



**St. Mary's University Schools of Graduate Studies
General MBA Program**

**Factors Affecting the Performance of Multi Modal Transportation
Operation Service: In Case of Ethiopian Shipping and Logistics Services
Enterprise**

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ID No: SGS/0008/2009B

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Addis Ababa, Ethiopia

**Factors Affecting the Performance of Multi Modal
Transportation Operation Service**

**A Thesis Submitted to School of Graduate Studies of St.Mary's
University in Partial Fulfillment of the Requirement of Degree of
Art Masters of Business Administration in General Management**

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STATEMENT OF DECLARATION

I declared that this thesis of MBA in general management at St. Mary's University, which was done independently with the advice and suggestions of my advisor, Mesifn Tesfay (PHD) , is my original work and had not been previously submitted for a degree at this or another University and that all reference materials contained therein have been duly acknowledged.

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ACRONYMS/ABBREVIATIONS

AIAA	American Institute of Aeronautics and Astronautics
ASEAN	Associations of Southeast Asian Nations
BPBS	Bank of Post Business Section
BPBS	Bangkok Post of Business Service
CDOT	Colorado Department of Transportation
DACA	Drug Administration and Control Authority
DSGI	Descartes systems Group Inc
ERA	Ethiopian Road Authority
ERCA	Ethiopian Revenues and custom Authority
E.C	Ethiopian Calendar
EFY	Ethiopian Fiscal year Series
ESLSE	Ethiopian Shipping and Logistics Service Enterprise
EUTRP	European Union Transportation Research
FNGP	Federal Negarit Gazeta Proclamation
FOB	Free on Board
ICOTERMS	International Commercial Terms
ICT	Information Communication Technology
LPI	Logistics Performance Index
MPIE	Multimodal Performance in Ethiopia
MTO	Multimodal Transport Operator
MTS	Multimodal Transport Service
QSAE	Quality and Standard Authority of Ethiopia
SAD	Single Administrative document.
TEU	Twenty foot Equivalent Unit

U.S NCHRP	United States National Cooperative Highway Research Program
U.S TRB	United States Transportation Research Board
UNCOIMTOG	United Nations Convention on International Multimodal Transport of Goods
UNCTAD	United Nations Conference and Development
UNMOFW	United Nations Manual on Freight Forwarding
US.FDOT	United States Department of Transport
VMFP	Virginia Multimodal Freight Plan
VTPI	Victoria Transport Policy Institute
WCO	World Customs Organization
WBGR	World Bank Global Ranking
WSDOT	Washington Department of Transport
WER	World Economic Review

Abstract

International multimodal transport is one means of facilitating efficient and cost effective transit logistic service of country's international trade. Ethiopian Shipping and Logistics Services Enterprise have been designated as a sole Multi Modal Operator in the Country. Not only as land locked country like Ethiopia but also internationally, most countries get benefit of multimodal transport that can minimize logistics costs and transit time due to cargoes can be moved from one country to another with single administration document and one multimodal operator. Most reviews of literature show that the implementations of multimodal transport system in Ethiopia have been bottle nicked by various problems. These problems include poor existing infrastructure and lack of basic infrastructures, congestion of dry ports, inefficient and ineffective freight vehicles, long and inefficient custom clearance process and lack of competition in multimodal transport service due to this the standards of gracing paired and dwelling time are unable to attain. This study was made with the main objective of factor affecting the performance of multimodal transport service in Ethiopian Shipping and Logistics Services Enterprise. In order to achieve this objective, has used explanatory research design and employ mixed research approach in order to triangulate the data. To collect data from respondent and other sources, this study used primary and secondary sources of data. Out of the 228 questionnaires distributed only 190 were returned back. In order to analyze and present the collected data, descriptive and inferential statistics analysis method were used. The study used multiple linear regression modules to see the effect of independent variables, which were the factors under study, on dependent variable performance of multimodal transport system using SPSS software. The findings from hypothesis testing showed that Customs, Infrastructure, Competence, Timeliness, Competition, and Tracking and Tracing have positive and significant relationship with performance of multimodal transport system. However, the findings from regression analysis coefficients of β (beta) showed that Customs has largest significant influence on the performance of Multimodal transport service followed by Infrastructure, Timeliness, Competence, Tracking and Tracing and Competition. Therefore, the researcher has recommended that the company should work with different stockholders and give due emphasis to those driving factors to appropriately address performance issues.

