

# Challenges and Prospects of Applying Multi Modal Transportation System in Ethiopia: A Case Study in Ethiopian Shipping and Logistics Service Enterprise

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## Abstract

This research was designed to investigate challenges and prospects of applying multimodal transport system in Ethiopia; the case of Ethiopian shipping and logistics service enterprise. The study used exploratory research design. Primary data were collected through, semi-structured interview and questionnaire. In order to select the respondents, the study used a non-probability sampling method and specifically purposive for collecting data from employees of targeted enterprise and convenience sampling for data to be collected from clients. Accordingly, 71 sample respondents were selected and out of 71 sample respondents', data were obtained from fifty of them using questionnaire and from the rest twenty one the required data using interview questionnaire personally. Qualitative content analysis technique is mainly employed for data analysis and in particular the directed content analysis approach is adopted. The finding of the study reveals that the major challenges in the MMT system is absence of integrated ICT, shortage of qualified logistics personnel, absence of enabling environment and custom facilitation. However, the finding identified future Rail road construction; technological development; rate of fast economic growth of the country; Political stability; current and future programs of improvement in the infrastructure as prospects for the improvement of multimodal transport system implementation. The researcher recommends, the enterprise could focus on challenges and prospects identified in this research to make use the findings of this research. Moreover, since this is an exploratory research it may be necessary in the future to conduct in depth study to determine the exact cause and effect relationships of the factors that impact on multimodal transport system.

**Keywords:** Multimodal transportation system, ESLSE.

## 1. Introduction

Cargo transport demand has been growing steadily over recent years and this rate of growth is expected to continue (Maliyamkono and Mason, 2006). Road freight has increased dramatically, while the modal share of rail has decreased (NS GRP, 2010). This is exacerbating the problems of road transport, particularly congestion. The demand for alternatives to road freight is getting stronger, especially as a result of policy on sustainable mobility (Maliyamkono and Mason, 2006). Multimodal transportation would also contribute to the Ethiopia development strategy by saving time of transportation and wait time at terminals and reduces cost related with cargo at port and terminals.

Litman (2012) conducted research on multimodal transport planning principles and practice, its paper emphasis was totally placed on principles and practices of public multimodal transport, and his finding indicates that multimodal transportation planning requires consideration of all factors such as transport demand, mobility transportation, user information, integration, affordability mobility substitutes, land use factor, Transport network connectivity, roadway design and management.

Another study has been conducted by Nassoro (2011) on benefit and challenges facing growth of intermodal transport networks in Tanzania and investigated the barriers and opportunities that operator facing in using intermodal transport and identified that poor investments in infrastructure, high transportation and distribution charges, institutional and managerial problem are the key barriers for intermodal transport. Specifically he underlined that these barriers results in to high transport cost and low speed transit time and poor revenue to the farmers, producers, importers & exporters of goods as the barrier for intermodal transport and these barriers impede greater scope for country development (Nassoro, 2011).

The in depth review of literature indicates that there are no studies conducted on the challenges and prospects of Ethiopia's multimodal transportation system. So far conducted studies limited their scope on analysis, benefit and challenges of intermodal transportation, containerization in multimodal for integration of supply chain in other countries and economic regions. The researcher believes that there are no studies conducted so far on areas the role of information, technology, logistics, skills, infrastructures, and finance in the successful implementation of the Ethiopian multimodal system operated by ESLSE.

Generally, Very little equivalent work has been carried out in East Africa, which is why there is a need for research to be conducted on challenges for applying multimodal transport in Ethiopia. Therefore, due to this research gap the researcher is interested in conducting a study on challenges and prospects of applying multimodal transportation system in Ethiopia in case of ESLSE. In order to successfully attain the objectives of

this study the following were the basic research questions raised by researcher and got answers:

1. What are the challenges that hindered the multimodal transport system operated by ESLSE to become more efficient and effective?
2. What are the prospects for multimodal transport system operated by ESLSE to become more efficient and effective?
3. What strategic issues beyond ESLSE are impeding the implementation of multimodal transportation?

## **2. Literature Review and Conceptual Framework of the Study**

Since the introduction of the container in 1965 by the maritime industry the use of multi modal transport has increased dramatically. Containerization grew further as a means of 'door-to-door' transport, spurred on by the development of the Piggy Back System where trailers themselves were carried aboard specialized 'Flat cars' (ESCAP, 1983). In many developed economies, containerization revolutionized transport technology and cargo-handling systems (Hayuth, 1987; Eno Transportation Foundation, 1999; Muller, 1999) and in newly industrialized areas including ASEAN members have begun to develop such systems (ASEAN Working Group, 1998). Multimodal transport, which facilitates the origin-to-destination freight transport service under a single operator's responsibility using more than one mode of transport, is a natural extension of containerization (Hayuth, 1987; D'Este, 1996; Muller, 1999). However, the inland transport system element of international freight transport impedes international trade in many least developed countries, (UNCTAD, 1994b). Transport companies involved in international trade have been developing for several years and creating new technologies to enable more efficient distributions along multiple modes of transport.

### **2.1. Requirements for Multimodal Transport**

The use of multimodal transport implies overall structural changes covering new trade and transport practices. Various measures are needed to implement multimodal transport, from the streamlining of commercial regulations to the development of transport infrastructure. The upgrade of three main elements is necessary for an efficient multimodal transport system. These elements are commercial practices, administrative requirements and transport infrastructure (Banomyong, 2000).

Dewan, et al, (2006) described successful implementation of multimodal transportation requires government coordination, technology, infrastructure, information system and knowhow of logistics management theory and practices.

Gray and Kim, (2001), consider the five determinants to successful multi-modalism. These are standardization, expenditure, interchange points, types of carrier, organizational coordination and role of government-deregulation and other encouragement.

### **2.2 The Role of Information and Communication Technology in Multimodal Transportation**

Information and communication technology (ICT) is today radically changing the way in which international trade and transport are conducted. Electronic means of communication are used to exchange information, enter into contracts and trace goods during transit. Transport users and providers are using them internally and also to exchange information among them. A successful example of the use of ICT in developing countries is the Advance Cargo Information System (United Nations Conference on Trade and Development, 2003)

Multimodal transport optimally integrates different modes of transport into a continuous system becoming a key enabler of efficient transport management (Beresford *et al.* 2006). It transfers a part of the estimated growth of road freight to alternative transport modes, such as air, rail, inland waterways and sea crossings. With the development of globalization and the integration of world economy, the transport industry needs to expand and optimize the transport systems and processes through information communication technology (ICT) applications in order to achieve the effective, efficient and environmentally friendly cargo movement, shifting from uni-modal to multimodal applications. Through interconnecting developments in wireless communication, tracking and tracing, fleet and freight management, e-commerce and Internet-based technologies, many ICT-based systems have emerged as collaborative operational platforms or e-marketplaces. These systems provide a comprehensive range of integrated services with regard to the door-to-door management of multimodal transport. Davies *et al.* (2007) focuses on the impact of the Internet on freight exchanges and ICT applications on general transport in the UK which indicates that many smaller transport operators in the UK remain dependent upon traditional communication and process systems, whilst the larger logistics companies are increasingly developing new ways of working supported by advanced ICT applications. The application of ICT in the area of multimodal transport has triggered significant changes in terms of both operational and managerial aspects (Harris, 2010). ICT applications serve as an enabler to optimizing the entire multimodal transport process by providing real-time visibility, quick and accurate information, efficient data exchange, and better flexibility to react to the unexpected changes during shipment (Durr and Giannopoulos 2003; Coronado *et al.* 2009; Perego *et al.* 2011). The adoption of ICT is able to bring about various levels of potential benefits, such as economic and

environmental benefits, to all related stakeholders involved in multimodal transport.

