

# Challenges and Prospects of Multimodal Transport System Provision and Operation in Ethiopia: The Case of Modjo Dry Port

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## Abstract

In this contemporary world, multimodal transport system faces with various challenges to transport freight effectively in most landlocked developing country, causing lost economic growth and development. The limitations of freight transit facilitation that exists in these countries are frequent problems of Ethiopia. This study assesses the challenges and prospects of multimodal transport system provision and operations in Ethiopia: The case of Modjo dry port. Particularly, the study attempts to identify challenges of system provision, factors affecting operation of the system in Modjo dry port and role of Modjo dry port for the system to manage the problems in Ethiopia. Primary data were collected through structured questionnaires, interview, focus group discussion and field observation; total of 96 samples from Modjo dry port enterprise, revenue and customs authority of Modjo branch and customs clearing agents are selected. Both probability and non-probability sampling were utilized. Secondary data sources were also collected from different books, websites, pamphlets, research papers, reports, magazines. Mixed research approach that combined both qualitative and quantitative is utilized to triangulate the analysis of the finding. Generally, the major challenges of multimodal transport system provisions in Modjo dry port were unfinished infrastructures; lack of essential equipments for cargoes handling; unfulfilled structure with skilled personnel; absence of railway, lack of truck; poor public private partnership, low level of technology and information technology provision. Whereas, increasing rate of foreign currency; frequent theft and pilferage; lack of training and awareness creation; high turnover rate; unbalanced trade; complex documentation and customs process; delay and congestion of cargo; un-automated service and high transport, port and warehouse fee at sea port are the major challenges of multimodal transport system operation in Modjo dry port confirmed by this study. This study proves that now Modjo dry port has not sufficient capacity to accomplish the activity of the system successfully. However, to overcome the challenges attempt to reduce unnecessary fee at port, give different service and provide essential equipments to run the activity of the system efficiently. At the end, based on survey result the study forwarded the possible implications to be considered to the concerned bodies to enhance efficiency and effectiveness of its transit facilitation.

**Keywords:** multimodal transport system; multimodal transport provision; multimodal transport operation and dry port enterprise.

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## 1. Introduction

Multimodal transport is transportation of goods under a single contract by multimodal transport operators and by single documentation at least by two different means of transport from origin to destination, door-to-door service delivery. This type of transport system is used to reduce cost of loading and unloading; transit cost; delay of container at port; reduce warehouse cost; reduce port fees and improve timely delivery freight between origin destinations, as compared with unimodal transport system. However, Multimodal transport system is a recent phenomenon in Ethiopia; the country has no access to seaport and far from neighboring port that used for freight transit. In this case, the country faced with various challenges to delivery freight transport from the port to the inland dry port. For this reason, assessing the major challenges encountered and prospects to multimodal transport system provision and operations in Ethiopia particularly at Modjo dry port. These challenges might be inadequate infrastructure, inadequate truck, shortage of foreign exchange, high cost of inland transportation, increasing duration of container at dry port and other challenges might face the MMTS when import export process carried out.

To assess the problem in detail the objective of the study assessing challenges and prospects of multimodal transport system provision and operations in Ethiopia the case of Modjo dry port, which might be a benchmark and pave the way for more research to be undertaken. In addition, the problems that identified by this study may help for policy makers, multimodal transport planner, governmental officials and non-governmental organizations as to give attention for the problems. Similarly, shortage of secondary data, reluctance of some respondents, time and budget constraints were addressed as limitation of the study.

Generally, theoretical and empirical review of literature internationally, nationally and locally related to

multimodal transport system provision and operations were assessed. Descriptive research method was used to describe the issue properly by gathering data through primary and secondary source. The data were analyzed and presented and hence the study was finalized by providing conclusion and recommendation of MMTS.

Multimodal transport system is transportation of goods under a single contract that performed with at least two different means of transport; the carrier is liable (in a legal sense) for the entire carriage, even though it was performed by several different modes of transport (by rail, sea, road and air). Multimodal transport system developed in connection with the "container revolution" of the 1960's and 70's, containerized transports were by far the most important multimodal consignments since the implementation of the container in 1965 by the maritime industry the use of MMTS has increases rapidly (World Bank, 2014).

Multimodal transport system identified as an efficient way of transporting international cargo through one transport document; one tariff rate and a single liability are applied. The principal aimed of multimodal transport was to make the movement of goods from seller to buyer more efficient, through faster transit times and reduced costs. In this system the responsibility and liability was concentrated in one entity known as the Multimodal Transport Operator (MTO), who organizes all transport systems in the transport chain between countries and they have accepted total responsibility and liability to perform the transport contract become the sole interface point for the shipper's transport function. The Multimodal Transport Operators (MTO) works on behalf of the supplier and contracts with the shipper to carry goods by one or more modes of transport that assured the supplier and the buyer as their goods effectively managed and supplied (Atallah, 2005).

Fokkema (2002) noted that more than 20 years have passed since the adoption of the multimodal transport convention now it is more than 30 years, during this time globalization, together with significant development in technology and communication that results change in demand leads to increase the emphasis of multimodal transport system.

Faghfour (2006) identified that, the movements towards trade liberalization corresponding to advancement of information technology has brought economic integration which raises export and import trade and alerting transport service structure from unimodal to multimodal transport that shifts cargo delivery from seaport to dry port and dry port to door to door service delivery. This is another factor, which promotes the journey towards the beginning of multimodal transport system. Therefore, countries starts to establish a uniform legal regime to govern liability for loss, damage or delay arising from multimodal transport extends back to the point at which containerizations became a technological reality. The application of several national laws and international unimodal convention to different mode of multimodal transport carriage resulted in uncertainty as to laws governing international door-to-door transportation of goods.

Additionally, Atallah (2005) stated that on issues relating to the international carriage of goods such as the scope of application, the period of responsibility of the carrier, obligation of the carrier, liability of the carrier, obligation of the shipper and transport documents requires legislative instrument and must be clearly stated. Landlocked developing countries face challenges when involved in global trading system mainly because goods arrived from and to a landlocked country are subject to additional trade barriers such as border crossing procedures, weak legal and institutional arrangements, poor infrastructure, lack of information technology, underdeveloped logistics sector and lack of cooperation with neighboring transit countries (UNCTAD, 2007).

The Ethiopia government takes strategic measure to maintain economic growth by establishing Ethiopian Shipping and Logistics Enterprise (ESLSE) under regulation No. 255/2011 had merge operations of the three major state owned enterprises such as Ethiopian Shipping Lines, Ethiopian Maritime and Transit Services and Ethiopian Dry Port Service Enterprise. This enterprise with huge responsibility of rendering sea transport and logistics services to the country's importers and exporters in a more effective and efficient way by reducing transit time, cost and handoffs (Negarit Gezeta, 2011). For further run the system, the government had intended to build and expand dry port (Annex VI). Modjo dry port is the first dry port that has been starting operation since 2009 initially serving public enterprises and state owned firms with high import volumes such as Ethiopian Telecommunications Corporations and Electric and Power Corporation (ESLSE, 2009).

ESLSE (2014) stated that Modjo dry port alone save 1.5 million birr in government expenditures by cutting the time it took to move cargo from Djibouti to Ethiopia from 30 days to 10 and had entertained 9,568 containers by November 2009. In addition to this the dry port would be delivered service to customers such as cargo loading and unloading, stuffing and un stuffing of containers, container cleaning and maintenance; customs control and clearance; banking and insurance, standard and quality control, temporary storage for import cargo were the major services provided by dry port (Belew, 2014). However, Mojo Dry Port face several challenges to provide such services these are delay of container, congestion, absence of modern technology, shortage of infrastructure are the major problem that affected the dry port as to not provide the necessary service (ESLSE, 2014).

On the other hand, the establishment of Ethiopia Shipping and Logistic Enterprise (ESLSE) in 2011 to operate Multimodal Transport System also initially implement on government and charity organization's freight transits. Then looking their effectiveness, in January 2012 the multimodal transport system had made to be implemented on all imports to Ethiopia in accordance the Regulation with Ministry of Transport. However, recently due to

transit costs and delay, that makes them uncompetitive in the world and domestic market, some national and international investors, importers and stakeholders, demand for a fast and efficient freight transit have increased. Due to this consistent raised in demand, Multimodal Transport System in Ethiopia was quickly become saturated (Yemane, 2013).

Moreover, Tadele (2013) noted that, Ethiopia lacked most of the prerequisites of multimodal transport and hence could not benefit fully from the advantages that go with this system of transportation. Because the proportion of used the Multimodal Transport System was 10% only, lack of collaboration, less infrastructural development, shortage of heavy machineries and private companies' involvement did not allow by the government, multimodal transport is only operated by Ethiopia shipping and logistic service enterprise. This leads to the dissatisfaction of customers preferred to use unimodal transport system, which was against the government policy in tried to reduce time and cost at the port.

Therefore, this study would help to identify the main challenges and possible prospects that had inseparable tool for facilitation of provision and operation, which was effective for Multimodal Transport System in Ethiopia particularly in Modjo dry port. The assessment could also play a crucial role in development of multimodal logistic center in Ethiopia and potential to become centers for economic development that allowed more trades, particularly in Modjo dry port.

### 1.1. Statement of the Problem

The transport sector is the backbone of every economic growth and development of any country in the world. MMTS is the new concept which required special emphasis along with the dry cargo transportation since the country's economy was highly dependent on agricultural product. Ethiopia as one of the LLDCs of the world often has limitations in its transportation sector, particularly multimodal transport system provision. These limitations are related with problems of distance, raised port fees and warehouse rent that caused increase in the delivery costs of imports, less competitive and attraction for foreign direct investment (UNCTAD, 2008).

Service delivered of multimodal transport system in Ethiopia especially in Modjo dry port is associated with high transportation cost, lack of timely service delivered of trucks, inefficient of dry port, congestion of ports, and lack of technicians' employee in the sector. Moreover, lack of information technology (IT) supported online system in the operation; marketing and customers' service delivery that lead to challenges of multimodal transport system provision and operation in Mojo Dry Port. The ESLSE is established by merging the former sector like Ethiopian Shipping lines Share Company, Maritime and Transit Service Enterprise and Dry Ports Enterprise: but lacked capacity to provide necessary service. In addition, Modjo dry port unable to provide the required service such as holding import trade sufficiently, timely transit and delivery of cargoes to customers (ESLSE, 2014). Ethiopia supposed to be alleviated after MMTS was adopted, since it made the movement of goods from seller to buyer more efficient through faster transit times and lower transport costs to door-to-door service delivery (ESLSE,2014).

However, since the freight transit predominantly passed and carried out through the Ethio- Djibouti trade corridor, which increased in import and export traffic in corridor that imposed considerable challenges for the country's freight transport by multimodal transport system. In addition, after establishment of big dry ports since 2009 at kaliti, modjo and semera; the transit problems of freight transportations in the country had not yet solved (Yemane, 2013). Because of this, the existing freight transportation system of multimodal transport needs further investigations to change the situations. Hence, having the above mentioned problems into consideration, then to make assessment of the challenges and prospects of multimodal transport system provision and operations to ensure required fulfillment in commercial, operational and professional regimes is crucial for ESLSE particularly Modjo dry port.

### 1.2 General Objective

✚ To assess challenges and prospects of multimodal transport system provisions and operations, in Modjo dry port.