Keywords:- Grace Period, Dwelling time, Custom, Infrastructure, Competence, Timeliness, Competition, Tracking & Tracing

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

“Logistics involves the integration of information, transportation, inventory, warehousing, material handling, and packaging”. In order to provide effective and efficient logistics services, the operational areas stated in the definition must be interlinked and work as one and the same. The Inefficient logistical operation will result in delivery delay, high cost of logistics, loss of customers, poor quality of service and discrepancy on quantity delivered, production interruption and extension of lead time (Agrawal,k.D, 2003).Multimodal transport (also known as combined transport) is the transportation of goods under a single contract, but performed with at least two different means of transport. The carrier is liable (in a legal sense) for the entire carriage, even though it is performed by several different modes of transport by rail, sea and road. According to (UNCTAD, 1981), the concept of international multimodal transport covers the door to door movement of goods under the responsibility of a single transport operator. According to the information revealed by the Ethiopian Shipping and logistics Service enterprise, Ethiopia as one of IMO members, multimodal transportation system has been implemented since 2012 and currently near to 70 percent of imported cargoes are transported through multimodal transportation system, (ESLSE, 2016;Aklile,2017). Multimodal transport has been expanding transport system around the world; one of the reasons is increasing in unitization of cargo. Unitization decrease logistics costs by moving more goods within container. It moves long distance with safety and minimizing the liability of multimodal operators. Cargoes can be moved from one country to another with single administration document (SAD) and one multimodal operator. Internationally, most of countries get benefit of multimodal transport that can minimize logistics cost and transit time. (Aklile,2017)

According to Breda (2009), Multimodal transportation plays a significant role in modern international trade operations by enabling the multimodal transport operators to give efficient and effective integrated transportation services with minimum transport costs. In this case, shippers will be satisfied in supplying their goods with the lowest possible transportation cost and thereby the consignees will not face shortages of raw materials in manufacturing centers if

it ensures early delivery. This scheme pools together one more modes of transport to render multimodal transport services via a single multimodal operator or multimodal service provider.

Further the system avoids the involvement of more transport operators and helps shipper to enter a single transportation contractual agreement with the multimodal transport operator and receive a door to door cargo delivery service than port to port. Therefore, this study is basically focused on the topic of Evaluating the Factor that Affecting Multi Modal Transportation Operation Service intends to analyze the general performance of multimodal transportation in the case of Ethiopian shipping and logistics service enterprise based on empirical and statistical evidences.

1.2. Back ground of the organization

The Ethiopian shipping and logistics enterprise (ESLSE), a state owned company, as a carrier, render to its esteemed customers sea freight transport, stevedoring (at port of Djibouti), multimodal transport service, freight forwarding and clearing, dry ports, full-fledged services and warehousing etc. For providing all the services mentioned earlier, the enterprise spends huge amounts of money in foreign and local currency. The Ethiopian Shipping and Logistics Service Enterprise (ESLSE) is a new enterprise established in November 2011 by the council of ministers regulation No 255/2011 merging the then Ethiopian Shipping Lines Share company, the Ethiopian Maritime and Transit Service Enterprise and the Ethiopian Dry Port Service Enterprise. According to a document obtained from the Enterprise, considering the similar line of operations and the interdependent nature of their functions, the Ethiopian Government has taken a strategic decision of merging those public enterprises in order to maintain the commendable economic growth that has been registered over the last several years. “The former truck operating company; known as Comet Transport SC, which was responsible for transportation of goods to and from ports, has been transferred to the ESLSE by a government decree issued in mid-2014. The objectives for which ESLSE is

- To render coastal and international and internal water transport services;
- To render coastal freight forwarding Service, multimodal transport, and Shipping Agency;
- To provide the services of stevedoring, shore handling, dry port warehousing and
- Other logistics services for import export goods;
- To provide container terminal service

1.3. Statement of the Problem

Access to logistics and multimodal transport services is an increasingly important prerequisite for competitiveness in a globalized economy, and many developing countries, especially landlocked and least developed ones, are precluded from such access. At the same time, the requirement that operators be able to provide adequate logistics and multimodal services is growing in line with increasing demands for faster, more frequent, reliable and secure deliveries UNCTAD(2003)

Facilitating international trade and development Access to logistics and multimodal transport services the key essence to boost the economy as landlocked country. But managing strategically and systematically beyond international trade low is the first priority in order to be coast wise by full filling the gap using the international right

Contrary to this fact there are list of bottle nick, Ethiopia's trade competitiveness features with many issues including long transit time, higher logistics cost, lower port lifting capacity, higher port dwell time, and fragmented service delivery, among others compared with various economies and income groups. In general, the Ethiopia's freight logistics does not cope-up with either the nation's present economic development or falls far short of the global best practices (WBGR (2016);wubshet.A(2018)).