### **2.3 Enabling Environment for Multimodal Transport**

Dewan et al (2006) described that government must ensure simple and flexible customs procedures to allow door-to-door movement of containerized cargo. Customs authorities have to develop a system or procedure to facilitate such movement. In their findings there was consensus that procedures such as arranging guides and the bonded warehouse system have restricted effective door-to-door delivery, as it has the outdated attitude of distrust in the customs client relationship. Introduction of Automated System for Customs Data (ASYCUDA) is improving the customs clearance system, but procedures should be simplified to facilitate quicker clearance of consignments (UNCTAD, 1996).

To achieve an efficient multimodal system demands a concerted and integrated effort by all parties involved (Razzaque, 1997.) There is collaboration between different types of carrier in different forms ranging from conference agreements to strategic alliances and vertical to horizontal (Panayides, 2001).

From a policy viewpoint the critical feature is that logistic are the primary concern of the firm which is where the trading off has to take place. Moreover, the very complexity, and situation specific nature of the trade-offs means that it is only the firm which can determine what is the best arrangement. Hence the role of the state must not be to decide what the best arrangement of transport for firms is, but merely to facilitate the actions of firms in making those commercial arrangements in a way which recognizes the social as well as the private costs of those decisions. It seems to me that it is on that basis alone that the public agenda should be founded (Gwilliam and Ken,2009).

In the majority of developing countries, the policy to preserve transport rights for national flag carriers is misguided. According to UNCTAD (2003), cargo reservation for national flag carriers shields them from competitive pressures in the international ocean transport market, with the result that the cost of their services is higher than that of the international carriers. The loss to domestic importers and exporters is the difference between what they pay for the carriage of cargo and what they would have to pay in a free market (UNCTAD, 2003).

#### **2.3.1 Infrastructures Role in Multimodal Transportation**

Where transport infrastructure is poor, the development of multimodal transport may not be easy. In order to be able to gain maximum benefit from multimodal transport, infrastructure that is capable of handling containers must be in place, Banomyong, (2000). Multimodal transport requires efficient transport systems supported by efficient infrastructural and institutional facilities so that goods move smoothly, safely and rapidly from door to door. The major infrastructural facilities include railroads, roads, airports, seaports, inland container depots and container freight stations (Sanders, 1990). Containerized cargo also requires less but better qualified personnel in ports, where reforms are still pending in many developing countries (Nassoro (2011). It further requires port, rail and road infrastructure, as well as the corresponding regulations and labor regimes. In many developing countries, particularly least developed countries, these inland links are often incomplete and poorly maintained. This is one of the main practical obstacles to transport providers offering multimodal transport (UNCTAD, 2003). Multimodal is a quality indicator of the level of integration between different modes: more multimodal means more integration and interconnectivity between modes, which provides scope for more efficient use of the transport system.

### **2.5. Product Safety and Security**

In the case of transport and international logistics, corruption, theft and accidents not only imply a direct cost, but also reduce the competitiveness of exports. Especially at ports and other nodes where cargo is shifted from one mode to another, security risks are particularly high. Uncertainty and also weak legal systems is thus a particular obstacle to multimodal transport, where often an original carrier located in a foreign country is supposed to cover the entire risk of the entire transport chain, (UNCATD, 2003). Fear of terrorist attacks is leading to new regulations and legislation, which add further obligations to shippers and transport providers, especially for exports to the United States. These obligations imply additional risks for those who have to provide more detailed and timely information. Shippers have to guarantee to the carrier that the information given to him about the goods is accurate and that the carrier can use this information without risk of suffering a penalty or delay. The obligations also imply additional costs inasmuch as they require the use of screening equipment and personnel. The distribution of costs and liabilities linked to these recent changes is difficult to estimate. What appears clear is that developing countries have more difficulties in complying than do industrialized countries (UNCATD, 2003).

### **2.6. Logistics Management Personnel**

Yang (2011) has considered in a speech delivered at *Intermodal 98*, Klaus Gibson, head of central corporate development with Thyssen Hassen, said that transport today is all about logistics. Service providers need to think

more in terms of producing total transport solutions, rather than the provision of one or two links in the chain. Multimodal transport has forced a reconsideration of the traditional unimodal approach to transportation and logistics (Raguraman & Chan, 1994). Policy may implement multimodal transport but it is the transport decision-maker that will make the choice of transport mode in a logistics system. Depending on his requirements, uni-modal or multimodal transport will be utilized.

### 2.7. Custom Facilitation

In many countries, Customs is a principal source of revenue for the government. In all countries Customs play a major role in enforcing laws at the nation's borders. As world trade has grown, so too has the complexity and workload of Customs. According to Lane (1999), the mission of Customs is as follows: to ensure all goods entering and exiting the country do so in compliance with all laws including revenue and to facilitate the entry of all legitimate merchandise into the country. The globalization of the world economy has placed increased pressure on the world's Customs administrations. Merchants have demanded faster, more standardized and uniform service while governments require more revenues. At the same time Customs must produce trade statistics and enforce other agency laws (i.e., health, intellectual property, etc.) at the nation's border. Customs are faced with the prospect of balancing the requirement of facilitation with enforcement. Using a traditional approach to Customs practices and procedures is not suitable for trade facilitation.

### 2.8. Port Administration in Implementation of Multimodal Transport

In multimodal system, ports are interchange points and very important to contribute seamless or continuous flow of goods. At interchange points there is often a transfer among different carriers. Thus, there is a need to coordinate different types of carriers. The relationship between shipping lines and ports has led to greater concentration of cargo moving through fewer and larger ports. Such ports form hubs serviced by feeder ports. In multimodal systems inland terminals are as important as seaports (Wolfe, 2001).

### 2.10. Conceptual Framework of the Study

Based up on the review of literature the researcher has identified the basic requirements for effectively and effeciently impelimentation of multimodal transportation system