#### 1.2.1 Specific Objective

- ✚ To assess challenges of multimodal transport system provision in the Mojo dry port,
- ✚ To investigate factors that affect multimodal transport system operations in the Mojo dry port,
- ✚ To analyze the role of Modjo dry port in multimodal transport system in Ethiopia,

## 2. Research Methodology

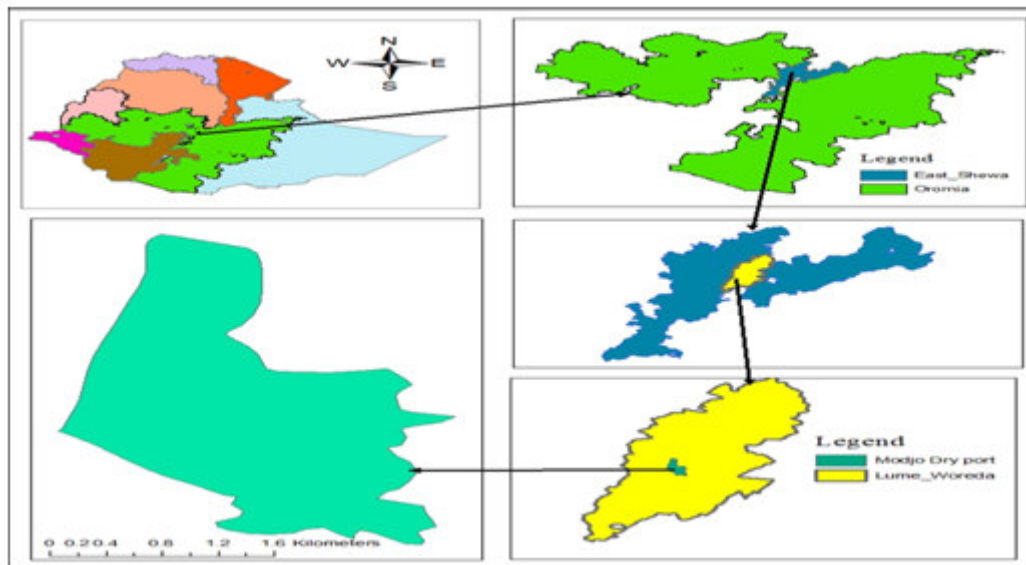
### 2.1 Description of the Study Area

As Modjo dry port service enterprise (2015) describes that, Modjo dry port is located in Oromia regional state in Modjo town between 8°39'N latitude 39°5'E longitude with an elevation of 1788 and 1825 meters above sea level; 76 km East of Addis Ababa and 15 km from Adama. Accordingly, the dry port developed on land of 62 hectares and additional 80 hectares asked Oromia Regional Government to expand the dry port terminal capacity.

Additionally, Modjo dry port service enterprise ( 2015) states that, Modjo dry port is the first established in

2007 by Ministry of Transport and Communication and starts commercial operations since 2009 with two reach stackers, one terminal tractor, four forklifts, two terminal chassis on red ash with capacity of 200 TEU. Also, describe, as the dry port provides 24-hour service with 234 permanent, 127 contractual employees, 102 daily workers and 240 loading and unloading workers and consisted of different equipments. These were 14 reach stackers; 18 terminal chassis; 10 terminal tractors; three empty container handler; 34 forklifts of different capacity, two fire fighters truck. Furthermore, stress the dry port is located in strategic place at near distance to the capital city of the country Addis Ababa and major industry of the country (ESLSE, 2014).

Map 1.1 Location Map of Modjo Dry Port Service Enterprise



Source: Extracted from Ethio-GIS (2015)

## 2.2 Research Design

Descriptive type of research used to observe the social reality, phenomenon, events and describes it. This method also enable researcher to answer what happen, how much, who, when, where and at what level.

## 2.3 Research Approach

Both qualitative and quantitative data were collected and analyzed using descriptive method of analysis to reach at research conclusion. Since employing combination of two types of research approaches gives better interpretation to enhance the information missed by one and better integrate result might be emerge from the analysis. The combination of two-research approach emerges as the most valid and reliable way to develop understanding of complex reality (Bell and Bryman, 2003). For instance, it described as follows:

**Qualitative approach:** was suitable to understand the problem and concept of the study that used to generate complete and in depth information, it focus in generating meaning rather than numbers, and it also transforms the reality into meaningful text, that collect through questionnaires, interviews, focused group discussion and field observation.

**Quantitative approach:** it is important to generate extensive information that summarized and presented in tabular and figure form. Generally, it helps to transforms reality into numeric value rather than meaning.

## 2.4 Sample Design

Sample design deals with sample taken from the target population, method of sampling technique and sample frame. These indicated as follows:

### A. Population

Staffs of Mojo Dry Port, ERCA of Modjo Branch and Customs Clearing Agents are the population for the study. According to Mojo Dry Port personnel information, there were 234 permanent employees in the dry port and as ERCA of Modjo human resource 115 permanent employees in the customs and 350 customs clearing agents have legally registered by the authority were exist. Those populations under run the activities of the multimodal transport directly and indirectly. On the other hand, customs clearing agents were selected as target population since they are representative of importers, exporters and investors and they part and parcel of activity of MMTS directly and indirectly while import and export take place.

### B. Sampling Frame

Sample frame of the study were list of Modjo dry port and ERCA officials as well as custom clearing agents. Total

population selected for the study was 699; out of this, 96 of them were selected through simple random and purposive sampling.

### C. Sampling Unit

The sampling units were taken from the sample frame. It would be the staff of Modjo dry port, ERCA of Modjo Branch and Customs Clearing and Forwarding Agents were selected.

### D. Sampling Technique

To collect data from the samples both probability (simple random sampling) and non-probability (purposive sampling) were used. Simple random sampling technique was employed to select the number of samples from Dry Port, ERCA staff and customs clearing agents for open and close-ended questionnaires. Interview questions and focus group discussion were take place with participant selected through purposive sampling. The rationale for the use of simple random sampling to avoid bias (give equal chance for all staff) and randomly to pick the selected respondents for the study based on their identification (ID) number. While purposive sampling technique is to select the team leaders who are especially responsible for and concerned with the issue of Multimodal Transport System activity in the Modjo dry port Enterprise.

### E. Sample size

To conduct the study, the researcher tried to take the maximum possible sample size from the target population of study. In this study, interviews made with ERCA and Modjo dry port team leaders of different department, through purposive selection. In addition, focus group discussion made purposively with group leaders of multimodal department of Modjo dry port who has responsible of the issue under study. The rationale behind the purposive selection of management bodies was their smallness in number and easily manageable to extract important information from them.

There is a Rule of Thumb, which helps to determine the sample size from the population of various sizes (Yount, 2006). In this rule, an attempt was made to determine sample size percentages from specific range of population. Accordingly, from staff of Modjo dry port 23, from ERCA 12 and 35 of them from customs clearing and forwarding agents were taken through Rule of Thumb sample size calculation (Table 3). Additionally, eight team leaders from Modjo dry port and 12 team leaders from ERCA of Modjo taken purposively for an interview as well as six group leaders from multimodal department of Modjo dry port were taken purposively for focus group discussion. The grand total of respondents was a sample size for this study is 96.

Table 3.1: Category of Sample Size

No.	Size of Population	Sampling Percent
1	0-100	100%
2	101-1,000	10%
3	1,001-5,000	5%
4	5,001-10,000	3%
5	10,000+	1%

Source: Yount (2006)

Based on the rule of thumb sample size described in the Table 3.1, sample size for the study is distributed in Table 3.2.

Table 3.2 Sample size distribution

No	Name of organization	Number of employees	Sample size	Sample taken	%
1	Modjo dry port Enterprise	234	$\frac{234}{100} * 10 = 23$	23	32.9
2	ERCA of Modjo Branch	115	$\frac{115}{100} * 10 = 12$	12	17.1
3	Custom Clearing Agents in Modjo dry port	350	$\frac{350}{100} * 10 = 35$	35	50.0
<b>Total</b>		<b>699</b>	<b>70</b>	<b>70</b>	<b>100</b>

Source: Computation made by Researcher (2015)

**Sources of Data:-** Both primary and secondary sources of data collections were used.

**Primary data sources:** Collected data through structured survey questionnaire both open and close ended, structured interviews, focus group discussion and field observations.

**Secondary data sources:** were collected from different books; research papers; bullet; pamphlets and websites. Additionally, from annual progress report of Modjo dry port, ESLSE, Transport Minister and ERCA as well as from other published and unpublished documents that related to the study.

**Field Survey (Observation):** was significant to capture what was happened and what respondents missed. More importantly, such observation was dedicated to get first hand information rather than relying on secondary sources. The researcher observed and took photographs on the study area to describe and give more visual plates on the situation.

## 2.5 Data Analysis and Presentation

The data collected from the questionnaires were analyzed by using descriptive statistics. The respondents were asked a five point Likert Scale on which they are expecting to rate their level of agreements. Accordingly, the collected data was checked, cleaned and exported to SPSS version 20 for further data cleaning and analysis. Frequency distributions were obtained to check for data entry error (missing/unrecognized values and codes). Whereas the data collected from primary data sources and obtain through secondary data sources were presented by tables; figures; percentages and plates. Generally, both primary and secondary data organized and presented by statistical tools, according to the type and nature of the collected data.

## 2.6 Data Analysis, Interpretation and Discussion

### 2.7 Response Rate

To undertake the study, 70 respondents were selected randomly for the close and open-ended questionnaires and distributed to them; accordingly, 23 to Modjo dry port Enterprise, 12 to ERCA of Modjo Branch and 35 to customs clearing and forwarders agents. The questionnaires were given to individual respondents and time given to fill them carefully and honestly. All responses of open and close ended questionnaires were returned 70 (100%) and used for analysis.

Additionally, 26 respondents were selected purposively for interview and focus group discussion. For interview eight from team leaders of dry port enterprise, 12 from ERCA team leaders and for focus group discussion six from multimodal department of Dry Port Enterprise. Accordingly, respondents who were selected purposively for interview and focus group discussion one of the respondents was not ready for the interview, 25 of them are described their responses. Therefore, total responses were presented need for analysis.

## 2.8 Demographic Characteristics of Respondents

### 2.8.1 Modjo Dry Port Respondents Profile

The total number of respondents of Modjo dry port was 23, out of these males accounted 82.6 percent. Similarly, 69.6 percent were married and age of the respondents were ranges from 17-42 ages and mostly concentrated between 20-30 ages that 60.9 percent with the mean age of 32 and 5.19 standard deviation. The reason behind the described, mean age was to observe the average age while standard deviation used to examine age distribution of respondents. There was no respondent below 20 and above 50 ages (Table 4.1).

