strategic leadership along with proper short and lone run intervention to capacitate the port is very crucial to improve the efficiency and effectiveness over time.
- Finally, but strongly, I recommend other researchers to conduct a more in depth study on the same or related topic of this study by using more preferably other methods of research like that of longitudinal studies.

REFERENCE`S

Abdurezak ,M(2016) An Assessment On Determinants Of Dry Port Performance: The Case Of ModjoDry Port:

APICS: American Production and Inventory Control Society (2018). SCOR Metrics. Understand the Structure of SCOR. Retrieved on March 22, 2019. Available at: ttps://www.apics.org/apics-for-business/benchmarking/scormark-process/scor-metrics.

Arvis, Daniel Saslavsky, LauriOjala, Ben Shepherd, Christina Busch and Anasuya Raj (2014). Trade Logistics in the Global Economy.The Logistics Performance Index and Its Indicators, Washington, DC: World Bank

Bagočiusa, V., Zavadskasb, E.K., and Turskisc, Z. (2013). Multi-Criteria Selection of a Deep-Water Port in Klaipeda.Procedia Engineering 57 (2013) 144 – 148.

Bentaleb, F., Mabrouki, C., and Semma, A. (2015) Key Performance Indicators Evaluation and Performance Measurement in Dry Port-Seaport System: A Multi Criteria Approach. JEMS, 2015; 3(2): 97-116.

Bergqvist, Rickard, Wilmsmeier, Gordon, and Cullinane, Kevin, eds. Dry Ports – A Global Perspective: Challenges and Developments in Serving Hinterlands. Surrey, England and Burlington, Vermont: Ashgate Publishing Limited, 2013. ISBN 9781409444244.

Cohen, S. and Roussel, J. (2005), Strategic Supply Chain Management: The Five Disciplines for Top Performance, McGraw-Hill, New York, NY.

Cullinane, K. and Wang, Y. (2009).Capacity-based measure of container port accessibility.*International Journal of Logistics*,.

Da Cruz, P.R., Ferreira J. J.M. and Susana GarridoAzevedo, G.S. (2013) Logistics resources in seaport performance: multi-criteria analysis. Maritime Policy & Management, 2013Vol. 40, No. 6, 588–613.

De Icaza1, R.R, and Gregory Samuel Parnell, S.R. (2018). Container Port Selection in West Africa: A Multi-Criteria Decision Analysis. Engineering Management Research; Vol. 7, No. 1; 2018.

Dragovic, B., and Zrnic, D.N. (2011) A Queuing Model Study of Port Performance Evolution. ANUL XVIII, NR. 2, 2011, ISSN 1453 – 7397.

Dyson, R. G. (2000). Performance measurement and data envelopment analysis – Ranking are rank, OR Insight, 13(4), 3–8.

ECE - Economic Commission for Europe, 2001.Terminology on combined transport.UN, New York and Geneva, 2001, p.59.

Eshaday, W.(2016) Assessment Of The Performance Of Dry ports in Ethiopia using SCOR method Addis Ababa University.

Feng, Mengying (2010)Factors Determining Port Performance and Choice : A Comparative Study of Ports and Their Hinterlands:
Gabriel, C.C. (Undated) Performance Assessment in Operating Dry Ports. AlexandruIoanCuza, University of Iasi, Faculty of Economics and Business Administration.

GirmaTadesse(2016) Port Service And Its Effect On Humanitorian Logistics In Addis Ababa
Harrison, R.; McCray, J.P.; Henk, R. and Prozzi, J., 2002.Inland port transportation evaluation guide.Center for Transportation Research.The University of Texas at Austin, USA.

Hiwot, T (2016) Addis Ababa University School of Commerce Department of Logistics and Supply Chain Management :Exploratory Study on Dry Port Service in Ethiopian Context: Case of Addis Ababa Kality Dry Port.

ISEG – School of Economics and Management, Technical University of Lisbon Rua Miguel KasypiMokhtar and Muhammad Zaly Shah (2006).*A Regression Model For Vessel Turnaround Time*. Tokyo Academic, Industry & Cultural Integration Tour, Shibaura Institute of Technology, Japan.Lupi, 20, 1249-078 Lisbon

JafarRezaei, Linde van WulfftenPalthe, Lori Tavasszy, Bart Wiegmans, Frank van derLaan, (2019) "Port performance measurement in the context of port choice: an MCDA approach", Management Decision, Vol. 57 Issue: 2, pp.396-417, https://doi.org/10.1108/MD-04-2018-0482.

Kalkidan, W (2017)Assessing Freight Transport Performances in Relation to Delays in Ethiopia: the case of Addis Ababa-Djibouti Corridor.

Mwendaple.,msabaha., Juma. (2015) the open university of Tanzania .Analysis on the factors contributing to poor sea port performance in Tanzania.

Nazery., Khalid (2015) Senior Fellow Center for Maritime Economics and Industries Maritime Institute of Malaysia.

Notteboom , T. E., & Rodriguez , J. P. (2009). *The terminalization of supply chains: Reassessing the role of terminals in port/hinterland logistical relationships* (1 st edition ed.). Ashgate.

Notteboom, T. E., & Rodriguez J. P., N. T. (2009).*The terminalization of supply chains Reassessing the role of terminals in port/hinterland logistical relationships* (1 st edition ed.). Ashgate.

RaimondsAronietis., Eddy Van de.,Voorde., Thierry Vanelslander(2010)Port Competitiveness Determinants of selected Europian ports in the Contenerized Cargo Market Association for European Transport and contributors.