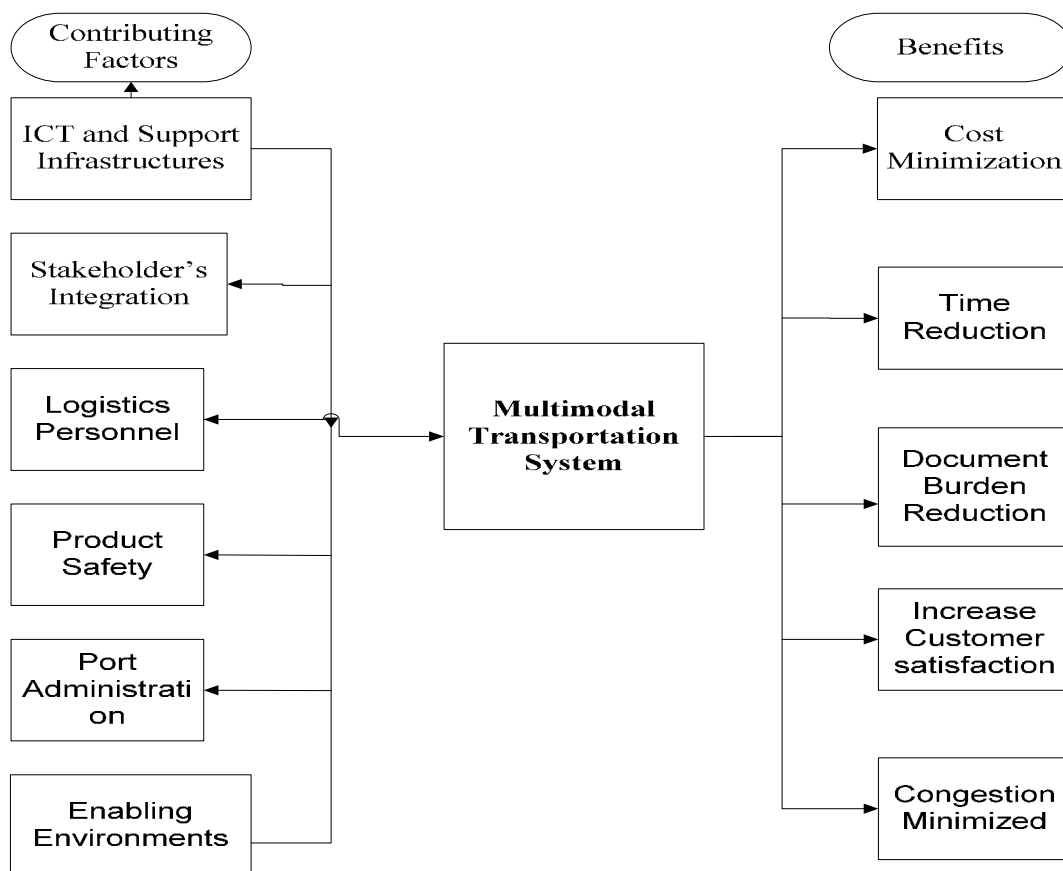


Figure 1. Conceptual Framework of the Study

### 3. Methodology

In this study exploratory research design was used, data were collected from both primary and secondary sources. In order to select target respondents of the study non-probability sampling techniques convenience and purposive sampling were used. Accordingly, the total number of populations included in sample frame was 200. Samples were selected by knowledgeable person or process owners and they were selected managers and employees of Ethiopian Shipping and Logistics Service Enterprise. Accordingly out of seventy one (71) sample respondents, data were obtained from fifty (50) of them using questionnaire and from the rest twenty one (21) the required data gathered using semi-interview question personally. The numbers of respondents were limited to 71 based on the judgment of the researcher, to avoid redundancy observed while collecting data. Qualitative content analysis (QCA) method was used to analyze data collected through interview and open ended questionnaire. The type of the content analysis used for this study is the direct content analysis whereby the codes and categories are derived from the theoretical framework and relevant studies. Data gathered through close ended questionnaire were analyzed using appropriate frequency distribution.

### 4. Result and Discussion

From the total of (71) sample respondents, a questionnaire was administered to 50 respondents while an interview was made with the other 21 respondents from officials of the enterprise. Of the total number of questionnaires distributed to 50 respondents, 44 questionnaires were filled and returned back for analysis at a response rate of 88%. And out of these returned questionnaires 38 (86.5%) were appropriately filled in and returned while 6 (13.5%) questionnaires were found to be incomplete and discarded. The data gathered from the interview, questionnaire and document analysis were analyzed and interpreted to obtain appropriate finding.

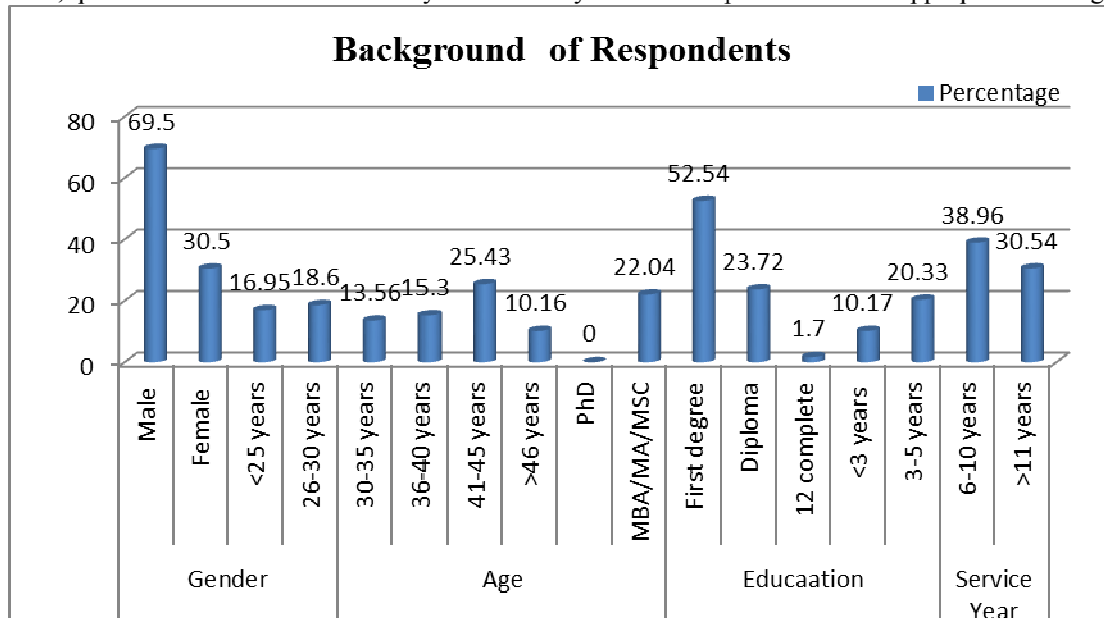


Figure 2. Demographic Characteristics of the Respondents

As it can be seen from figure 2, out of the total 59 respondents 41 (69.5%) are found to be male and the remaining 18 (30.5%) to be female. Concerning educational background of respondents, as per data gathered the majority of 31 (52.54%) employees are first degree holder whereas 14 (23.72%) are college diploma, 13 (22.04%) are second degree holder and the remaining 1 (1.7%) is twelve complete. Again as it can be seen from the table from total respondents 10 (16.95%) are less than 25 years, 11(18.6%) are between 26 to 30 years, 8(13.5%) are between 30 to 35 years, 9(15.3%) are between 36 to 40 years, 15(25.43%) majority of the respondents are 41 to 45 and the remaining 6(10.16%) respondents are greater than 46 years old. The data presented in the above table depicts from the total respondents 6 (10.17%) served for less than two years; 12 (20.33%) served for three to five years; 23 (38.96%) served six to ten years and 18 (30.54%) respondents served the enterprise for more than eleven years. Since service year has an importance on the data collected, the finding in this regard shows that the respondents profile in terms of service found to be relevant to obtain reliable responses.