Table 4.1 Modjo Dry Port Demographic Profiles of Respondents

No	Demographic Profiles of Respondents		Responses	
			Frequency (n= 23)	Percent
1	Sex	Male	19	82.6
		Female	4	17.4
2	Marital status	Single	7	30.4
		Married	16	69.6
		Divorced	-	-
		Widowed	-	-
3	Age in year	Below 20	-	-
		20-30	14	60.9
		31-40	7	30.4
		41-50	2	8.7
		Above 50	-	-
		Mean $\pm$ SD ( $m \pm \sigma$ )	32 $\pm$ 5.19	-
4	Education background	Masters and above	7	30.4
		Degree holders	15	65.2
		Diploma		
		Below Diploma	1	4.3

No	Demographic Profiles of Respondents	Responses		
		Frequency (n= 23)	Percent	
5	Monthly income in birr	Median	4,725	-
		Below 1,500	-	-
		1,501-3,500	5	21.7
		3,501-5,500	10	43.5
		5,501-7,500	2	8.7
		Above 7501	6	26.1
6	Working position	Managers	5	21.7
		Officers	18	78.3
		Clearing and forwarding agents	-	-
7	Working experience in Year	Below 5	4	17.4
		6-10	12	52.2
		Above 11	7	30.4
		Mean $\pm$ SD ( $m \pm \sigma$ )	9.12 $\pm$ 5.47	-
8	Level of understand and experience towards MMTS operation	Excellent	10	43.5
		Very Good	6	26.1
		Good	2	8.7
		Satisfactory	5	21.7
		Below satisfactory	-	-

Source: Compiled by Researcher from the Questionnaires (2015)

As identified in Table 4.1, among the total respondents, 69.6 were married and degree holders about 65.2 percent that was the dominated educational backgrounds. The median of respondents' gross monthly income was 4,725 birr and maximum monthly income was in between 3,501-5,500 incomes that was 43.5 percent. A median was used to identify the middle income earned of the respondents, since it was not influenced by extreme values and did not take all actual values.

Additionally, as described in Table 4.1 working position of respondents 78.26 percent were officers, which constitutes senior officer, junior officer, and officer and the remaining 21.74 were managers that includes director, vice directors, process owners and team leaders since they are management member of the enterprise. Working experiences of the respondents were highly existed between 6-10 years that accounts 52.2 percent with the mean work experience and standard deviation of 9.12 and 5.47 respectively. The level of understand and knowledge of the respondents towards MMTS operation, most of the respondents were excellent 43.5 percent followed by very good 26.1 percent. Accordingly, there was no level of understanding and experience below satisfactory (Table 4.1).

### 2.8.2 Demographic Profile of ERCA of Modjo Branch Respondents

The total number of respondents of ERCA of modjo branch was 23 from this, 75 percent were males and about 58.3 percent were married. Age of respondent ranges from 12-38 ages and most age category was between 20-30 ages, which were 75 percent. Similarly, the mean age of the respondents with standard deviation was 31  $\pm$  3.67 ages. On the other hand, there are no respondents below 20 and above 41 ages. Concerning educational background, degree holders were the greatest percentage share, which was 58.3 percent (Table 4.2)

Moreover, as shown in Table 4.2, median of monthly income earned was 4,925 and the highest monthly income were concentrated between 3,501-5,500 incomes, which accounted about 33.3 percent followed by both 1,501-3,500 and 5,501-7,500 monthly incomes category that shares 25 percent. Working experience of the respondents were dominated between 6-10 years that 52.2 percent with mean and standard deviation of 7.75 and 2.38 respectively. Level of understanding and experience about multimodal transport system operation the responses of most respondents are very good 47.7 percent followed by excellent 25 percent and good 25 percent. On the other hand, there are no level of understanding and experience below satisfactory (Table 4.2).

Table 4.2 ERCA of Modjo Branch Demographic Profiles of Respondents

	Demographic Profiles of Respondents	Responses	
		Frequency (n=12)	Percent (%)
	Gender	Male	10
	Female	2	16.7
	Marital status	Single	5
		Married	7
		Divorced	-
		Widowed	-
	Age in years	Below 20	-
		21-30	9
		31-40	3
		41-50	-
		Above 50	-
		Mean $\pm$ SD ( $m \pm \sigma$ )	31 $\pm$ 3.67
			Educational background
Degree holders	7		
Diploma	2		
Below diploma	-		
	Monthly income in birr	Median	4,925
		Below 1,500	-
		1,501-3,500	3
		3,501-5,500	4
		5,501-7,500	3
		Above 7,501	2
	Working position	Manager	3
		Officer	9
		Custom clearing and forwarding agents	-
	Working experience in years	Below 5	1
		6-10	9
		Above 11	2
		Mean $\pm$ SD ( $m \pm \sigma$ )	7.75 $\pm$ 2.38
	Level of understand and experience towards MMTS operation	Excellent	3
		Very Good	5
		Good	3
		Satisfactory	1
		Below satisfactory	-

Source: Compiled by Researcher from the Questionnaires (2015)

### 2.8.3 Demographic Profiles of Clearing and Forwarding Agents

As described in Table 4.3, about 65.7 percent of the respondents were male and about 65.7 percent were married. Most age category of respondents fell between 20-30 ages constituting 48.6 percent and with the age mean and standard deviation of 32 and 6.27 correspondingly. On the other hand, there was no age below 20 and above 50 years. Degree was the greatest percentage share of educational background of the respondents that accounted 60 percent.

Moreover, the median of earned income of the respondents were 5000 and the greatest monthly income concentrated between 1,501-3,500 and 3,501-5,500 income that both of them constituted 28.6 percent followed by above 7501, which was 22.9 percent. Regard to working position of the respondents all of them represents clearing and forwarding agents. Most respondents had 6-10 years working experience that was 37.1 percent with mean and standard deviation of 9.81 and 5.61 respectively. Level of understanding and experience of the respondents towards MMTS were mostly fallen within Very good, which accounted 40 percent. However, there was no level of understanding below satisfactory (Table 4.3).

Generally, demographic characteristics of respondents of three organizations characterized by, regarding sex of the respondents, more percentage shares were males this implies that gender equality was not fair within the organizations. Likewise, mean age of the respondents were almost approximate and most of them were married. In addition, concerning the age structure dependent labor forces did not exist in the organizations. Therefore, the



activities of the organization were performed by active labor force, which leads to the organizational activity took place successfully as per the objectives and goals. Similarly, the dominant percentage share of educational background was degree followed by diploma. In reverse masters and above was low in number. Moreover, monthly incomes were different from organizations to organizations especially payment at government organization was less than private ones. For instance, monthly income of clearing and forwarding agents were higher than dry port and ERCA staff since they earned income per custom clearing cargoes or releasing containers. This caused for frequent turnover of employments for better salary. This seriously affected the human resource management, particularly skilled and experience manpower to run the organization effectively.

Table 4.3 Demographic Profiles of Clearing and Forwarding Agents

No	Demographic Profiles		Responses	
			Frequency (35)	Percent
1	Sex	Male	23	65.7
		Female	12	34.3
2	Age in years	Below 20	-	-
		21-30	17	48.57
		31-40	15	42.86
		41-50	3	8.57
		Above 51	-	-
		Mean $\pm$ SD ( $m \pm \sigma$ )	32 $\pm$ 6.27	-
3	Marital status	Single	12	34.3
		Married	23	65.7
		Divorced	-	-
		Widowed	-	-
4	Educational background	Masters and above	4	11.4
		Degree holders	21	60.0
		Diploma	10	28.6
		Below diploma	-	-
5	Monthly income in birr	Median	5,000	-
		Below 1,500	-	-
		1,501-3,500	10	28.6
		3,501-5,500	10	28.6
		5,501-7,500	7	20.0
		Above 7,501	8	22.9
6	Working position	Manager	-	-
		Officer	-	-
		Clearing and forwarding agents	35	100
7	Working experience in years	Below 5	9	25.7143
		6-10	13	37.1429
		Above 11	13	37.1429
		Mean $\pm$ SD ( $m \pm \sigma$ )	9.81 $\pm$ 5.61	-
8	Level of understand and experience about MMTS	Excellent	9	25.7
		Very Good	14	40.0
		Good	2	5.7
		Satisfactory	10	28.6
		Below satisfactory	-	-

Source: Compiled by Researcher from the Questionnaires (2015)

Furthermore, assessing knowhow of MMTS of the respondents was necessary to know the strength and weakness of activity of the system. Hence, level of understanding and experience towards the system was relatively better in the dry port and ERCA, which indicates that operation of MMTS improved from time to time since better understanding and experience leads the employees for valuable operation of the system in good manner. Accordingly, the level of understanding and experience towards MMTS operations were highly included below excellent, this indicates that more training required for them. This was because the activity of MMTS associated to their day-to-day operational activity of within the organization. At all, there was no response below satisfactory level of understanding and experience in three organizations.

### 3. Findings of the Study

#### 3.1 Challenges of MMTS Provision in the Modjo Dry Port

##### i. Challenges of MMTS Provision in Modjo Dry Port

As shown in Table 4.4 more than 75 percent of respondents strongly agree that, multimodal transport system provision in Modjo dry port challenged by shortage of equipments, shortage of skilled human resource and weak ICT infrastructures. In contrast, less than 65 percent of responses strongly agree that limited terminal capacity; inadequate truck; shortage of space for expansion, inadequate infrastructures, shortage of warehouse and low level of technology are the challenges of MMTS provision in Modjo dry port.

Table 4.4 Challenges of MMTS Provision in Modjo Dry Port, 2015

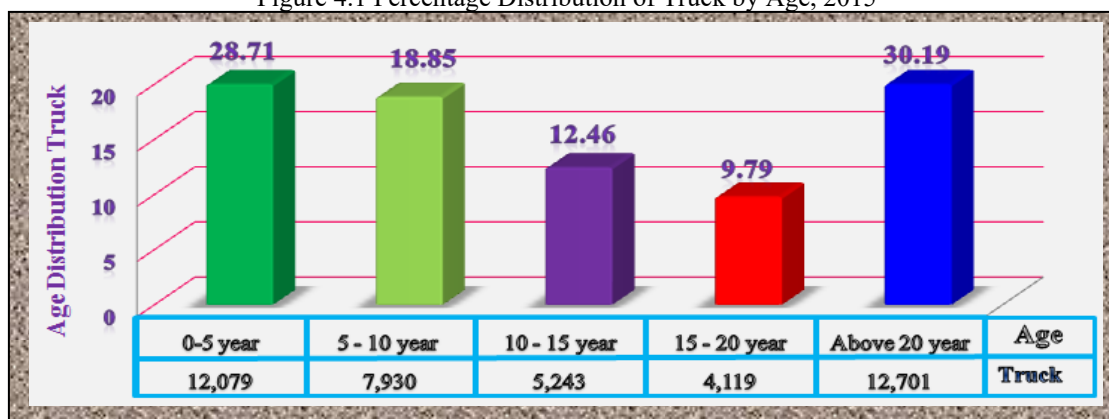
No	Challenges of MMTS Provision	Strongly agree		Agree		Undecided		Disagree		Strongly disagree		Total	
		freq	%	freq	%	freq	%	freq	%	freq	%	freq	%
1	Trucks inadequacy	44	62.9	21	30.0	3	4.3	1	1.4	1	1.4	70	100
2	Warehouse inadequacy	40	57.1	25	35.7	0	0	5	7.1	0	0	70	100
3	Limited terminal capacity	45	64.5	22	31.4	1	1.4	2	2.9	0	0	70	100
4	Weak ICT infrastructure	55	78.6	13	18.6	2	2.9	0	0	0	0	70	100
5	Low level of technology	37	52.9	31	44.3	2	2.9	0	0	0	0	70	100
6	Shortage of skilled personnel	56	80.0	13	18.6	1	1.4	0	0	0	0	70	100
7	Inadequacy of infrastructure	43	61.4	23	32.9	2	2.9	2	2.9	0	0	70	100
8	Shortage of equipments	57	81.4	10	14.3	2	2.9	1	1.4	0	0	70	100
9	Shortage of space for expansion	44	62.9	25	35.7	1	1.4	0	0	0	0	70	100

Source: Compiled by Researcher from the Questionnaires (2015)

##### ii. Inadequacy of Border Cross Freight Transport

As interview made with Modjo dry port team leaders, they stated that the existing trucks that used to transport freights they either very old or mismatch with the currently increasing import cargoes. According to their view the structure of Ethiopian imported has increased and upgrade through time from finished and lightweight products to a combined of light finished products and project-bound bulky cargo. However, there were much fewer trucks, both private and state-owned, to lift the required weight of goods, also the existed truck that was old and light in weight did not match with the heavy and bulky cargo (Figure 4.1).