Samuel Monday Nyema (2014) Department of Procurement in the School of Entrepreneurship, Procurement and Management Jomo Kenyatta University of Agriculture and Technology.European Journal of Logistics Purchasing and Supply Chain Management Vol.2, No.3, pp. 39-78,

YoditRegasaGudisa(2016) Dry Ports Service Quality in Ethiopia: A- Comparative Study The Case of Modjo and Kaliti Dry Ports and Terminals

APPENDIX

QUESTIONNAIRE

PERFORMACE AND DETERMINANTS EVALUATION OF MOJO DRY PORT

Survey Questionnaire

Dear respondents:

My name is RedietBekele. I am a graduate student pursuing Master of Science (Msc) degree in Development Economics at St. Mary's University, Institute of Agriculture and Development Studies. Currently, I am undertaking final research study on "ASSESSMENT ON PERFRMANCE AND DETERMINANTS OF MOJO DRYPORT" in partial fulfillment of the requirements for the degree of Master of Science (Msc) in Development Economics.

Because of your experience in dry port system, you have been selected to participate in this survey by completing the attached survey questions. The researcher would highly appreciate if you assist her by responding to all questions as completely, correctly and honestly as possible. The researcher would also affirmed that the data collected will be solely used for academic purposes and hence, your responses, opinions, views will be completely confidential and not used for other purpose.

If you require additional information or have questions, please contact me at the number listed below. Thank you very much for your participation, cooperation and understanding in advance.

Sincerely,

RedietBekele

Phone number: +251912282512

Email: redietbekele22@gmail.com

PART 1

Mojo dry port employees survey

SECTION I: BACKGROUND INFORMATION OF RESPONDENTS

1. Sex of Respondent: (A) Male [ ] (B) Female [ ]
2. Level of Education acquired:

   (A) Diploma [ ] (B) First Degree [ ] (C) Post Graduate Degree [ ] (D) Other (Specify) _____

4. Experience in this organization? _____ Years

SECTION 2

Here are some variables that are selected to measure the performance of mojo dry port, Accordingly, rate the performance of the dry port in terms of the following variables indicated below.

Mark the one that you believed in

	Very poor	**Poor**	**Medium**	**High**	**Very high**
5. HUMAN CAPITAL					
5.1workforces' knowledge and skills to perform their job is:					
5.2workforce's commitment and loyalty is					
5.3Accesses to training and education opportunities to enhance the workforces' capability is:	Trained				
5.4Accesses to safety and security materials					
6.INFORMATION CAPITAL	Very poor	Poor	Medium	High	Very high
6.1Networks for internal and (or) external communication is					
6.2IT infrastructure system in terms of functionality, compatibility and accessibility in operation is:					
6.3Databases, in particular, application for promoting analysis, interpretation and sharing of information and knowledge is:					
6.4Having capability to adopt service to meet customers'					

specifications					
7. Reliability	**Very poor**	**Poor**	**Medium**	**High**	**Very high**
7.1Incidence of cargo damage					
7.2Incidence of cargo theft					
7.3Incidence of delays(lead time)					
7.4Port security					
8.SIZE OF THE DRY PORT	Very poor	Poor	Medium	High	Very high
8.1.Availability of storage capacity at the port					
8.2Access to port premises for pick-up and delivery (gate congestion)					
9.Through put volume	Very poor	Poor	Medium	High	Very high
Container throughout put(containers entrance and exit)					
10.INFRASTRUCTURE	Very poor	Poor	Medium	High	Very high

10.1Quality of port infrastructure					
10.2.Quality of telecommunication and IT service					
11. Port machineries	Very poor	Poor	Medium	High	Very high
11.1Availability of Container handling equipment in the dry port					
11.2Functionality of the machineries					
11.3Operational effectiveness of machineries					

PART 2

Dry port user's survey

SECTION 1.BACKGROUND INFORMATION OF RESPONDENTS

1. Sex of Respondent: (A) Male [ ] (B) Female [ ]

2. Level of Education acquired:

(A) Diploma [ ] (B) First Degree [ ] (C) Post Graduate Degree [ ] (D) Other (Specify) _____

3. Sector of your import ?

4. Experience in this organization? _____ Years

SECTION 2

- Here are some variables that are selected to measure the performance of mojo dry port, accordingly, rate the performance of the dry port in terms of the following variables indicated below.

Mark the one that you believed in

5. Reliability	**Very poor**	**Poor**	**Medium**	**High**	Very high
5.1Incidence of cargo theft					
5.2Incidence of delays(lead time)					
5.3 Port security					
6. Servvice cost	**Very poor**	**Poor**	**Medium**	**High**	Very high
6.1Satisfaction with cost of goods storage					
6.2Satisfaction with cost of (loading/unloading, Stuffing/Unstuffing,warehouse charge)					
6.3Satisfaction with cargo handling charge of a terminal.					
6.4Satisfaction with total service cost					

7. Port machineries	**Very poor**	**Poor**	**medium**	**High**	Very high
7.1Availability of machineries in the dry port					
7.2Operational effectiveness of machineries					
8.Information and communication system	**Very poor**	**Poor**	**Medium**	**High**	Very high
8.1Networks for internal and (or) external communication is					
8.2IT infrastructure system in terms of functionality, compatibility and accessibility in operation is:					
8.3Databases, in particular, application for promoting analysis, interpretation and sharing of information and knowledge is:					
8.4Having capability to adopt service to meet customers' specifications					
9. SIZE OF THE DRY PORT	**Very poor**	**Poor**	**Medium**	**High**	Very high
9.1.Availability of storage capacity at the port					
9.2Access to port premises for pick-up and delivery (gate congestion)					

10. INFRAS	Very Poor	Poor	Medium	High	Very high
		RUC	TU	R	E
10.1Quality of port infrastructure					
10.2.Quality of telecommunication and IT service					