**Table 4.2: Presentation of Responses Collected through Close Ended Questionnaires**

Questions	Yes	No	Total
Do you provide your customers information about multimodal transport rates online?	4 (10.52%)	34 (89.5%)	38 (100%)
Do you provide your customers information about how long it will take to get their cargo at their premise online?	6 (15.8%)	32 (84.2)	38 (100%)
Do you provide an online booking service for your customers on continuous basis?	6 (15.8%)	32 (84.2%)	38 (100%)
Do you think that the number of logistics expertise your enterprise has is enough to provide the required service efficiently?	4 (10.52%)	34 (89.5%)	38 (100%)
Do you have enough expertise related with logistic like inventory managers, transport managers?	8 (21.05%)	30 (78.95)	38 (100%)
Do you have a training center for your expertise?	5 (13.16%)	33 (86.8%)	38 (100%)
Is the current transport infrastructure suitable to provide door to door MMT service?	3 (7.9%)	35 (92.1%)	38 (100%)
Do you have enough inland container depots?	21(55.26%)	17 (44.7%)	38 (100%)
Do you think that your product stuffing and transshipment secured?	7 (18.42%)	31(81.58%)	38 (100%)
Have you ever received complaints from your customers regarding mishandling of goods?	29 (76.5%)	9 (23.48%)	38 (100%)
Is there flexibility in your custom station to clear cargos from the station?	8 (21.1%)	30 (78.9%)	38 (100%)
Do you think there is enough and well equipped container terminal at port?	5 (13.2%)	33 (86.8%)	38 (100%)
Do you think that the communication system among ports is well integrated?	3 (7.9%)	35(92.1%)	38 (100%)
Do you think that areas in dry port are effectively utilized?	2 (5.3%)	36 (94.7%)	38 (100%)

As it can be seen from the above table for questions providing information about multimodal transport rates online, 89.48% of the respondents replied no and the remaining 10.52% said yes. Again in relation with getting online information about how long it will take to get their cargo at their premise and online booking service for customers on continuous base out of total respondents, 84.2% of them replied no and the rest 15.8% replied yes. From this the researcher conclude that there is absence of information and communication technology in the enterprise to provide online information to the customers about on transit time, online booking service and online multimodal transport rate.

In relation with availability of enough logistics expertise in the enterprise 89.48% of the respondents replied no and the remaining 10.52% replied yes. Pertaining to expertise from related field like inventory management, and transport management out total respondents 78.95% replied no and the remaining 21.05% replied yes. In addition for questions asked in relation with existence of training center for logistic expertise 86.84% of respondents replied there is no training center and the remaining 13.16% of the said yes. From the researcher conclude that the enterprise has no enough logistics expertise, expertise from related field, and has no training center for the up grading of expertise.

In relation with suitability of infrastructure to provide door to door multimodal transport services 92.1% of the respondents replied no and the remaining 7.9% replied yes. 55.26% of the respondents replied that the current inland container depots are enough to provide multimodal transport service and the remaining 44.74% replied the current inland container depots are not enough. From this data it can be concluded that the current infrastructure is not suitable to provide door to door transport services through multimodal system.

In terms product staffing and transshipment security 81.58% of the respondents replied, the current system is not secured and the remaining 18.42% replied yes it is secured. In relation with this, complain receipt from customers related with mishandling of containers 76.52% of respondents replied yes and the remaining 23.48% replied no. Pertaining to flexibility of custom clearing process 78.9% of the respondents replied no and the remaining 21.1% said yes.

For questions raised to respondents in relation to availability of enough and well equipped container terminal port 86.8% of the respondents replied no and the remaining 13.2% of them replied yes they are enough in number and well equipped. 92.1% of the respondents replied that there is no well integrated communication system among ports and the remaining 7.9% of them replied yes, communication among port is well integrated. In relation with effective area utilization at port 94.7% of respondents replied no effective area utilization in port and the remaining 5.3% replied yes.

**Table 4.3 Categories and Codes of Collected Data**

Category	Codes
Information communication Technology (ICT)	Codes 1 Tracking and tracing system
	Code 2 Information and communication system
	Code 3 Challenges related with ICT
Custom facilitation	Code 1 Process Flexibility at Custom
	Code 2 Clearance process
Enabling environment	Code 1 Conducive business environment for multimodal transport
	Code 2 Rules and regulations
	Code 3 Institutional management
	Codes 4 Incentives for importers use multimodal transportation
	Codes 5 Pre implementation plan for multimodal transport
Infrastructure	Codes 1 Road Infrastructure
	Code 2 Truck Supply
	Code 3 Shipment or shipping supply
	Codes 4 Offices Facilities
Human resources	Code 1 Logistics personnel
	Code 2 Training center
Port administration	Code 1 Availability of enough container port and equipment
	Code 2 Area utilization at port
	Code 3 Communication among port
Product security	Code 1 Product security
Stake holder	Code 1 Customers
	Code 2 Main actors of multimodal under ESLSE
Prospects for implementation of multimodal transport system	
Advantages of multimodal transport system to the country	

As it is exhibited on the table above, first raw data collected from key informants transcript were made word by word in to English. After transcription, data collected were filtered based on the purpose of the research. Then similar items were grouped together. Moreover, group categories were formed and codes were assigned to each category. Based on this process themes such as; information and communication technology, custom facilitation, enabling environment, infrastructure, human resources, product security and safety, stake holder, prospects for implementation, and advantages of multimodal transport system were formed. So as to carry out the analysis the researcher first presented raw data under each category. The data were qualitatively analyzed by making use of directive qualitative content analysis taking in to account the related literature summarized under chapter two.

#### **4.2.1. Information and Communication Technology**

In relation with information and communication technology almost all of the respondents would like to have information and communication technology which help them for cargo tracing and tracking, for flow of information and communication. Based up on data's collected via interview from interviewee there is no Global Positioning System (GPS) installed by Ethiopian shipping and logistics service enterprise. In relation to this few of the interviewees replied that currently there is a system called Container Tracking and Tracing System (CTTS) which is built in house for tracking and tracing of cargo and providing information about the progress of shipment to the concerned officials rather than for customers. According to the responses, the problem is not only related with absence of tracking and tracing system, but they added there is no initiative of installing modern information and communication technology by administration to change the system.

“Due to the absence of cargo tracing and tracking system, we are frequently receiving complaints from our customers related with dislocation of cargos. As an example before two weeks there was a complaint by firm, because during opening of letter of credit they filled Modjo dry port as a port of destiny but after frequent request to the custom, cargo located at Mekelle dry port, then the cargo returned to modjo dry port by the expense of the complaining firm itself” (Interviewee 1, line 13-22)”.

In addition to systems that enable organization to track and trace cargos many of the respondents would like to have latest information communication and technology infrastructure like ASYCUDA++ system for the sake of automating tax calculation at custom and Electronic data interchange at any sectors of the organization to make things free from more of manual doings.

“At custom station due to the absence of electronic data interchange, there is no system which tells you where containers for inspection are, rather you have to walk through dry ports where containers are located and search for the containers to be inspected by manually identifying the container, which takes a minimum of thirty minutes and leads customer to wait for a days to get turn for inspection. Furthermore, ASYCUDA++ system

frequently failed to perform because of network problem and power interruption. In addition the ASCUDA++ system being used is out dated even, Djibouti is using ASCUDA world due to that there is incompatibility of system in Djibouti port and that of our country, (Interviewee 10, line 19-31)”.

In terms of information and communications among stake holders including customers many of the respondents responded that absence of integrated information system is a big problem of the operators which leads the operator not providing online multimodal transport freight rate information and online booking service for shipment. So based on their response most of the respondents would like to have a system which enables the operator to provide on line booking service and provision of information to customers related with the transportation of cargo and other basic information instead of providing such information personally, through radio, the operator’s broacher and news paper. Furthermore, many of the respondents responded that there is no holistic information communication system and communication among ports is very poor which is based on personal mail, fax and telephone.