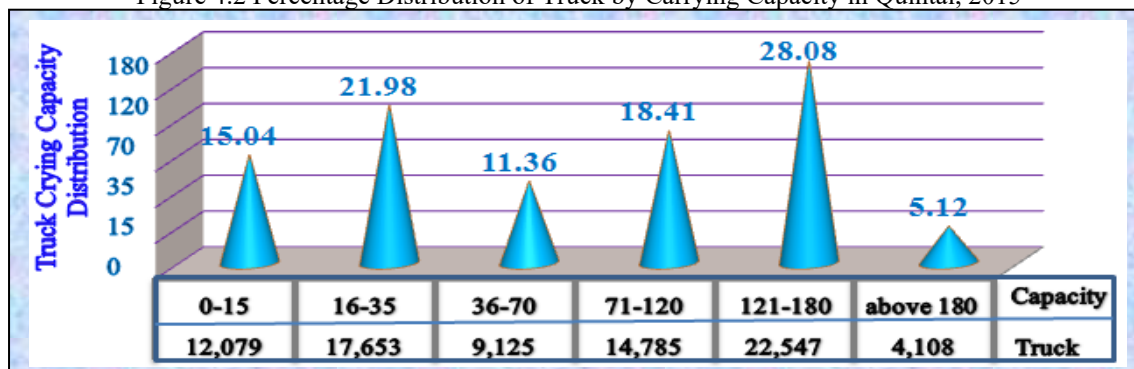
Figure 4.1 Percentage Distribution of Truck by Age, 2015



Source: Ethiopia Transport Minister (2015)

As shown in Figure 4.2 total number of truck that had the capacity to load above 121 quintals, which were supposed to operate in import-export constituted 33.2 percent of the total number of trucks of the country.

Figure 4.2 Percentage Distribution of Truck by Carrying Capacity in Quintal, 2015



Source: Ethiopia Transport Minister (2015)

### iii. Weak Public Private Partnership

The result of close ended identified that, more than 75 percent of the respondents agreed that on absence of sufficient partnership between government and private enterprise to provide sustainable MMTS. The respondents also agreed on the weakness of private and government partnership as lack of awareness, communication and consultation. Similarly, Modjo dry port team leaders suggested that lack of proper information about the newly enacted system and laws to private sector, as well as the government did not convince about benefits of the system. Again, there was no behavioral influencing awareness creation made for private sector. Hence, the provision and operation of the system was monopolized by government enterprise. In addition, public and private organizations had conflict of interests. Private sectors were self-centered and profit oriented while government sector was public centered.

Generally, the respondents reflected the newness of multimodal transport and lack of experience, the poorness of the existing infrastructure and inconvenience of freight transportation to and from the dry port. Similarly, shortage of freight transport, old aged and limited capacity to handle the cargoes from the port to the dry port and private enterprises unfamiliar with the benefits of the system that makes poor coordination between the public private partnerships to enhance provision of the system.

### 3.2 Importance of MMTS Operation in Modjo Dry Port

As surveyed through focus group discussion almost all of them stated that MMTS is significant for Ethiopia by enhancing the country's revenues, reduces congestion of ports, saves foreign currency paid at Djibouti port for storage service and demurrages, reduces transit time, minimize delay of containers at port and reduces theft risks and pilferages. In addition, they suggested that reduces bureaucratic process of documentation, render door-to-door service by single contract and document for cargo owners, which makes as cargoes cleared on time for delivery of goods. This useful for perishable goods, construction materials and stable the market by reducing the cost of goods and services since delivered on time.

According to the respondents view, MMTS facilitate trades through containerization and dry port; this enabled importation of many containers in one contractual agreement, one operator and single document. When necessary equipments, technologies and infrastructure was ensured, it enables fast delivery and efficient services to the traders since it reduce time spent at port, remove unnecessary charges paid at port since demurrage cost at port is higher than warehouse cost at dry port and abolish high stuffing cost at seaport. Moreover, multimodal transport system operation saves time, saves foreign currency paid at sea port, essential for effective and efficient of trade, but some respondents did not appreciate the introduction of MMTS and did not see the difference from unimodal, because customs clearing cost paid at seaport was 630 dollar and 594 dollar at dry port, with little difference. They stated that the only difference made was changed in place of payment.

Similarly, those incorporated in the focus group discussion capitalized on the benefits of MMTS as it avoided confiscation of goods at sea ports by foreign government since the cargoes were delivered on time to inland dry port. The system was also essential to safe and secured for imported goods since it was used sealed containerization as well as reduce black market trades, which weakened revenue capacity of the country. They had also reflected on the challenges facing on the ground. Generally, from the respondents' point of view the provisions of the system are not match with the currently growing import export trade with sustainable economic growth and development of the country. Simply, mismatch supply (Provision) of system with demand (raised traders who use). Therefore, lack/unbalanced of such things for the system was failed for the country's sustainable economic growth and development in general, specifically for Modjo dry port to enhance the country's revenue per stated plan.

### 3.3 Factors Challenges MMTS Operation in Modjo Dry Port

As revealed in Table 4.5 more than 85 percent of the respondents believed that, MMTS operation in the Modjo

dry port challenged by delay of containers, shortage of freight transport, lack of skilled employees and management, inadequate training, high transport cost, warehouse and port charge and increase foreign currency. Additionally, greater than 75 percent of responses described that complex multimodal documentation and custom clearance process as the major challenges of the system. Similarly, about 60 percent of the respondents dissatisfied with frequent theft and pilferages, the clarity of rules and regulation of the system. In this response, they stressed that unskilled management without well-experienced and trained staff, resulted in poor service delivery, experienced by behavioral problems of deviating from the culture of public service provision.

Table 4.5 Factors Challenges MMTS Operation in Modjo Dry Port, 2015

No	Challenges of MMTS Operation	Strongly agree		Agree		Undecided		Disagree		Strongly disagree		Total	
		freq	%	freq	%	freq	%	freq	%	freq	%	freq	%
1	Delay of cargo at port and dry port	33	47.1	33	47.1	2	2.9	1	1.4	1	1.4	70	100
2	Unclear rules, regulation and law	17	24.3	25	35.7	23	32.9	3	4.3	2	2.9	70	100
3	Lack of transport operator and truck	23	32.9	43	61.4	2	2.9	2	2.9	-	-	70	100
4	Increasing rate of foreign currency	20	28.6	42	60.0	3	4.7	4	5.7	1	1.4	70	100
5	Frequent theft and pilferage	21	30.0	22	31.4	17	24.3	2	2.9	8	11.4	70	100
6	Lack of skilled management	32	45.7	33	47.1	3	4.3	1	1.4	1	1.4	70	100
7	Inadequate training	25	35.7	39	55.7	2	2.9	2	2.9	2	2.9	70	100
8	Lack of skilled and experienced personnel	43	61.4	23	34.3	2	2.9	1	1.4	-	-	70	100
9	Complex custom clearance Process	27	38.6	31	44.3	8	11.4	3	4.3	1	1.4	70	100
10	High transport cost, port and warehouse fee at seaport	30	42.9	33	47.1	6	8.6	1	1.4	-	-	70	100
11	Complex and burden of MMTS documentation	21	30.0	32	45.7	7	10	5	7.1	3	4.3	70	100

Source: Organized by Researcher from the Questionnaires (2015)

Moreover, problems stated were transporting goods across international boundaries using single administration document (SAD) made; delays in the processing customs and port clearance. As a result, trucks are forced to stay more days at Djibouti port than unimodal transport system that raised demurrage and other charges; reduced round trip of truck to and from Djibouti port, this dissatisfies the customers and enterprises. Since, Djibouti port operates for 24 hours while Djibouti customs works only for 12 hours, these brought delays in gate permission and seal on the containers on the trucks. Similar to this Modjo dry port enterprise work for 24 hours and ERCA of Modjo Branch works for eight hours this affected day-to-day activity of the system operations in the Modjo Dry Enterprise. In addition, they suggested that, the presence of cooperation problems between the two countries includes unpredictable port policy changes and uncompetitive and continuously raised port tariff. The interview and focus group discussion result witnessed the opening of the operation of the system without prior preparation. According to their view there were provisional, operational (implementation), technological and financial problems. They believed that these factors were summarized the challenges of MMTS operation that described (Table 4.5).

#### i. Provisional Challenges of MMTS Operation

Inadequacy of necessary resources, infrastructures and human resource were affected the day to day activity of the enterprise. For this reason, inadequate provision of MMTS facility were challenged the operation of the system in Modjo dry port. Accordingly, the respondent in interview and focus group discussion shortage of infrastructure like road; water supply; parking; warehouse; offices; electric power; border cross trucks, absence of alternative mode of transport-to-transport cargo to and from dry port and unfilled organizational structure with skilled employees described as provision challenges of MMTS operational. For instance, ERCA of Modjo branch structures were filled 28 percent and Modjo dry port enterprise were filled 66 percent of employees. This implies that there inadequate employees in the organizational.

Likewise, weak one window service delivery and poor ICT utilization. This was because one-window services

were hold different department at one place (office) whose their duty was similar, but there was no such offices for this service. However, Modjo dry port enterprise try to made some departments in one office like delivery order, finance and good release order in one office, this was insufficient since other departments like ICT, operational and documentation departments are serves in different offices. ICT utilization was linked with provision of ICT related materials like various cables, computers and different software with skilled personnel. This was useful to modernize the given service by followed the activity on line, automate documentation; ensured the accuracy of information transmission to and from concerned bodies, follow some illegal activity within the dry port or outside the dry port. Nevertheless, these were not provided sufficiently in the organization, which caused operational challenges in the dry port.

### ii. Operational (Implementation) Challenges of MMTS Operation

Were associated with the way to manage or undertook the day-to-day activities of the system. These were creating awareness, promoting qualified personnel, prepared training, modernized services, and promoted public private partnership. In reverse of this, created awareness, promoted training and modernized services that supported by modern technology was insufficient; high turnover rate which caused lack of qualified and experienced employees in the organization. For instance, out of the total 210 employees in 2013, 43 (20.5%) of them left the organization and out of the total 234 employees in 2014, 47 (20%) of them broke their contract with the dry port (Modjo Dry Port Enterprise, 2015).

The result of open-ended questionnaires stated, that about 61.4 percent responses agreed on the government's monopoly on MMTS provision and operation and poor cooperation among different stakeholders (ESLSE, ERCA, Transitors, Importers, Exporters and Investors). According to their view to sustained the ongoing economic growth and development; to be competent in the world market and to achieve efficient logistics service the government should participate and promote different stakeholders and private enterprises were inevitable.