Fekadu (2013) on the assessment made about Logistics practice in Ethiopia, he summarized in his study that Ethiopian logistics system is characterized by poor logistics management system and lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage

Based on the World Bank Logistics Performance Index (LPI) which provides a comprehensive measure of the state of trade logistics in a country and facilitates comparisons among countries, Ethiopia ranks at the lower end of the surveyed countries, the rank shows a relative deterioration between 2010 and 2016.

The rank is updated every two years and thus, in 2010 and 2012 Ethiopia were placed 123 and 141 from a total of 155 countries respectively. In the recent version of 2014 and 2016, the country was ranked 104 and 126 out of 160 member countries. The average of LPI in four years is 123.5. The report by the enterprise has shown that, most of multimodal cargoes do not loaded

within the given grace period. In 2014/2015 the average dwell time of containers were 9 days which is almost about 53 percent of the cargoes and it has been subjected to storage cost. In 2015/2016 average dwell time of multimodal containers were about 10 days and thus 40 percent of multi modal containers had paid storage cost at Djibouti port. This could severely harm the competitive ability of the enterprise significantly. The Aggregated LPI (2012-2018) combines the four most recent LPI editions. Scores of the six components across the 2012, 2014, 2016 and 2018 LPI surveys were used to generate a “big picture” to better indicate countries’ logistics performance. This approach reduces random variation from one LPI survey to another and enables the comparison of 167 countries. Each year’s scores in each component were given weights: 6.7 percent for 2012, 13.3 percent for 2014, 26.7 percent for 2016, and 53.3 percent for 2017. In this way, the most recent data carry the highest weight. The Aggregated LPI allows for comparisons across 167 countries. Missing values are filled according to previous years’ scores and Ethiopia becomes also 131 (World Bank, (2018)).

Accordingly, the World Bank (2013) had developed six dimensions of Logistics Performance Index which are Customs, Infrastructure, Competence, Timeliness, Competition, and Tracking and Tracing; Hence, the researcher which were used as independent variable and by measuring performance of multimodal as dependent variable. Therefore; over all coordination and integration of stakeholders on performance of Multimodal transport system in Ethiopia which will full fill a literature gap which was found on the literature suggested by Wubishet.A(2018) on the further study part and researcher developed and used for continuations of the study and also the above independent variable had been used by one of the researcher Selamawit.H (2017), Title called on the Assessment of the performance of Multimodal Transport operation service. The Gap seen also on the research approach and data analysis which had used descriptive approach and descriptive analysis

In order to have deep & wide information the earlier research approach and data analysis developed. The researcher was used explanatory approach and descriptive Statistical techniques and inferential Statistical techniques by using for further study to independent variable.

In order to provide new insight, the study will conduct on Factors Affecting the Performance of Multimodal Transportation Operation Service (In The Case Of Ethiopian Shipping and Logistics Service Enterprise)

1.4. Research Questions

- How does Custom affect performance of multimodal operation service?
- What degrees of an infrastructure affect performance of multimodal operation service?
- What extents of a competence affect performance of multimodal operation service?
- What magnitudes of Timeliness affect performance of multimodal operation service?
- How does a competition affect performance of multimodal operation service?
- What magnitude of tracking and tracing does affect performance of multimodal operation service?

1.5. Objectives of the Study

1.5.1. General Objective of the Study

To investigate and identify the key factors that influence performance of multimodal transport Operation Service In the Case Of Ethiopian Shipping and Logistics Service Enterprise.