Generally, in issues related with information and communication technology most of the respondents would like to have:

- ✚ Strong information and communication system
- ✚ Enough skilled manpower of information and communication technology
- ✚ Broad band network which is independent of national network to avoid the existing ASYCUDA++ system failure
- ✚ Holistic system which integrates and enables all parties to send and get necessary information

According to Beresford et al (2006), since multimodal transport system integrates different modes of transport the application of information and communication technology enables to achieve effectiveness and efficiency of the cargo movement. They added through interconnecting developments in wireless communication, tracking and tracing, fleet and freight management would provide a comprehensive range of integrated services with regard to the door to door management of multimodal transport.

The finding reveals that there is no wireless communication, tracking and tracing, as well as fleet and freight management system installed by Ethiopian shipping and logistics service enterprise. Therefore, information and communication technology is one of the challenging factors that the enterprise is suffering from. The finding is consistent with the finding of Dewan *et al* (2006) that multimodal transport requires standardized flows of information, but shippers or consignees are unable to get sufficient information about their consignments because of the incapability off carriers or freight forwarders to offer effective tracking and tracing of shipments. Due to absence of this enabling factor information about shipping is published rarely on enterprise brochure which is issued quarterly, and often this information are un-updated and shippers do not know where to obtain sufficient information about multimodal freight rates online rather they request the clerk in person.

Since the current business environment is full of competition, shippers and consignees need an efficient transport service that enables them to get their goods at the right time, at right place and at the right price. Therefore, adequate transport infrastructure and communications facility are a critical factors for the success of business.

As clearly depicted in Harris (2010), the application of ICT in the area of multimodal transport has prompted significant changes in terms of both operational and managerial aspects. It enables to optimize the entire multimodal transport by providing real time visibility, quick and accurate information, efficient data exchange, and better flexibility to react to the unexpected changes during shipment (Durr and Giannopoulos 2003; Coronado *et al.* 2009; Peregó *et al.* 2011). The finding this research reveals that there is no quick and accurate information; efficient data interchange between ports, actors, and customers.

In relation with challenges impeding the enterprise for adoption of Information and communication technology, finding of this study is consistent with Zeimpeksi and Giaglis (2006) operations related barriers are difficulty in employing qualified personnel, lack of ICT specialists, and personnel skill shortage for operation of new applications, as well as insufficient ICT oriented training and educational activities. .

The absence of this modern information and communication technology in Ethiopian shipping and logistics service enterprise leads for no integration, no effective port area utilization, increased truck supply problem, and also increased delay at custom due to poor and outdated ASYCUDA++ system and no installed Electronic Data Interchange system for both customs and ports.

From this, the researcher conclude that information and communication technology is a big challenge which is influencing other variables such as custom processing, port administration, truck supply and shipment planning, product safety and security. Because with the absence of ICT the enterprise:

- ✚ Cannot keep product safety and security
- ✚ Cargo tracing and tracking is not possible
- ✚ Integration among actors is poor
- ✚ Resource planning and control become very poor (truck supply and shipment planning
- ✚ Effective and efficient port administration is not possible





Custom process flexibility and reducing time is unthinkable

#### 4.2.2. The Performance of Customs in Relation with Multimodal Transport System

In terms of process flexibility of custom for multimodal transportation system most of the respondents responded as there is no process flexibility. Rather they described customs processing system as very much lengthy, have no clarity, full of problem, suffer from shortage of warehouse to inspect cargos those cannot be inspected in field.

“There is no smooth information system placed in custom stations that is why inspection and clearance at custom is one impeding factor which takes long time for cargo owners to take their cargos timely. Especially modjo custom station is not serving customers very well because of very lengthy process and they appoint customers to come back for inspection of their cargo after a week or two weeks. Due to this, customers are requesting our office not to make modjo dry port as their cargos destination rather they want their cargos destination at kommet and customers hate modjo dry port too much, (Interviewee 2, L28-35)”.

In relation with cargo clearance time at custom station many of the respondents replied that cargo inspection takes long time not only for cargos that comes through multimodal but also in the unimodal system as well, and they conclude as speed of cargo clearing is very slow. In interviews with interviewees whose position are on inspection of container they responded that in average it takes 9 to 20 days to inspect the containers. As a reason they stated that even to get where cargos are, it will take two days since cargos arrangement system is not in appropriate way and arranged randomly. Many of the respondents externalized the reason for delay of cargo clearance at custom to shortage of labor force (inspectors) and ASYCUDA++ system failure because of network problem, power interruption as well as outdated software and also shortage of ICT expertise to timely maintain the system it fails. One of the interviewee explained custom processing time as:

“After implementation of multimodal transportation system yes there is time reduction in custom processing but this time reduction is not because of improved custom facilitation rather due to limiting the number of custom station only to inland dry ports by reducing the number of custom stations on the route, and transistors (Interview 9, L18-24)”.

Furthermore, many of respondents would like if custom authority emphasis more on trade facilitation rather than emphasizing more on control. As an example they raised X-ray check-up at Galafi which works only for 16 hours per day and leads around four hundred loaded trucks to wait for their turn of inspection for hours. The respondents raised also the double sealing at Djibouti port as a time consuming task.



“In order to facilitate the transaction system of both domestic and foreign market, Custom authority has to allow all containers to inter to inland dry ports because I believe that contraband will not be more than one container out of thousand tracks stopped at Galafi, so that instead of stopping one thousand truck there custom authority has to allow them to get in, (Interviewee 13, L21-28)”.

A simplified and effective procedure is one of the requirements to encourage trade and investment (Temple, 2001; The New Nation, 2003). Government of Ethiopia should develop simple and flexible customs procedures to allow door to door movement of containers. Because it can be seen from above presented data there is unclarity, lengthy process and some of restrictions imposed by customs impeding trade, fruitlessly cargos are staying at custom station for a long period of time and which discourage international trade. This research finding in relation with custom processing time somewhat consistent with the study conducted by MacDonald, (1998) which indicated that clearance time for customs are between 5 to 7 days in Chittagong port but at modjo dry port it takes 9 to 20 days.

Again there is findings consistency with Dewan et al (2006) that procedures such as arranging guides and shortage of warehouse have restricted effective door to door delivery, and the attitude of distrust in the customs client relationship. From the finding it can be understood that cargos stay at Galafi to be inspected with the help of X-ray which functions only for 16 hours, which is partly because of the distrusts that custom has on importers. According to UNCTAD (1996), the introduction of Automated System for Customs Data (ASYCUDA) is improving the customs clearance system. But the ASCUDA++ currently used by ESLSE is frequently failing because of network failure, system failure and power interruption. Due to this challenge it is leading to take long time to clear cargo from the station. So, from this the researcher conclude that absence of installed automated system, shortage of man power and clear and simple procedure is impeding effective and efficient customs service for multimodal transport system.

#### 4.2.3. Enabling Environment for Multimodal Transport System

In terms of favorable business environment for multimodal transport most of the respondents would like to have more conducive business environment in particular:

-  Having more choice to select their own operator instead of Ethiopian Shipping and logistics service enterprise and
-  Increased role of private sector in the transportation system

In relation with rules and regulations which governs multimodal transport system operator and the actors most of the respondents would like to have more clear rules and regulations for encouraging the private sector

and avoidance of monopoly. And Ethiopian government has to work closely with Djibouti government for respecting the protocols signed between them related with the implementation of multimodal. Because according to interviews held with interviewees currently Djibouti is not doing things as per protocols signed due to the reason that multimodal implantation reduces money that Djibouti government get in case of unimodal transport system.