Additionally, they raised poor public private partnership and exclusive policy of private sector in MMTS operation that organized and managed by one government enterprise. As a result, to handled and moved all cargoes from Djibouti port to inland dry port (Modjo), the enterprise has no sufficient capacity. For example, in fiscal year from 2011-2015 that shown in Table 4.6, arrived cargoes to port were not fully transferred to inland dry port of the country, causing freight delay and congestion in the port, which made unnecessary charges and confiscation. Therefore, the respondents believed that Ethiopia shipping and logistic service enterprise was unable to accomplish the activity of multimodal operation successfully per intended aimed. This due, to shortage and outdated truck as well as absence of railway transport, which has the capacity to handle bulk cargoes than trucks. However, ESLSE (2014) stated that, the enterprise had bought nine additional vessels to upgrade their capacity and facilitate imported-exported trades.

Table 4.6 Cargo Movements by MMTS from Djibouti Port to Modjo Dry Port

Types of Freight	Unit	2011	2012	2013	2014	2015
Container shipment on maritime	TEU	-	36,822	67,389	88,559	119,688
Container transit to dry port	TEU	10,886	19,629	60,799	84,869	114,369
Performance in percent	%	89.11	53.31	90.22	95.83	95.56
Vehicles transit on maritime	No	460	2,788	3,931	4,225	10,767
Vehicle transit to dry port	No	460	2,788	3,820	4,183	8,275
Performance in percent	%	100	100	97.18	99.01	76.86
Iron moved on maritime	Ton	253,853	169,760	626,303	490,942	553,971
Iron transit to dry port	Ton	223,971	148,547	598,794	485,973	551,133
Performance in percent	%	88.23	87.50	95.61	98.99	99.49
Moved bundle of cargoes on maritime	Ton	471,442	115,856	246,980	347,129	295,259
Commodities transit to dry port	Ton	375,358	89,627	225,835	345,219	291,183
Performance in percent	%	79.62	77.36	91.44	99.45	98.62

Source: Modjo dry port Enterprise (2015)

As shown in the Table 4.7, there were high imported goods in volume and value, whereas there was low export in volume and value that made mismatch of trade. This enforces empty container transportation to Djibouti port. Similarly, the result obtained from the respondents were described that the establishment of Modjo dry port aimed to facilitates and serve the imported than the exported goods. For this reason, in Modjo dry port the process of domestic export goods did not carried out, rather when the exporters need the containers they given it in contract form, then the customers under took the process in comet either in unimodal or in multimodal. Hence, government of Ethiopia looked for means to overcome the import than export trade, as a result inland dry port in the country facilitate and serve import freight than the domestic export trades.

Table 4.7 Import and Export Trends of Ethiopia by Volumes and Values

No	Year	Import		Export	
		Volume (tons)	Value (birr)	Volume (tons)	Value (birr)
1	2009	8,208,459	83,190,170,194	1,018,485	16,844,844,880
2	2010	7,192,410	121,222,583,248	1,169,187	29,052,892,877
3	2011	7,309,632	149,475,725,127	1,182,936	43,385,286,360
4	2012	8,468,979	208,870,616,834	1,318,982	48,976,073,199
5	2013	10,732,146	273,635,921,419	1,941,269	66,350,917,028

Source: Ethiopia Revenue and customs authority (2013)

On other hand, the result of interview and focus group discussion stressed that, containers were sealed again in Djibouti port when import cargoes arrived to the port that recognized internationally, which brought delay and congestion of freight, unnecessary charges at port; since sealing process was made orderly. Accordingly, this was caused challenges of multimodal transports system operation.

The interview made with respondents were ensured that, ineffective good governance and inseparable terminal station for dangerous cargoes. Accordingly, regard to good governance there was no regular monitoring and evaluation by Ethiopia shipping and logistic service enterprise, to support the activity of the dry port that related with multimodal transport. Likewise, there was attitude and behavioral problems such as priority given to some customers while render essential services and customers also tried to hide the imported goods and services this brought theft and pilferage. In the same way, terminal station was not separated by cargo type (dangerous, open top and flat cargo) especially for dangerous cargoes. This affected environmental and social while the customs inspection carried out.

Other operational challenges of multimodal transport system, identified were complex multimodal documentation and customs clearance process.

#### A. Multimodal Transport Documentation

Interview and focus group discussion conducted with respondents and ESLSE (2015) stated that the procedures of multimodal transport operation in Ethiopia were began with opening letter of credit; booking; service contract agreement with trucking company; data management exchange of information and cargo arrival notification at dry ports. Likewise, updating in information at dry port like insurance guarantee bond submission to custom authority and reconciliation of insurance guarantee bond with custom authority; releasing cargo with containers through cash deposit and releasing cargo with container through letter of under taking were the required multimodal transport documentation. According to the respondent described that began from opening letter of credit up to realizing cargo had it was contained other documents and needed other procedure. For example after the goods moved to the dry port, the next step was custom clearing activity. As a result, to carry out the process the required documents from the customer by ERCA branch office (Modjo) were insurance guarantee bond; certificate of origin; bill of lading; commercial invoice; customer license and customer tax identification number (TIN).

Additionally, as identified in Annex VII the average time taken to collect shipping documents from letter of credit opening was about 30 days, which includes time required for transaction, financing and insurance arrangements. Generally, the interview and focus group discussion result stated that multimodal documentation behind their complex it was not computerized and terminal location was not automated. Consequently, the containers were stacked and stored manually through Dry Port Operation Information System (DPOIS), which was derived by ICT department of modjo. As a result, the owners and custom inspection group consumed time to search where the cargo was located to undertake cargoes inspection. Therefore, customers to bring the described documents and custom branch office (Modjo) to ensure the documents it took a time, which was caused delay, congestion of the dry port and demurrage cost. Through this process the challenges of multimodal transport operation was faced.

#### B. Cargoes Clearance Process

The result of interview and focus group discussion stated that the customs clearance process began from Djibouti port when truck left port terminal and cross border based on cross border agreement between two countries (Annex X). After passing through different check points like Mille cargo scanning and others truck were unloaded their freight at Modjo dry port based on agreement. However, Modjo dry port customs carried out the activity of inspection by labor force due to absence of cargo scanning machine in the dry port. As Custom Clearance Process Owner notified, the inspection is categorized into document inspection and physical examinations in three ways: green, yellow and red category of inspections. According to him green inspection refers to low risk of imported goods, this stage of inspection intactness of cargo seal, discrepancy between the declaration and the physically inspected goods; and homogeneity of cargos are inspected.

Yellow inspection refers to medium risk goods such as document scrutiny, which might clear the goods for duty and tax re-assessment and release of goods. If physical examination is not required, the documents are passed over to the tax re-assessment unit to determine whether or not there was a difference between the duty and taxes

testified by the declarant and the actual duties and taxes that need to be paid on the bases of examination of the documents. If there is no difference between the declared and actual assessment of duties and taxes, the goods are released for free circulation after the full payment of duties and taxes. However, if there is a difference between the declared and actual assessment of duties and taxes, the documents will pass over to Customs Procedures Variation Re-assessment Unit.

Red inspection refers to high risk goods. At this inspection a declaration, carrying heterogeneous imported products such as electronics products, spare parts, garments from different origins, grocery items or imports by individuals or companies with no profiles with customs are categorized. Consignments that are routed to the red channel are subject document and physical examination and have to be warehoused in customs designated bonded warehouses. If there is no difference between the declared and actual assessment of duties and taxes, the goods are released for free circulation after full payment of duties and taxes. If there is a discrepancy between documents and physical examination, the documents are forwarded to Customs Procedures Variation Re-assessment Unit (Endris and Tsegaye, 2011).

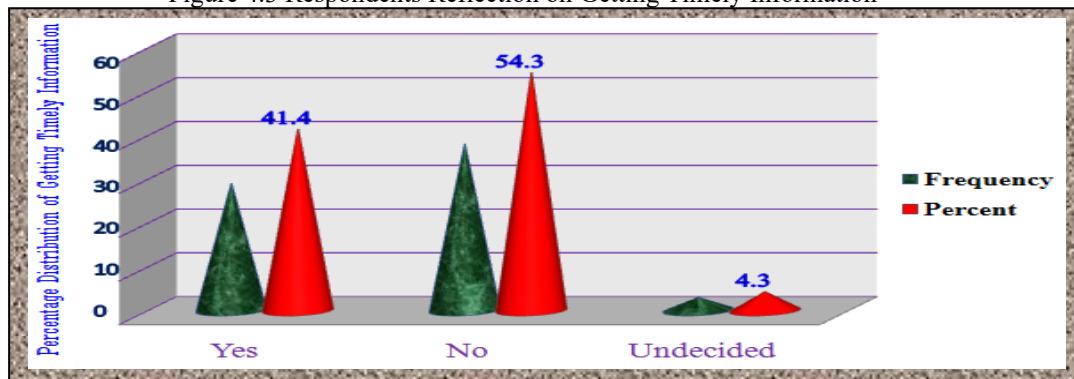
Additionally, cargo handling and clearance at Djibouti usually takes 13 days; cargo handling and customs release at dry port take nine days and collection of original import documents from letter of credit opening bank took about two days. However, the result of interview and focus group discussion witnessed the presence of standard time set for inspection of cargoes following Business Process Reengineering (BPR). Because of the outcome of BPR delay of cargoes were reduced and the customers fulfill all the necessary formality from the concerned bodies they served at one window.

On the other hand, excluding time taken for obtaining shipping document (30 days), the average time consumed for import goods 46 days and 42 days for export. Moreover, at customs checkpoints for import-export goods due to the network problem, the software used, ASYCUDA ++ was not working properly and trucks were forced to wait up to 8 hours until the checking was finished by manual system and delayed communicating with head the office (Debela, 2013).

### iii. Technological Challenges of MMTS Operation

Technological challenges were associated with, lack of container handling equipments and machineries like reach stacker; forklift; terminal tractor; inadequate truck that supported by GPS and GIS; absence of safety and security camera and poor information communication technology. As stated in Figure 4.3, more than 50 percent of the respondents were dissatisfied because of lack of just in time information service. However, the remaining ones were satisfied and said that multimodal transport system operation was efficient in providing just in time information service. They also appreciated the effort they had shown to communicate during power and network interruption.

Figure 4.3 Respondents Reflection on Getting Timely Information



Source: Organized by Researcher from the Questionnaires (2015)

While interview made with respondents other issues raised were improper documentation, communication and cooperation between importer and dry port enterprise. The system was unable to provide the importers proper information where cargo exist and arrived, as a result of this miss destination of cargoes and misallocation of goods and services were rampant. Sometimes the reports originating from Djibouti ports were not reliable and complete, and caused delay of clearing freight and posed the problems on providing the right information of cargoes to customers. The problem even reached to a level where the organization itself was unable to know the status of imported goods. Because of this, the organization was forced to work manually, and counted on its efficiency.

In generally, advanced technology like GPS and GIS essential to controlled illegal acts while cargoes transported from and to corridor. This was a machine worked by installing electronic seal on heavy trucks, which has a direct linked to the server and visualize every activity of the truck and driver that sign alarm when something made wrong like tried to open the container, changing the direction of a transit route. If drivers not carefully followed the illegal act, the head office informed to the other enforcement section called patrolling to follow until it reached to destination. Hence, these systems are reliable, safety and protect cargoes from theft that attracts, and

bring the more importers and exporters to MMTS. However, these systems were not adequately functional in Ethiopia (Tadele, 2013).