1.5.2. Specific Objective

- To identify the effect of Custom on performance of multimodal operation service
- To examine the infrastructures on performance of multimodal operation service
- To find out the competences on performance of multimodal operation service
- To analyze the Timeliness on performance of multimodal operation service
- To determine the degree of competitions on performance of multimodal operation service
- To evaluate tracking and tracing on performance of multimodal operation service

1.6. Hypothesis of the Study

- 1. Ha1.** Customs has positive and significant effect on the Performance of multimodal Transport Operation Service.
- 2. Ha2.** Infrastructure has positive and significant effect on the Performance of multimodal Transport Operation Service.
- 3. Ha3.** Competence has positive and significant effect on the Performance of multimodal Transport Operation Service.
- 4. Ha4.** Timeliness has positive and significant effect on the Performance of multimodal Transport Operation Service.
- 5. Ha5.** Competition has positive and significant effect on the Performance of multimodal Transport Operation Service.
- 6. Ha6.** Tracking and Tracing has positive and significant effect on the Performance of multimodal Transport Operation Service.

1.7. Significance of the Study

The study was presented the status of the key performance indicators of freight transportation. The outputs would give a clear picture of the performance of multimodal transport operation for policy makers, different stakeholders, academicians, and company managers those who want to participate directly or indirectly in logistics and supply chain management activities. This have an impact to make informed decisions related with the issue of multimodal transport system. It is also important to reduce the weakness and enrich the strength of the enterprise. Furthermore, the study will provide additional information to the existing literature and indicate areas that need further investigation in areas under studied.

1.8. Scope of the study

Because of the time and budget constraint, the study focused only on the import side of containerized cargo of multimodal transport system and thus the researcher was not cover export side of multimodal transport system.

1.9. Delimitation of the Study

This study was delimited in geographical location which was only included two dry ports from out of seven dry ports Modgio and kality that customer needed to collect there cargo's. Constructing and taking population size i.e. only considering multimodal transport service customers are directly involved in Multimodal transport system.

1.10. Definition of terms

The terms 'Through Transport', 'Combined Transport', 'Intermodal Transport' and 'Multimodal Transport' are all used in the context of cargo movement, from origin to destination. These four terms have very similar meanings, i.e. the transportation of goods by more than one mode of transport and a through freight rate. However, the United Nations made a distinction between each term and introduced definitions of transportation terminology in their Multimodal Transport Handbook (1995):

Modes of Transport: The method of transport used for the movement of goods, e.g. by rail, road, sea or air.

Means of Transport: The vehicle used for transport, e.g. ship, truck, or aircraft.

Types of Means of Transport: The type of vehicle used in the transport process, e.g. wide-body, tank truck, passenger vessel, etc.

Unimodal Transport: The transport by one mode of transport only, where each carrier issues his own transport document (B/L, Airwaybill, consignment note, etc.).

Combined Transport: The transportation of goods in one and the same loading unit or vehicle by a combination of road, rail, and inland waterway modes.

Intermodal Transport: The transportation of goods by several modes of transport where one carrier organizes the whole transport from one point or port of origin via one or more interface points to a final port or point. Depending on how responsibility for the entire transport is shared, different types of documents are used. There are also different definitions for intermodal transport. The ECMT (European Conference of Ministers of Transport) and the European Committee for standardization (CEN) use the following definition for intermodal transport: "the movement of goods in one and the same loading unit or vehicle which uses successively several modes of transport without handling of the goods themselves in changing mode". The EC

definition goes beyond the ECMT/CEN definition, and corresponds with the ECMT/CEN definition of multimodal transport: “the movement of goods whereby at least two different modes are used in a door-to-door transport chain”. For Mahoney (1986), “Intermodality” means the movement of freight via two or more dissimilar means of modes of transportation while for Hayuth (1987), “Intermodality” means the movement of cargo from shipper to consignee by at least two different modes of transport under a single rate, through-billing, and through liability. The term “intermodality” has been widely adopted by European Union policy-makers.

Multimodal Transport:

Where the carrier organizing the transport takes responsibility for the entire door-to-door transport and issues a multimodal transport document. Multimodal transport is therefore a concept which places the responsibility for transport activities under one operator, who then manages and coordinates the total task from the shipper’s door to the consignee’s door, ensuring the continuous movement of the goods along the best route, by the most efficient and, cost-effective means, to meet the shippers requirements of delivery. This means simplified documentation, and increasingly by electronic means such as electronic data interchange (EDI).

Dwelling Time: represents the amount of days (hr.) the cargo staying in the port and terminal from the time it is off loaded from the vessel until it is moved in land obtaining all permit and clearance requirements EMAA (2016).