“Government of Ethiopia itself is one big problem for multimodal transportation system, because there is no rules and regulation that govern the implementation of multimodal, so how government encourages private sectors and how integration comes with private sectors in a place where there is no integration among government stakeholders like customs authority, transport minister, shipping line, maritime authority and dry port authority, (interviewee 14, L 26-33)”.

With no single organization responsible for a uniform and comprehensive policy, private bodies including the shipper’s council and freight forwarders association find it difficult to reap the benefit from an efficient and effective multimodal transport system. The government could further improve regulations for implementing multimodal transport system including decentralizing its structure (Dewan et al 2006). Even though Dewan et al (2006), argue that, there are no rules and regulations which govern the system. As a researcher I suppose the government to develop clear and precise rules and regulations by encompassing the private sector. Because including private sector during developing multimodal transport system rules enables it to inculcate things from their aspect because they avoid the chance of only considering the government intention. Razzaque (1997) stated that to achieve efficiency multimodal system demands a concerted and integrated effort by all parties involved. There is collaboration between different types of carrier in different forms ranging from conference agreements to strategic alliances and vertical to horizontal (Panayides, 2001). The main objectives of these collaborations are to control multimodal transport chain, to reduce overall transport cost and to increase service quality, generally through laws associated with the deregulation of transport.

An important feature of deregulation was the separation of government business into discrete units. This structural separation occurred in three main areas: The separation of regulatory and commercial functions, the separation of natural monopoly, and the separation of potential competitive activities, (Everett, 2001). From this the researcher identified that due to absence of collaboration and deregulation, the enterprise failed to reduce overall transport cost, failed to control the system and failed to increase service quality. Because deregulation makes the market full of competition and avoids the current natural monopoly of Ethiopian shipping and logistics service enterprise, and improve quality of service.

The researcher finding is inconsistent with that of the results of Babul (2000) that a private company undertakes container handling operations and equipment maintenance. But in the case of Ethiopia, there is no system which is deregulated that participate private sector for providing such service because everything is done under the umbrella of the enterprise. Panayides (2001) has considered many governments have encouraged private sector participation in finance and management of ports and have abandoned traditional flag protection in shipping. But when we compare with the findings not only in finance and management of port the government is not allowing the private carriers to transport containers rather it gives priority for association.

In terms of institutional management for multimodal transportation system many of respondents replied that it would be good if there is clear and precise institutional management structure which depicts who is responsible to whom for better coordination and cooperation among stakeholder. Many of the respondents share that because of no clear cut government procedure and regulation about collaboration and coordination among stakeholders integration among stakeholders become very difficult (poor) and fragmented.

Therefore, in order to collaborate with and coordinate the stakeholders first the government has to clearly depict who is responsible to whom by assigning one responsible organ for the coordination and collaboration of multimodal transport.

In issues related with the incentives for those using service of multimodal transportation system some of the respondents would like to see more of supports to those importers currently using multimodal transport in order to create awareness about multimodal transport system advantage.

“Government support and follow up is necessary but currently I can say there is no government support for those importers using multimodal transport and operator as well. Government is giving priority for those sectors considered as economy movers but mainly more than 85% of importers are those who imports commercial and consumption goods, so government has to give priority for those who take majority of Ethiopian import, even giving an opportunity of selecting operator is an incentive for them but government denied them, (Interviewee 21, L 32-38)”.

According to Gwilliam and Ken (2009), from a policy viewpoint the critical feature is that logistic is the primary concern of the firm which is where the trading off has to take place. Moreover, the very complexity, and situation specific nature of the trade-offs means that it is only the firm which can determine what is the best arrangement. But according to the finding for all importers either government office importer or private importers, selection of modes of transport is made by the state. This means the importers or exporters has no

option of making trade off decision in relation with selecting carrier of transport that provide better service quality or less cost. So, from this the researcher concludes that there are no incentives provided by government for customers. Because letting them to choose the carrier under multimodal transport system is one incentive for them. A simplified and effective procedure is required to encourage trade and investment (Temple, 2001; The New Nation, 2003).

For question raised to respondents related with how multimodal was implemented, totally all respondents responded that there was no pre plan made to implement multimodal, it was not started with well-organized system and even not the construction of new infrastructure but also the existing infrastructure were not maintained. In 2001 E.C. the federal government has made pilot test on 10% of government offices containers imported from abroad and the result was very encouraging. The government was very interested by the results obtained from pilot test of multimodal transport system and decided to fully apply multimodal for all containers imported to Ethiopia from foreign country. But there was no pre implementation capacity plan which is made by government and that is one of the reasons why now operator is facing difficulties.

Therefore, absence of pre implementation plan in aspects like rules and regulation and capacity planning is a challenge which impeding the multimodal transport.

#### **4.2.4. Multimodal Transport System and Product Safety**

In terms of product safety and security all respondents have the same feeling that is nothing has done by the concerned body to keep the products safety and security in relation with implementation of multimodal transport system. According to responses obtained from respondents the operator is using key, guard and sealing to keep the security of products instead of using latest technology which enables it to follow what is going on and what is happening in relation to containers.

Due to absence of containers security system the operator is receiving complaints from different customers related with theft of escort tire and other electronic materials during inspection and travel respectively. In one hand after the implementation of multimodal transport system since there is no un-staffing of imported container at Djibouti port product safety is good than during unimodal transport system. In another case there are not enough inspection warehouses at inland container depots. The safety of perishable product is in danger because they are inspected on field.

As clearly presented, even if the problems occurred so far are not serious there is a problem. Due to absence of technology based product security system cargo owners are incurring cost and losing their competition in market also. According to UNCATD (2003), in international logistics, corruption, theft and accidents not only imply a direct cost, but also reduce the competitiveness of exports and imports. Especially at ports and other nodes where cargo is shifted from one mode to another, security risks are particularly high.

Branch (1994), Safety of goods is equally important with its security. Any loss or damage, because of theft, mishandling, poor quantity packaging or physical damage caused by accident will result in the non-availability of the goods at the expected time and place, and in expected conditions. In relation with the safety of product my finding indicate that due to shortage of warehouse materials are inspected on field which has a consequence of damage to products that are to be inspected in warehouse.

So, that from this the researcher conclude that due to absence of information and communication technology and shortage of warehouse infrastructure securing product safety and security is challenging factors.

#### **4.2.5. The Role of Stake Holders in the Implementation of Multimodal Transport System**

Customers are the key user and stake holders of multimodal transport system. In relation with customer's cooperation and coordination for multimodal transport system all in all the respondents replied that customers are not willing to take their containers immediately. After it is cleared rather they use dry ports as a warehouse for the sake of taking price escalation advantage and due to shortage of currency. They indicated that because of they are using dry ports as a warehouse; there is a shortage of space at ports for placing the new incoming containers. In addition to that not only taking their cargo on time, they are not willing to return empty containers at port on time which leads for shortage of containers.

In terms of integration among stakeholders specifically main actors of multimodal transport system almost many of the respondents would like to have:

Good coordination and cooperation among custom authority, shipping line, road authority, transistors, transport planners, level providers and dry ports. A feeling of responsibility and belongingness of the related parties with facilitating the activity as well as holistic thinking and system which coordinate all actors. High level of commitment in implementing the system

The stakeholders, like road authority and customs authority, do not have feeling of belongingness in the process of resolving the challenges in the implementation of the system. For example road authority, instead of building alternative bridge with better capacity on Awash River, it blocks the cargos, beyond the carrying capacity of the bridge from being transported.