#### **iv. Financial Challenges of MMTS Operation**

The interview results stated that investment in transport infrastructures and fulfilling necessary equipments for loading and unloading (cranes, forklift) needs a big amount of money. On top of this, trade logistic costs were further increased and required foreign currency for shipping from port to inland dry port (Modjo). Generally, shortage of finance that the common problems of most developing countries, this made some owners of cargo was unable to receive their goods from the port on time. However, the rate of foreign exchange increased through time, which leads to delay and congestion freight, these were caused for unnecessary charges. To fulfilled essential logistic infrastructures and equipments finance played a key role, but this study verified that there had been shortage of finance in Ethiopia, specifically in Modjo Dry Port. This was because, the country had lacked foreign donor on logistic infrastructural provision and it's a land locked developing country.

##### **A. Rights, Duties and Responsibilities of Maritime Transit/ Freight Forwarding**

Freight forwarder was a commission agent performing on behalf of the exporter/importer routine tasks such as loading/unloading of goods, storage of goods, arranging local transport and obtaining payment for his customer. There is no internationally accepted definition of the term freight forwarder. It is known by different names in different countries, such as customs house agent, clearing agent, broker, shipping and forwarding agent and acts as a principal carrier (UNECA, 2003).

Additionally, freight forwarders on the behalf of exporters (consignor) carried out various activities such as choose the route; mode of transport and a suitable carrier; book space with the selected carrier; take delivery of the goods and issue relevant documents; provide letter of credit and prepare all the necessary documents, pack the goods, arrange warehousing of the goods. also, weigh and measure the goods, arrange insurance of goods, transport the goods to the port, arrange for customs clearance, related documentation formalities and deliver the goods to the carrier, attend to foreign exchange transactions, pay fees and other charges, obtain the signed bills of lading from the carrier and arrange delivery to the consignor, arrange for transshipment en route. Likewise, monitor the movement of goods all the way to the consignee through contacts with the carrier, note damages or losses if any to the goods and assist the consignor in pursuing claims if any against the carrier for loss of the goods (UNECA, 2003).

While, on behalf of the consignee (importer) monitor the movement of goods on behalf of the consignee, receive and check all relevant documents relating to the movement of the goods, take delivery of the goods from the carrier and pay the freight costs, arrange customs clearance and pay duties, fees and other charges. Arrange transit warehousing; deliver the cleared goods to the consignee; assist the consignee in pursuing claims against the carrier for the loss of the goods or any damage to them and assist the consignee in warehousing and distribution (UNECA, 2003).

##### **B. Legal Status of a Freight Forwarder**

The legal status of a freight forwarder varies from country to country depending on the legal system in each country. The forwarder is the agent of his principal (consignor/consignee) in arranging transport of the latter's goods; they are subject to the traditional rules of agency like due care in the performance of his duties; being loyal to the principal; obey reasonable instructions and accountable for all transactions. When acting as agent, the defenses and limitations of liability, which are appropriate to an agent, are available to him (UNECA, 2003).

### **3.4 Roles of Modjo dry port for Multimodal Transport System**

#### **A. Capacity of the Modjo Dry Port to undertake the activity of MMTS**

Open-ended questionnaires revealed that agreement of most respondents, 48 (68.6 percent) on the weakness of major dry port to run the activity of the system, because of its infancy and beginning of the operation with without fulfilling necessary materials required for the operations of the activity of the system. In reverse, the remaining 17 (24.3 percent) believed that currently Modjo Dry Port had sufficient capacity to run the activity of the system by evidencing adequate land, skilled personnel filled gradually, construction of infrastructure finished more than 90 percent, necessary equipments and machineries sold (215 modern truck bought) (Plate 4.1). However, the rest 7.1 percent were indifferent on the raised issue. Similar to this they believed that the dry port either in size or in capacity has shown a progress significantly to hold the imported freight effectively (Table 4.8).



Plate 4.1 Level of Construction and New Purchased Truck (2015)



**Construction of Road and office (above 90%)**

**Advanced Truck Provided in 2015**

Source: Photo Taken by Researcher (2015)

However, through open-ended questionnaire and interview the respondent were asked for the availability of adequate infrastructural facility to provide MMTS in Modjo dry port. Accordingly, 82.9 percent argued, as it was not adequate since the infrastructure like road intra dry port, electric power; water supply; parking; warehouse and ICT infrastructure (cable, internet, and computer) were not provided sufficiently. On the other hand, they stated that absence of safety and security machine to follow illegal activity, rubber tired gantry to handle container, stack and load-unload.

Table 4.8 Dry Port Size in Hectare and their Capacity in TEU (2010-2015)

No	Name of the Dry Port	2010		2011		2012		2013		2014		2015	
		size	capacity	size	capacity	size	capacity	Size	capacity	size	Capacity	size	capacity
1	Modjo	2	1,152	4	2,688	4	2,688	9	6,605	17	12,238	23.67	12,675
2	Comet	-	-	-	-	3	2,500	3	2,500	3	2,500	2	1,260
3	Gelan	-	-	-	-	-	-	-	-	4	2,352	-	-
4	Kombolcha	-	-	-	-	-	-	3	1,152	3	1,152	8	3776
5	Mekella	-	-	-	-	-	-	1	510	1	510	3.05	1,439
6	Dire dawa	-	-	-	-	-	-	1	288	1	288	0.78	288
7	Semera	-	-	2	980	2	980	2	980	2	980	2.5	980
	Total	2	1,152	6	3,668	9	6,168	19	12,035	31	20,020	40	20,418
	Annual Growth	-	-	267	218	58	68	119	95	67	67	29	-

Source: Modjo dry port Enterprise (2015)

Generally, most of the respondents of focus group discussion believed and admired the accomplishments of Modjo dry port since its establishment. The major activities in this connection were construction activity, providing necessary technology and materials side by side performing the activity of multimodal transport system and giving necessary services to their customers. Therefore, accordingly the dry port did not have enough capacity for multimodal transport system operation effectively and efficiently.

#### B. Driving Force for MMTS Operations in the Modjo Dry Port

Open-ended questionnaires and focus group discussion revealed that since Ethiopia is landlocked developing country it is linked with long distance to and from the seaport, as a result constant increase was observed in port; warehouse and demurrage charges after grace period at Djibouti port, which was extremely high and paid in terms of foreign exchange. Additionally, they described to ensure safe, secured and modern service delivery in the country. To reduce freight delay at Djibouti port and minimize unnecessary charge that paid at Djibouti port like high loading and unloading cargoes specially while using unimodal transport system. Due to trade volume of Ethiopia continuously increased, it was difficult to handle goods through unimodal transport also the system required full set of submitting original clearing documents for customs and port clearing, whereas importers to get original documents from their bank was difficult.

Moreover, the responses in interview and focus group discussion stressed the prevalence of unimodal transport system, unplanned and unorganized freight transport, lack of coordination in transporting cargoes and bureaucratic obstacles at ports. Where the system lacked computerized document system and long processing of many documents, increased containers dispatch and congestion and lack of effective communication, for this reason, goods and services could not used for intended purposes, hence some projects delayed and sensitive goods like pharmaceuticals were destroyed due to bad weather conditions at Djibouti port. Above all beside delay of goods at port there was confiscation of goods when stay more than 60 days and slackness of transistors for government goods which also leads to acquisition of goods by Djibouti Port Administration. Therefore, the government of Ethiopia looked for means to overcome these problems. Accordingly, the response indicated that multimodal transport system operation avoids these problems with dry port enterprises. Nonetheless, the identified problems were the driving force for the Multimodal Transport System Operations in the Modjo dry port.

### C. Favorable Conditions in Modjo Dry Port to provide MMTS

The result of the respondents in open-ended questionnaires and focus group discussions suggested that the presence of favorable conditions and opportunities for the provision of multimodal transport system in the Modjo dry port. These were strategic location of the dry port that between the two main roads Adama to Addis Ababa via old roads and new high way, nearest to Adama and Modjo town that have huge industries of the country. Most private firms emerged from these towns and used the dry port for importing their goods.

Additionally, they stated that construction of railway station near the dry port was unpredictable opportunity that solved absence of alternative transport system for freight transportation. Other favorable conditions and opportunities mentioned by the respondents were government sign and reaches on an agreement with Djibouti government to operate the system and give attention for the dry port to run the activity of the system by providing necessary infrastructures, equipments and modern technologies for the effective and efficient system in the Modjo dry port. Likewise, there were presence of high government commitment to solve logistic problems and growth of infrastructure to link the dry port with the seaport. Since, all shipments are guaranteed by the Ethiopian Shipping and Logistic Service Enterprise (ESLSE) and operate multimodal transport system in the Modjo dry port was easier.

### D. Benefits of Modjo Dry Port for MMTS Activity

As shown in Table 4.9 more than 90 percent respondents described were satisfied the role of Modjo Dry Port to reduce delay of containers at Djibouti port, facilitate import goods, provide heavy equipments, under took the activity of stuffing and un-stuffing, reduce warehouse and port charges at Djibouti port. In contrast, greater than 75 percent of responses were agreed that the dry port was played role to provide advanced technology, cut clearing and forwarding agents at sea port, decrease port congestion, facilitate door to service and avoided demurrages and late documentations fee at port. Besides played these roles, the dry port act as customs clearing agents for government goods and services to accomplish necessary formalities, process and procedures, which was negligent in unimodal transport system. On the other hand, some of them were not familiar with its role to avoided clearing and forwarding agent at sea port about 15.7 percent and demurrage cost and late documentation fee at sea port 20 percent, so that they prefer silent in their perception.

In summary, the role of Modjo dry port for MMTS concentrated in the reduction and avoidance of unnecessary charge at port, render different services and provide operational equipments and machineries shown in Plate 4.2. Therefore, available equipments and machineries for the last seven years (2009-2015) are shown in Table 4.10. Additionally, plate 4.2 taken by researcher that support the stated idea of role of Modjo dry port to provide equipments.

Table 4.9 Benefit of Modjo Dry Port in Providing MMTS

No	Benefit of Modjo dry port	Strongly agree		Agree		Undecided		Disagree		Strongly disagree		Total	
		freq	%	freq	%	freq	%	freq	%	freq	%	freq	%
1	Reduce delay of cargo at Port	54	77.1	13	18.6	3	4.3	0	0	0	0	70	100
2	Lessen dry port congestion	32	45.7	22	31.4	7	10.0	9	12.9	0	0	70	100
3	Reduce foreign currency	16	22.9	22	31.4	12	17.1	6	8.6	14	20	70	100
4	Facilitate import goods	38	54.3	31	44.3	1	1.4	0	0	0	0	70	100
5	Cut clearing and forwarding agent at sea port	23	32.9	33	47.1	11	15.7	2	2.9	1	1.4	70	100
6	Avoid Demurrage and late documentations fee at port	22	31.4	28	40.0	14	20	6	8.6	0	0	70	100
7	Provide advanced technology	31	44.3	31	44.3	8	11.4	0	0	0	0	70	100
8	Offer heavy equipment	52	74.3	18	25.7	0	0	0	0	0	0	70	100
9	Provide stuffing and unstuffy	52	74.3	17	24.3	1	1.4	0	0	0	0	70	100
10	Reduce warehouse and port fee	49	70.0	17	24.3	1	1.4	3	4.3	0	0	70	100
11	Facilitate door to door service	46	65.7	8	11.4	7	10.0	7	10.0	2	2.9	70	100

Source: Compiled by Researcher from the Questionnaires (2015).