Grace Period: The free period at which customers are not obliged to pay demurrage and storage after the cargo discharged at dry port or sea port EMAA (2016).

Bill of Loading: A receipt signed by or on behalf of the carrier and issued to the shipper acknowledging that goods, as described in it, have been shipped in a particular vessel UNCTAD (1971).

Freight forwarder: “A freight forwarder, or forwarding agent, is a person or company that organizes shipments for individuals or corporations to get goods from the manufacturer or producer to the market, customer or final point of destination” (RHUD ,(1997).

Shipper: “Someone who sends goods for shipment, by packaging labeling, and arranging for transit, or who coordinate the transport of goods”(DSGI, (2018).

Tracking: “A carrier’s system of recording movement intervals of shipments from origin to destination.” (DSGI, (2018).

Twenty Equivalent Units (TEU) or 20’: “A measure of shipping container’s capacity using a standard 20-foot international ocean shipping container as a measuring unit.” (DSGI, (2018).

1.11. Organization of the Study

The study was categorized in five Chapters. Chapter presents the introduction and gives back ground information about the nature of the research; the second Chapter, the review of related literature was accessed basic concepts, measurement variables, and other related concepts critically essential to the study. The third Chapter was presented the research methodology, approach and designs. Under this section, research approaches, methods of data collection, sampling designs and techniques, and methods of data analysis and presentation were assessed. The fourth part was analyzed the data collected through survey questionnaire and second hand information using various statistical measurement tools depending on the characteristics of variables used on the study.

The final section provided conclusions and Recommendation the actions that required solving the problems arising from the finding of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. Introduction

The purpose of the literature review is to provide insight into information from previous researches related to this study and the research questions which will facilitate the research process (Rowley, 2012). The literature review part of this study has theoretical literature review and empirical literature review parts. The theoretical part presents the summary of theories forwarded by different scholars pertaining to the subject under study at different times. Whereas the empirical part contains summary of similar or related research findings obtained from other earlier researches

2.2. Theoretical Literature Review

The availability of an efficient transport system in a country or region is a catalyst for its economic growth (Hayuth, 1987). The service quality of transport means affects transport and logistics related costs and also influences the demand for products (Coyle *et al.*, 1996). The demand for increased productivity and efficiency of the transport industry has been heightened as the manufacturing and service sectors adopt such logistics concepts as "just-in-time" delivery and supply chain integration, and by the shift towards a global economy, competition between supply chain versus supply chain (instead of company versus company), e-business and e-commerce. In such a situation mode-specific segmental approaches are no longer able to meet effectively the needs of shippers and manufacturers (OECD, 2001). Containerization involves improving the quality of handling and transfer of general cargo in transit moving by road, rail or ship, but multimodalism integrates the modal transport function under one operator from factory door to factory door.

2.2.1. The Concept of Multimodal Transport

The 'Multimodal Transport' concept can be defined as the combination of various types of transport modes used in a national or international transport operation, in which provides door-to-door services, under the responsibility of one single transport operator (UNCTAD, 1995; 2001). Practically, this particular concept is not new and may even have been practiced long before the introduction of this terminology.

According to Woxenius (1998), the early form of combining transport modes dates back to

Roman times where horses and carriages were the primary form of interchangeable transport modes. An effort of introducing adequate legal framework for Multimodal Transport operation was found in the work of ‘International Code of A ffreightment’ in the early 1910s. However, during that time, transportation was considered as a segmented industry based on unimodal operation and contracts. It was not until the introduction of large-scale containerization in the 1970s, did Multimodal Transport gain considerable momentum (Faust, 1985). According to Muller (1995), only 1% of world containerized cargo was moved intermodal under a through bill of lading in 1979. Today, most containerized cargo does.

Until the introduction of containerization in the 1960s, physical movement of goods had been through evolutionary changes of innovation in an attempt to achieve efficiency and effectiveness (Hayuth, 1987). However, based on the emergence of driving forces such as technology, economy, regulation, social environment and business competitiveness, the complexity of transport operations has driven the need to introduce a more structured concept. This in turn brought with it a terminology which would encapsulate the key considerations of transport practices and which would be agreed upon at an international level (Hayuth, 1987; UNCTAD, 1993). As a component of international trade, Multimodal Transport has generated considerable commercial values for shippers in comparison to other alternative transport systems. According to Campisi and Gastaldi (1996), Banomyong (2000), SLA (2008), and Islam, et al. (2008), some of its many advantages are:

- Reduction of time, risk of lost or damaged goods through a planned and coordinated single transport operation,
- The establishment of a seamless communication link maintained by single Multimodal Transport Operator,
- Increase market access opportunity through speedy transfer and transit time,
- Reduction of multiple documentation,
- Cost saving through possible reduction of freight rate,
- Minimizing confusion through a single point of contact (the Multimodal Transport Operator),
- Ultimately, an improvement in the competitive position of companies in the international market place,

- Different solutions can be easily benchmarked for performance,
- Reduction in energy used, thus provides environmental and social benefits

2.2.2. Types of Cargos

According to the report of Port of Aantwerp (2017), cargos are categorized in to container cargo, liquid bulk, dry bulk, break bulk, and ro-ro. Depending on the nature of cargo type they have, they are described in the following manner.

2.2.2.1. Container Cargo

Container is a large standard size metal box in to which cargo is packed for shipment a broad specially configured transport modes Rodrigue and Slack (1998). Containers are loading and transporting goods with different methods (land, sea, air...). Having a logical operator in charge of selecting the most appropriate one is essential for our goods to reach their destination in perfect conditions Bilogistik (2016). Toys, televisions, DVDs, clothing, meat and computers; containers are the best way to transport these and many similar products. Container shipping is different from conventional shipping because it uses containers of various standards sizes -20 feet (6.09m), 40 (12.18m), 45 feet (13.70m), 48 feet (14.60m), and 53 feet (16.15m) to load, transport, and unload goods. As a result, containers can be moved seamlessly between ships, trucks and trains. The two most important, and most commonly used sizes today, are the 20 feet and 40 feet. In addition to this based on their type containers are divided as flat rack, open side, open top and tank Prabhankar (2016). The fixed size of the containers also has a major advantage. The standard sizes mean containers fit on sea-going vessels, Lorries, inland barges and train wagons

2.2.2.2. Liquid Bulk

Crude oil, petrol, fuel oil, vegetable oils and even wine; all liquid products which are often transported on big tankers or through a pipeline to the next destination Port of Aantwerp (2017): Wubishet.A(2018)

Liquid forms of bulk are measured by weight or volume (primarily tones). Commodities like crude oil, gasoline and miscellaneous chemicals are common liquid bulk cargos.

2.2.2.3. Dry Bulk

Dry bulk refers to grain, coal, iron ore, cement, sugar, salt and sand. They are not packaged separately, but transported in large quantities in the hold of a ship, wagon or lorry.

(ESLSE Statistical Bulletin, 2010; Wubishet.A(2018)).

2.2.2.4. Break-Bulk

Break bulk is a term used in the shipping industry. It refers to cargo that needs to be individually loaded. Break bulk cargo cannot be shipped in inter-modal containers or in bulk, like grains or oil. It has been the most common type of cargo since the beginning of the service. In modern times, container shipping has become more popular and break bulk has declined. A bulk of cargo is broken down in to groups that can be easily loaded using equipment available at the port. Break bulk cargo is often shipped on pallets, barrels, drums (cylinder), boxes or bags ((ESLSE Statistical Bulletin, 2010; Wubishet.A(2018))

2.2.2.5. Ro-Ro

Ro-Ro refers to roll on / roll off. This name explains how the cargo is discharged and loaded. This concerns cargo that can be driven which is only done by especially trained drivers. Ro-Ro is used for cars, busses, trucks, agricultural vehicles and cranes. To transport as many of these vehicles in one go, enormous ro-ro vessels have been built. Some ro-ro vessels have enough room for more than 8,500 cars In the Antwerp port area, ro-ro is chiefly on the Left bank.

(ESLSE Statistical Bulletin, 2010; Wubishet.A(2018)).

2.2.2.6. Steel profile

It is a type of Break Bulk cargo is non-containerized and usually transported as individual pieces due to cargo often being oversized and overweight meaning freight container cannot accommodate cargo. (ESLSE Statistical Bulletin, 2010; Wubishet.A(2018)).

2.2.3. Multimodalism & Containerization of Cargo

The history of containerization is a development that can be pinpointed to the mid of 20th century pioneered by U.S based conveyance business man Malcolm Mclean, cargo containers were fashioned in a bid to simplify the long dream processes involved in shipping of cargo through sea routes Tomlinson (2009). Mulimodalism developed with container revolution of 1960 and 1970. It is the most vital factor of multimodal transportation as it combines the consistency of rail, flexibility of road, the cost effectiveness of shipping and speed of air transport.