"In case of custom authority, instead of letting cargo owners to take their cargo immediately by reducing custom processing time they hold containers for a period of time due to tight control. These are a big problem of

not having the feeling of responsibility related with facilitating the system rather only focusing on their own objective that is why there is no holistic thinking, (Interviewee 8, L33-39)".

In relation with stake holders among top officials interviewed many of them raised that there is over all capacity problem of actors.

To achieve an efficient multimodal system demands a concerted and integrated effort by all parties involved (Razzaque, 1997). The finding is consistent with MacDonald (1998), that the capacity of final customers to receive containers is limited. So, in order to enable the customers to take their cargo on time the government or the bank has to closely work with the customers. Because if they are not taking their cargo due to shortage of finance the bank has to provide them a loan or the custom has to allow them to pay after some period of time. But, if customers are using dry port as a warehouse serious action has to be taken by the concerned body from legal aspect.

#### **4.2.6. Port Administration**

In terms of the availability of facilities, equipments, and necessary machines at ports for multimodal transport system; many of the respondents stressed that the capacity of port is a big problem due to shortage of equipments and tools like reach stackers, forklifts, and big cranes.

"The numbers of inland container depots are not enough if multimodal is going to be fully implemented.

Because we do have only six inland container depots which are currently used for containerized shipment and RORO. Which mean no break bulk materials like metal even not all containers, are through multimodal transport system. Only 42% the rest is through unimodal transport system, and they are not located strategically only modjo dry port, (Interviewee 8, L26-32)".

"Inland dry Ports are not well equipped with necessary equipments, currently there are only four reach stackers, four trailers and six forklifts of these, two of them have a maximum load capacity of four tone and the rests maximum load capacity is seven ton, (Interviewee 18, L 11-15)".

In relations with ports area utilization many of the respondents responded that currently ports' area is not fully utilized because of capacity of materials handling equipment is limited; "we cannot use more than three high stacking due to the capacity of the reach stackers and forklifts, (interviewee 13, L23)". The planned performance of modjo dry port was to maintain about 4000 containers but due to poor working system and shortage of leveled ground for containers its actual performance is limited to 2000 containers. There is shortage of space at dry ports because of this; "even if expansion construction is undergoing we are using red ash to level the ground and place containers (interviewee 22, L31)". Again because of shortage of space at modjo dry port the operator is moving cargos from modjo to Commet. In general they replied that there is dry ports inefficiency because of no enough port equipment, shortage of labor force to work, no well organized management system, information communication, and space problem.

Based on responses collected from respondents in relation with communication among ports they would like to have integrated information system which communicate all ports for effective area utilization because currently communication among port is through personal mail, fax, phone and head quarter report.

"Since there is no system which integrates all ports, the communication among them is very poor, (Interviewee 7, L19-20)".

Efficient inland container terminals and logistics and freight centers are essential if a container port is to be fully integrated with its hinterland to enable development of multimodal transport (Cullinane et al., 2004). From the finding of this study it can be conclude that the current numbers of ports are not enough to satisfy the needs of all importers because their location is limited to six locations. In addition to that they are not well equipped with the necessary containers handling equipment. There is no integrated communication system among ports and in port like Electronic data interchange. Therefore, according to the finding the researcher concludes that because of shortage of containers handling equipment and electronic data interchange ports area utilization is poor. Because, heavy containers may cause damage to handling and other facilities not designed to withstand them. In general, port capacity is unacceptable to meet the demands of multimodal transport system of Ethiopia.

#### **4.2.7. Logistics Management Personnel for Multimodal Transport System**

In relation with logistic management expertise almost all of the respondents responded that there is no logistic professionals working in the enterprise rather currently they use graduates from related field and majority of the expertise are doing their job by experience not specialist in this area.

"There is a shortage of logistics expertise not only to our enterprise but also the problem is at a national level. Because there is no higher educational institutions produces such qualified professionals in area of logistics in Ethiopia, (interviewee 2, L19-24)".

Generally, almost all of the respondents replied that there is a shortage of human resource which is not limited to logistics area only; rather there is a shortage of human resources in all aspects of the enterprise in areas like information and communication technology. In addition, specifically to customs office there is high employees turn over due to reasons such as

 job burden and mistrust among employees and managers due to the sensitivity of the area for

corruption,



Absence of conducive working environment and appropriate incentive.

And they believe that in relation to responsibility of the organization and work load the current human resource is not enough at custom office.

“We are doing jobs that have to be done by 20 employees only by 3 employees that lead us for fatigue and tiredness, (interviewee 1, L 23-24)”. “Among the main reason for shortage of human resource high turnover is the first, currently more than 3/4<sup>th</sup> of the employees are unhappy with the system, (interviewee 7, L25-26)”.

In terms of human resource development for multimodal many of the respondents would like to have a logistics training center for up grading their employees with the knowledge and skills of logistics.

“Both in quality and quantity the current human resource is not enough, but to improve the quality of those who are working on maritime area the enterprise has training center only, (interviewee 11, L11-14).

It is known that among the factors that make an organization to be successful in the accomplishment of its objective is assigning the right people in the right position. But, what is observed in this enterprise is the opposite. So, it can be concluded that, one of the reason for its inefficiency and ineffectiveness of operation is shortage of skilled man power.

#### 4.2.8. Transport Infrastructure for Multimodal Transport System

In terms of road transport infrastructure for multimodal transport system more of the respondents responded that the current road transport is not enough at all. Because the maximum load capacity is limited to forty ton, there is no alternatives road in case there is a problem the trucks have to use Djibouti to Dessie and Dessie to Addis Ababa road, the quality of the road is poor, it is too narrow and not standardized road. And also they stated that there is a problem of maximum load to cross over Awash Bridge which leads trucks to stop there for many days.

“We have no standardized road which enables us to successfully implement multimodal transport system, as an example if we take the quality of roads which takes from Djibouti to inland dry ports like Djibouti to mile to Kombolcha, to Mekelle and from Djibouti to Diredawa, are very dangerous for trucks and also for drivers life due to that reason the drivers and truck owners don not prefer those road, (interviewee 12, L20-24)”.

In issues related with truck supply some of the respondents responded that there is a problem in supply of truck to take cargos on time from Djibouti port.

“There is rent seeking problem and corrupted system in transport sector that is why containers stay at Djibouti port rather than taking them to inland container depots, it is not because of shortage of truck rather due to absence of clarity, (interviewee 11, L21)”. “Again in relation with shipment there is a problem from transistors side, because according to our agreement they agreed to make cargos ready for shipment within four days, but when the enterprise order trucks to pick the containers they are not ready for shipment but their system tells us it is ready for shipment but not. Due to this problem there was around 2000 stopped at Djibouti port without load, (interviewee 20, L16-29)”.

Most of the respondents also said there is shortage of office at main office as well as at modjo dry port.

The finding is consistent with Subramanian and Arnold (2001), that Containerized cargo movement was hampered by road infrastructure unsuited to handling full container loads, with inadequate design, weak bridges and poorly equipped vehicles. In order to increases the efficiency and effectiveness of multimodal transport system, adequate inland transport infrastructure must be in place for the sake of facilitating door to door transportation of cargos.