Plate 4.2 Different Operational Equipments of Modjo dry port



Source: Photo Taken by Researcher (2015)

Table 4.10 The Existing Equipments in Modjo Dry Port from 2009-2015

No	Name of Machineries	Fiscal Year						
		2009	2010	2011	2012	2013	2014	2015
1	Reach Stacker	2	2	5	7	14	14	14
2	Forklift	4	10	10	10	14	34	34
3	Terminal Tractor	1	3	3	3	10	10	10
4	Terminal Chassis	2	2	2	2	18	18	18
5	Crane	-	-	-	1	2	1	1
6	Empty Container Handler	-	-	-	-	-	3	3
7	Fire Fighting Truck	-	-	-	-	2	2	2
8	Fuel Truck	-	-	-	-	1	1	1
9	Water Truck	-	-	-	-	1	1	1
	<b>Total</b>	<b>9</b>	<b>17</b>	<b>20</b>	<b>23</b>	<b>62</b>	<b>85</b>	<b>85</b>
	<b>Annual growth</b>	<b>-</b>	<b>89</b>	<b>18</b>	<b>15</b>	<b>170</b>	<b>37</b>	<b>-</b>

Source: Modjo Dry Port Service Enterprise (2015)

**A. Save foreign currency paid at port**

The dry port saved foreign currency when MMTS used these were reduced demurrage cost; stuffing cost; confiscation of cargo; port and warehouse charge at Djibouti since the inland dry port of Ethiopia handle cargoes from Djibouti port on time and under took clearance process in the inland dry port (Modjo). Additionally, reduced damage cost and theft of risk since freight shipment carried out by sealed container.

**B. Give essential services**

Basic service took place in the Modjo dry port were inland customs clearance process, loading to provide door-to-door services and unloading when cargoes moved to the dry port and quality and standard control. Undertook the activity of stuffing and un-stuffing after necessary formality accomplished, the dry port made goods with containers and without containers. This was based on customers' willingness while handle their goods from the dry port. Also, provide banking service due to this the customers carried out necessary payment in the dry port. As a result, un-necessary times lost for searching bank to perform required payment were reduced.

Above all, the dry port act as clearing and forwarding agent for government cargoes, to accomplish the required custom clearance process on behalf of government, which a problem in previous unimodal system. Short-term storage goods were also took place in the dry port while freight moved to the dry port. For this reason, the goods stayed until essential formality finalized. These facilitate the imported goods in the Modjo dry port.

**C. Provide equipments and machineries**

The dry port to carried out the activity of MMTS successfully provide different equipments and machineries such as forklift; reach stacker; terminal tractor; terminal chassis and fire fighting truck to perform the activity of MMTS efficiently. As described in the Table 4.9, at the beginning the dry port start operation with nine (9) equipments on

two hectare of land and recently it reaches about 85 machineries with 23.67 hectare of land that promote the activity of the enterprise.

### 3.5 Prospects of Modjo dry port Enterprise to Enhance MMTS

The result of interview and focus group discussion stated that, the dry port to handle the import cargoes sufficiently and to render advanced services to their customers aimed at promote MMTS provision and operations in different ways. It planned to sufficiently provide infrastructures; equipments; enhance service delivery; promote skilled manpower and develop training and strength collaboration and partnership with different stakeholders.

With regard to the provision, the enterprise was determined, the construction of infrastructures and additional infrastructure like warehouses, offices, terminal station, dry port expansion, parking, entry and exit of truck, upgrading the ICT services, allocate budget to buy additional containers. Beside its provision of necessary infrastructures, aimed to provide advanced equipments such as rubber-tired gantry, different modern forklifts and reach stacker, mobile crane, empty container handler, fire fighting truck and vehicle loading truck that described (Table 4.11). Third, enhance service delivery by introducing modern technology like modern truck that have GPS and GIS, IT to automate the documents and increase the accuracy of data. In addition, aims to apply cargo-scanning machine when the construction of entry and exit of the truck accomplished.

Finally, the dry port intended to promote skilled manpower in different ways. These were aimed to encourage skilled and experienced employees to allowed incentives and promote training. Similarly, the enterprise planned to develop collaboration and partnership with different stakeholders like importers; Railway Corporation; ERCA, and Customs Clearing Agents. Generally, as indicated in Table 4.11 Modjo dry port Enterprise proposed different operational equipments by allocating budget in 2016. The enterprise hoped that once these equipments availed MMTS would operate successfully and identified problems so far would be resolved. Additionally, the government to overcome the problem of road freight transport, to promote import and export trade of the country, they come up with new freight transport of railway integration with freight transport of truck not only integrating it with sea transport to move cargoes to and from the Djibouti port, but also integrating it within the Modjo dry port.

Table 4.11 Proposed Plan of Modjo dry port to Provide Advanced Equipments in 2016

No	Proposed Equipments for dry port to buy in 2016	Amount
1	Rubber Tired Gantry Crane (R.T.G) 50 ton capacity	7
2	Forklift-masted type 6 ton and racking forklift 1.5-3 ton capacity	15
3	Electric forklift 3 ton and telescopic forklift 4-5 ton capacity	10
4	Forklift 15 -28 ton capacity and reach stacker 10 ton capacity	8
5	Coil handler-boom 15-25 ton and empty container handler 10 ton	8
6	Mobile Crane 75 ton capacity	1
7	Walks Talky Radio	70
8	Fire fighting truck 7000 liter capacity	1
9	Mobile fuel truck with counter	1
10	Container adhering machine and terminal marking machine	4
11	Slings with eyes and shackles 20-50 ton capacity	100
12	Vehicle loading truck	25
13	To purchase additional containers	2,580

Source: Modjo Dry Port Service Enterprise (2015)

## 4 Discussions of the Finding

### 4.1 Challenges of MMTS Provision in Modjo Dry Port

The study carried out by Nassoro (2011) stated that, barriers to the MMTS in Tanzania were Poor port investments in transport infrastructures; poor better-trained middle management; poor road infrastructure; institutional barrier. The same to this, the research carried out in Ethiopia by Yemane (2013) described that the problem like shortage of infrastructure, lack of truck and outdated; lack of information technology; lack of railway to and from the seaport; were the major challenges of the system in Ethiopia.

Likewise, this study raised that the major challenges of MMTS provision in Modjo dry port were unfinished infrastructures; shortage of equipments; lack of border cross trucks, out dated and limited capacity; lack of public private partnership and unfulfilled organizational structure with skilled employees. Additionally, there was no alternative mode of transport (rail way) and poor public private partnership to provide the system. For this reason, the company could be unable to provide the service successfully and made uncompetitive in the Global Market.

The government alone to fulfill necessary equipments and infrastructure was difficult and inefficient hence, for the efficient logistic activities; outsourcing of logistics activities were essential for the successful business operations. Now globalization drives a higher level of complexity in the logistics supply network, highlighting the important role of distribution and transportation to enhance market value of products. The importance of

distribution and transportation in maintaining a company's sustainable, competitive advantage further increases the sophistication of distribution and transportation operations. As companies, seek to concentrate on their core competencies, logistics activities being outsourced increasingly to specialist providers (OECD, 2002).

Similar to this, India improved the problem of logistics service like inadequate of infrastructure, lack of integration and poor ICT utilization by outsourcing logistics service provision to private sectors (Debela, 2013). The same to this, in Uganda as Godfrey (2001) presented the role of the private sectors had greatly expanded and contributed particularly in infrastructure maintenance and construction in Uganda. For instance out of 15 multinational inland container depots (ICDs), local entrepreneurs owned one that was Peacock Inland Container Depot. The rest owned by the government and international investors in the Uganda. In reverse, this study verified that monopoly power of one government enterprise to provide and operate multimodal transport system in Ethiopia. Hence, the government put into consideration the issue of public private partnership in MMTS provision and participate the stakeholders by preparing necessary awareness and workshop to them. The comments and ideas of the stakeholders and beneficiaries might be an input for the operation of multimodal transport. Through this process, the government upgrades the capacity of the Dry Port, mainly Modjo dry port, which leads to raise the country's revenue.

#### **4.2 Challenges of MMTS Operation in Modjo Dry Port**

The study carried out by Desta (2013), expressed that logistics problem in Ethiopia were categorized into, organizational, skilled personnel, technological and infrastructural. Similarly, this study identified that the major challenges of MMTS operation in the Modjo dry port as provisional, operational (implementation), technological and financial problems. Regard to provisional challenges uncompleted infrastructural construction like road; warehouse; offices; terminal station; water supply; parking; electric power, poor ICT provision and shortage of truck. Similarly, absence of alternative mode of transport to transfer cargo to and from dry port and unfilled organizational structure with skilled employees was the provisional challenges of MMTS operations in Modjo dry port. The study conducted by Nassoro (2011) in Tanzania supported this study by presented the major challenges of MMTS like poor road infrastructure, lack of enough skilled labor and weak institutional set-up.

Additionally, this study stated the operational (implementation) of MMTS operation as weak awareness creation; lack of training; frequent theft and pilferage; delay and congestion of cargoes; unbalanced trade; manual service delivered; increasing unexpected charges and rate of foreign exchange; lack of skilled management; high turnover rate of qualified and experienced employees. Moreover, the system monopolized by government enterprise that had no sufficient capacity to implement the system and exclusive policy of private sectors in MMTS operation. This was due to, shortage, limited capacity and outdated truck and absence of railway transport, which has the capacity to handle bulk cargoes than trucks. On the other hand, the government did not pay attention to promote export trade as import trade that was establish dry port enterprise and introduce MMTS operation to hold import trade from port. Accordingly, Modjo dry port facilitates import trade than export once that was facilitated in comet dry port.

Similar to this the study conducted by Ahmed and Omneia ( 2007) was encouraged this study by stating the operations of maritime transport and related logistics services in Egypt faced with the problems like weak ports infrastructure, ineffective implementation of regulations, inadequate institutional setup; lack of trained personnel; excessive dwell time; cumbersome clearance procedures, costly containers' handling services and freight transportation. Likewise, the study carried out by Nassoro (2011) stated that, barriers to the MMTS in Tanzania were poor better-trained middle management, institutional and financial barrier.

Other research support the result of this study were, the study undertaken by Wubshet (2011) underlined that, the percentage of empty containers shipped back to Djibouti was high as a result, Importers Company had responsible to paid transport costs of empty containers back to Djibouti. World Bank report (2013) proved that, the major challenges of freight transport in landlocked developing countries were shortage of foreign exchange, high cost of transport (inland), unbalanced trade, more time consumed to import-export and lack of competition, capacity and coordination with transit countries.

On other hand, this research described that containers were sealed again in Djibouti port when import cargoes arrived to the port that recognized internationally, which leads to delay of freight, congestion and unnecessary charges at port; since sealing process was made orderly, which was an operational challenges of the system. Moreover, ineffective good governance and inseparable terminal station by cargo type, particularly for dangerous cargo that was realized by this study as operational challenges of the system. In addition, some customers tried to hide the imported freight to reduce the declared duty and tax that made theft and pilferage.

Other operational challenges of MMTS identified by this study were complex multimodal documentation and customs clearance process. Accordingly, there are high average time taken to collect shipping documents from letter of credit opened, the document behind their complex it was not computerized and terminal location was not automated. Consequently, the containers were stacked and stored manually. As a result, freight owners (agents) and custom inspection group lost time to search where the cargoes were located when inspection of cargoes

required. The research made by Alemu (2005) support this study, as the procedures and documentation needed to finalize the transit formalities both at the destination (port) and in the port are cumbersome, inefficient and very bureaucratic.

Regard to customs clearance process, the result of this study stated that the customs process began from Djibouti port when truck left port terminal and border cross based on border cross agreement between two countries. After truck passed through different check points like mille cargo scanning and others checked truck were unloaded their freight at Modjo dry port based on agreement. Accordingly, Modjo dry port custom carried out the activity of inspection by labor force due to absence of cargo scanning machine in the dry port. This was took time to search where cargo located and likewise, the average time consumed to import and export goods to obtain shipping document were high in Ethiopia. However, followed BPR standard time was set to made inspection of cargoes, because of this delay and congestion of cargoes were reduced in Modjo dry port when the customers fulfilled all the necessary formality from the concerned bodies.

Additionally, this study identified that cargo handling and clearance at Djibouti and collection of original imported documents from letter of credit opening bank took more time. Moreover, at customs checkpoints for import-export goods the software used was not working properly and manual system communication through telephone, this consumed more time and brought delay and congestion of cargoes. The same to this, the at custom checkpoints for import-export, goods caused delay and congestion, due to the network problem and check up was made by manual system. Likewise, the research conducted by Wubshet (2011) stated that the scanner device in mille checkpoint had a limited capacity and had not been match with an average flow of the truck; this made traffic congestion and long lines of trucks at this checkpoint occur frequently.

In contrast, Ethiopia customs office was attempted to improve its efficiency by adopting ASYCUDA++ system, its performance capacity was improved through BPR and trained its staff, then the cross border checkpoint between Ethio-Djibouti corridors that took not more than one hour, which was previously consumed more than two hours (Belew, 2014). This was appreciated as the best achievements in Africa and many landlocked developing countries.

Furthermore, this research identified that technological challenges of MMTS operation were shortage of container handling equipments and machineries like reach stacker, forklift, terminal tractor, absence of safety and security camera in Modjo dry port, which resulted inefficient of the capacity to handle and serve the import goods and services. Additionally, presence of under developed advanced technology like GPS and GIS, which used to control illegal acts while cargoes transported from and to corridor. Likewise, the study conducted by OECD (2002) supported this result, by identifying lack of effective and efficient information connectivity provision among various modes like water, air, road and rail in most LLDC.

Finally, challenges of MMTS operation proved by this study were shortage of finance that the common problems of most developing countries, this made some owners of cargo was unable to receive their goods from the port on time. However, the rate of foreign exchange increased through time, which leads to delay and congestion freight, these were caused for unnecessary charges. To fulfilled essential logistic infrastructures and equipments finance played a key role, but this study verified that there had shortage of finance in Ethiopia, specifically in Modjo dry port. This was because, the country had lacked foreign donor on logistic infrastructural provision and it's a land locked developing country. In contrast, the study conducted in Uganda described that the shortage of finance faced the country on logistic infrastructure were reduced through foreign donor and outsourced the provision of infrastructure to foreign and domestic investors (Godfrey, 2001).

Generally, beside the challenges of MMTS operation, this study identified the benefits of the system. Accordingly, as the result obtained implied that MMTS was significant for Ethiopia to save foreign currency paid at Djibouti port, reduce documentation, reduce transit time, minimize delay of containers at port, provided door-to-door service and reduced theft of risks and pilferages. Above all avoided confiscation of goods at seaports, reduce black market trades and abolish high stuffing cost at seaport. Consequently, the study took place by Godfrey (2001) in Uganda and Belew (2014) stated benefits of MMTS, which were supposed the findings of this study, but missed the role of MMTS of reduces black market trade and high stuffing cost at port.

#### **4.6 The Role of Modjo Dry Port for MMTS in Ethiopia**

The result of this study notified that, Modjo dry port somehow overcomes the problem of freight transport. Among the improved problems were unnecessary charges paid at sea port reduced like demurrage cost, stuffing cost at port, port and warehouse charge at Djibouti, due to inland dry port handled cargoes from Djibouti port on time and the customs cleared process carried out at inland dry port (Modjo). In addition, reduce damage cost and theft of risk due freight shipment carried out by sealed container; avoid confiscation of cargoes since cargoes were transferred from port of Djibouti to inland dry port (Modjo) on time by Ethiopian government. As a result, freight did not stayed in port until dead line of confiscation reached.

Moreover, Modjo dry port was rendered different services like quality and standard control; undertook inland customs clearance process; loading and unloading handle cargoes; stuffing and un-stuffing; banking service.

Beside played those role the dry port act as customs clearing agents for government goods and service to accomplish the required custom clearance process on behalf of government. The dry port was facilitated short-term storage for imported cargoes, until essential formality finalized. Additionally, the Modjo dry port was responsible to provide different equipments and machineries to perform the activity of MMTS successfully. Similar to these the study conducted by Tadele (2013) confirmed all advantages of the dry port alike this study. But, his study missed the role of the dry port act as clearing agents for government goods and service to finalize customs clearance procedures and processes.

However, this study stated that the activity of MMTS in Modjo dry port were underutilized due to unfinished infrastructure within the dry port, lack sufficient truck, shortage of advanced equipments and lack of technicians' employee in the sector. Moreover, poor information technology, absence of safety and security camera to safeguard the cargoes located in the terminal station and alternative mode of freight transport (railway).

Other thing considered in this study was derived force for MMTS operations in the Modjo dry port. Accordingly, the derived force for the operation of the system was to reduce unnecessary fee at port; delay and congestion of port; to overcome confiscation and port clearance process; to ensure safe, secured and modern service. Other driving force verified by this study was continuously increased trade volume of Ethiopia. Therefore, the government Ethiopia looked for means to overcome these problems. Accordingly, this study indicated that MMTS operation avoids these problems with dry port enterprise. The study carried out by Yemane (2013) encouraged this study. However, his study was not mentioned the issue of safe, secured and modern service supported by modern technology to follow the activity of truck and driver.

Furthermore, this study realized that the presence of favorable conditions and opportunities to provide multimodal transport system in the Modjo dry port. These were strategic location of the dry port, construction of railway station near the dry, presence of high government commitment to provide infrastructures, equipments and modern technologies in the Modjo dry port and Ethiopia Shipping and Logistic Services Enterprise guaranteed all shipments. The study conducted by Yemane (2013) support this study, but his study missed strategic location of the dry port. This might be due the study area and the topic understudy differs from this study area.

## **5 .Conclusions and Recommendations**

### **5.1 Conclusions**

#### **A. Challenges of MMTS Provisions in Modjo Dry Port**

Challenges of MMTS provision in Modjo dry port are unfinished infrastructure; shortage of advanced equipments and machines; shortage of freight transport; absence of railway; shortage of skilled human resource; limited capacity of terminal station, monopoly power of government enterprise to provide the system and poor public private partnership to provide the system. Generally, there is mismatched supply and demand of MMTS in Modjo dry port. However, the enterprise proposes various equipments and intended to accomplish the construction of the infrastructure for efficient of the activities.

#### **B. Challenges of MMTS Operations in Modjo Dry Port**

The factor that affects operations of the system in Modjo dry port are increasing rate of foreign currency; inadequate training; high transport, port and ware house payment; frequent theft and pilferage; unclear rules, regulation and law and lack experienced management and high turnover rate of employees; weak one window service; complex documentation and customs clearing process. Additionally, unfinished the construction of infrastructure; ineffective good government; inseparable terminal station by cargo type; absence of cargo scanning machine; weak usage of modern technology and information technology; un-automated documentation and terminal station; unbalanced trade and manual system of undertaking activities are other factors that affect the system. Accordingly, these all factors are summarized as provisional, operational, technological and financial challenges of multimodal transport system operation in Modjo dry port. Even if these challenges confronted the enterprise significant to conduct the activity of multimodal transport system operation like reduce port congestion, saves foreign currency paid at port and render various services to the customers.


#### **C. Role of Modjo Dry Port in Multimodal Transport System in Ethiopia**

Modjo dry port plays significant role for activity of the system these are save foreign currency by handling the imported goods on time, this reduce unnecessary fee, decrease congestion, delay and confiscation of freight at port, provide different services and equipments. Additionally, act as custom clearing agents for government goods and services to complete essential customs procedures and process. However, Modjo dry port has not sufficient capacity to realize the aimed activity of the system successfully. This is because still there is shortage of skilled personnel, lack of machineries; unfinished infrastructure.

### **5.2 Recommendations**

#### **I. To Overcome the Challenges of Multimodal Transport System Provision:**

##### **A. Government of Ethiopia**

 Promote public private partnership, outsource the provision of necessary infrastructures, equipments and

monopoly power of government enterprise to provide and operate multimodal transport system does not continue, since its result not successful. Hence, the government encourages freight transport association to inter in multimodal transportation system to realize the efficient provision of the system in Modjo dry port.

- ✚ Ministry of Transport confirm the provision of enough and advanced border cross freight transport that supported by modern technology (GPS and GIS) and have sufficient capacity to handle cargoes from port to Modjo dry port on time. This increases trip round of truck, facilitate import trade and reduces delay and congestion of seaport, which contribute to save unnecessary charges at seaport.

## **II. To manage the challenges of Multimodal Transport System Operation:**

### **A. Government of Ethiopia**

- ✚ Ensure balance trade by promoting and developing domestic export trade likes that of import goods by establishing inland dry port and introducing new system of multimodal transport. In addition, to enhance the export trade diversify the export goods rather than homogenous agricultural products to confirm competitive in global market and to calm empty container transportation that faced the Modjo dry port enterprise.

### **B. Ethiopia Shipping and Logistic Service Enterprise (ESLSE)**

- ✚ Verify good governance by making continues monitoring and evaluation, to capacitate employees and management of the dry port, since the nature of monitoring and evaluation activities show direction and support the performed tasks by identifying the technical and operational activity. This is contributing for success of multimodal transportation system operation in Modjo dry port enterprise.

### **C. Ethiopia Revenue and Customs Authority of Modjo Branch**

- ✚ Promote the usage of cargo-scanning machine in Modjo dry port for the efficient of freight inspection than inspection by manpower that helps to reduce theft and pilferage.

### **D. Modjo Dry Port Service Enterprise**

- ✚ Ensure the provision of training, awareness creation; automate provided service and promote employment incentive to reduce turnover rate of employees.
- ✚ Realize one window service delivery by organizing similar structures at one place with qualified employees. These are responsible for day-to-day activity of multimodal transport operation successfully in Modjo dry port.
- ✚ Utilize the usage of modern technology (GPS, GIS and CCTV Camera) to follow illegal activity while freight transportation takes place and promote information communication technology to ensure reliable information and communication technologies that essential to enhance and develop trade facilitation by increasing reliable information exchange from port to inland dry port of Modjo.

## **III. Role of Modjo Dry Port for Multimodal Transport System in Ethiopia**

### **A. Modjo Dry Port Service Enterprise**

- ✚ Accomplish the construction of infrastructures and realize the provision of necessary advanced equipments and machineries to handle freight transport sufficiently. These are ensure the capacity of the dry port and significant to sustain the benefits of the dry port like save foreign currency; facilitate import goods; avoid customs clearing and forwarding at seaport and reduce delay and congestion of port. This is lay concrete, for domestic and foreign investors to invest and facilitate their trade in the country; particularly around the Modjo area, which is essential to create employment opportunity to the area and confirm strategic location of the dry port.

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