However, currently there is no rail and other modes of inland transport only road which is considered as inadequate to meet the demand of containers transport from Djibouti to inland containers dry port. According to the finding, there is a critical situation that leads to maintain and construct the main road network from Djibouti port to inland dry ports. Especially, for those lines stretched from Djibouti to kombolcha and from Djibouti to Dire Dawa dry ports are dangerous condition. It is necessary to strength existing bridges or builds new than Awash for being old and limited in capacity.

**Table 4.4: Ranks given by sample respondents for factors considered as challenge**

S. No	Challenges	Response order						Score*	Rank
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>		
1	Shortage of ICT facilities	17	22	12	4	2	2	164	1
2	Lack of enough transport infrastructure	4	14	3	7	17	14	86.5	5
3	Absence of custom facility	3	3	26	11	12	4	92	4
4	Lack of enabling environment	8	5	4	18	4	20	85	6
5	Incapability of port in handling cargos	12	10	9	10	14	4	115	3
6	Lack of logistics expertise	29	8	7	3	4	8	163	2

As it can be seen in the above table, based on data collected from the sample respondent’s shortage of ICT

facilities and lack of logistic expertise found to be the first and second challenging factor for successful implementation of multimodal transport system by ESLSE. In addition the respondents ranked incapability of ports in handling cargos, absence of custom facilitation, lack of enough transport infrastructure, and lack of enabling environment as 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> challenging factors for implementation of the system. In terms of advantages that multimodal transportation system has for Ethiopia most of the respondents shared: It reduces transit time, it enables to reduce cost of transit, it minimizes burden of documents, It saves foreign currency which have paid for Djibouti, customers transport and other related cost to Djibouti is saved, demurrage cost is reduced, numbers of actors are minimized, since there is no un-staffing at Djibouti port product security is secured to some extent, language difficulties for importers or custom clearing agent is avoided, extra process are minimized and containers congestion at Djibouti port is reduced.

#### 4.2.10. Prospects for Improving Multimodal Transport System

The followings are some of the prospects identified by the researcher for improving multimodal transport system:

**Table 4.5 Ranks given by sample respondents for options proposed as prospects for implementation of multimodal transport in Ethiopia.**

S. No	Prospects	Response order						Score *	Rank
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>		
1	Rail road construction	39	6	4	7	2	1	190.5	1
2	Economic growth	13	13	26	4	3	-	148.5	2
3	Political stability	10	8	4	23	5	9	102	4
4	Technological development	11	33	6	5	2	2	162	3
5	Foreign direct investment	7	3	6	8	30	5	56	5
6	Being member of WTO	-	1	7	16	4	31	51.5	6

As it can be seen from table 4.5 rail road construction and economic growth ranked first and second respectively as potential prospects for the improvements of implementation of multimodal transport system to become more efficient and effective. Furthermore, technological development, political stability, foreign direct investment, and becoming member of world trade organization ranked as 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> respectively as potential prospects for improvements of the implementation of the system.

## 5. Conclusions

This research is conducted on challenges and prospects of applying multimodal transport system in Ethiopia. In particular this research attempted to answer the following three research questions.

In terms of the first research question, the research has found absence of information and communication technology and shortages of human resources in areas of logistics, to be the most challenging factors to Ethiopian shipping and logistics service enterprise to become effective and efficient multimodal transport operator. The absence of information and communication technology within the enterprise has an impact on other contributing factors for successful implementation of multimodal transport system such as custom facilitation, product safety and security, port administration and stakeholder's integration. Because in the absence of information and communication technology the enterprise cannot realized effective port area utilization, cannot keep product security, and cannot make integration among stakeholders effective. The same is true for absence of enough human resources in the enterprise. That means, the enterprise may have all contributing factor for successful implementation of the system but if there is shortage of manpower it is meaningless.

In terms of the second question, the research found future rail road construction and economic growth to be the major prospect for Ethiopian shipping and logistic service enterprise to become more effective and efficient multimodal transport system operator. In addition to rail road construction and economic growth the research also conclude that technological development, development of human resources in logistics area, political stability of the region, and improvements in the infrastructure are the prospects for better improvements of the implementation of the system.

Furthermore, the research conclude that the absence of clear and precise rules and regulations that guides the implementation of multimodal transport system is strategic issue beyond Ethiopian shipping and logistic service enterprise impeding the system from being successfully implemented. Absence of deregulation by government is also other strategic issue which is beyond the ESLSE impeding the implementation of the system.

## 5.2. Recommendation

Based on the result of the finding and the conclusions drawn in the previous sections, the following recommendations are forwarded.

As the result of the finding reveled ESLSE has no integrated information and communication technology which enables it to coordinate all parties toward the successful implementation of the system. Therefore, the researcher recommends ESLSE better if they install latest output of information and communication

technologies for the success of the system than simply using in house built CTTS to provide information only for internal users. Specifically, first, better if the enterprise installs Electronic Data Interchange for easily managing the system and to fully utilize the ports area and to simplify the inspection system. Secondly, better if the enterprise use up dated ASYCUDA World than only depending on outdated ASYUDA+++ for avoiding frequent system failure, simplify tax system with automated system and it also enable the enterprise to configure the system with the Djibouti's system. The installation of latest result of information and communication technology will enables the enterprise to avoid currents complicated and delayed custom handling system. Because, with having these technologies the enterprise can boost its customer satisfaction by simplifying the system and minimizing current lengthy custom processing time. Thirdly, better if the enterprise installs Global Positioning System (GPS) on trucks engaged in transporting materials from Djibouti ports to Inland Dry ports for the sake of tracking and tracing container to protect theft and to know the progress of cargoes.

As it is known that for the success of any business organization either profit making or not human resources is essential. Based on the results of the finding the organization has no enough qualified work force in the area of logistics and supply chain management. Therefore, the researcher recommends better if the enterprise hire professional in logistics and also provide training center for its employees than simply performing the task by experience. Or the enterprise better if develop relationship with universities producing qualified work force in this area to get training advantage to its existing employees providing service to their customer by experience.

Based on the result of the finding there is no effective ports area utilization due to capacity limitation because of shortage of leveled area for container placing and containers handling equipments (data is collected in June 2013). Therefore, the researcher recommends better if the enterprise make expansion of dry ports to get enough space for placing container, use EDI & GPS to fully utilize areas and to easily locate containers and also buy heavy materials handling equipments to stack the containers up to five high levels than currently in use simple cranes and forklift.

In addition, the finding reveled that, there is absence of standardized road infrastructure which is suitable for successful implementation of the system. Therefore, the researcher recommends better if the enterprise cooperate with stakeholders like ministry of transport, Ethiopian road authority, and also other concerned body to construct standardized road and bridge to avoid current problems related with transport which is hindering the on time transportation of cargo like limited load capacity of Awash Bridge.

In general, the researcher recommends the enterprise could focus on challenges and prospects identified in this thesis to make use the findings of this research. In addition, as this is an exploratory research it may be necessary in the future to conduct in depth study to determine the exact cause and effect relationships of the factors that impact on multimodal transport system. Moreover, as the full implementation of multimodal transport system is only one and half years much more data could be obtained in the future by conducting longitudinal study to better understand the multimodal transport system and its improvement.

In relation with sampling, as most of the respondents are government officials the results of this research may not necessarily reflect the attitude or perceptions of the private sector with regard to multimodal transport system. Therefore the researcher recommends further study by focusing on private operators, transistors and private companies.

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