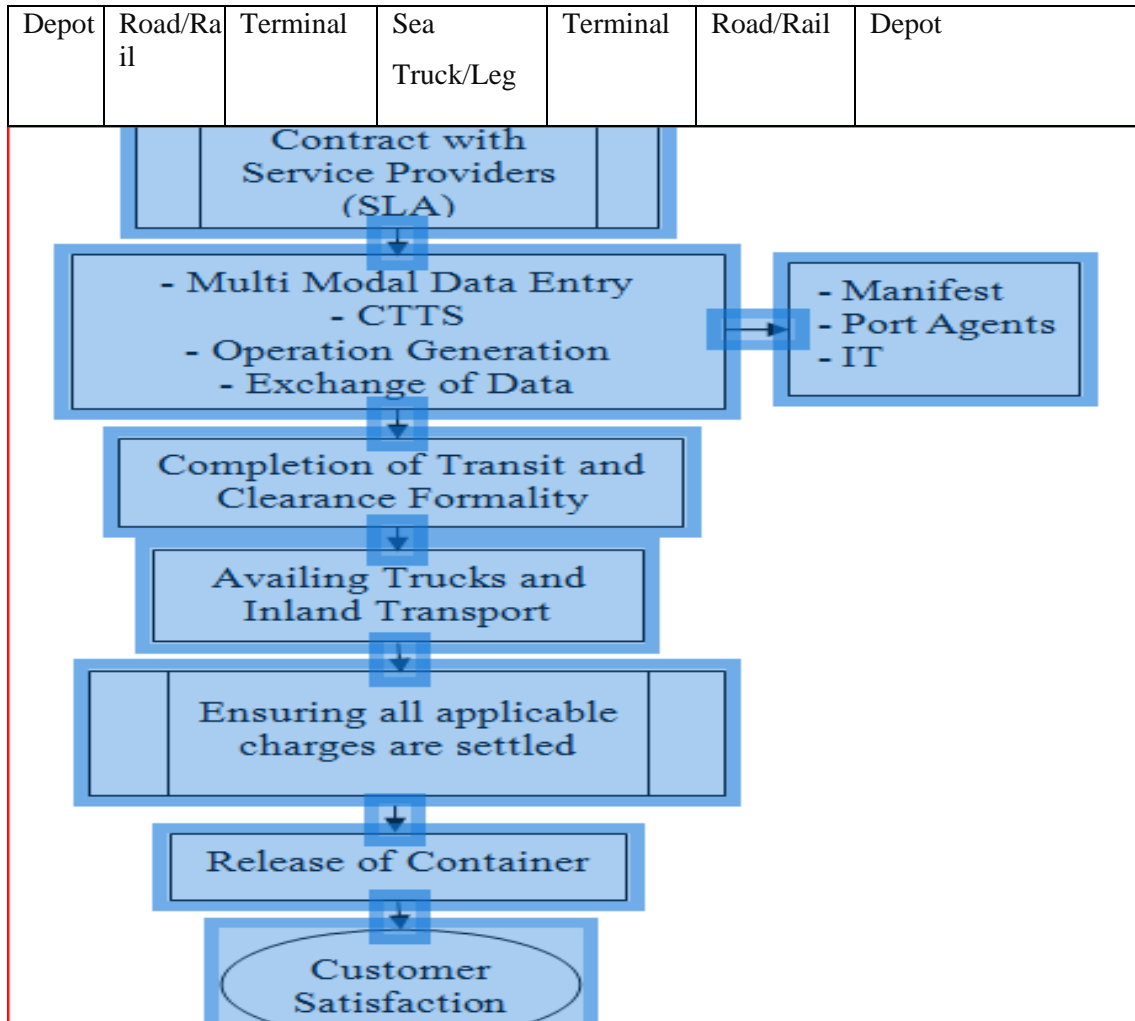
Simply stated, carrying cargo in a container is "containerization". It refers to the increasing and generalized use of the container as a support for freight transportation. The process is an improvement on the concept of unitization and pillarization of cargo for the purpose of making handling easier and reducing costs in transport. The development of intermodal transportation and containerization are mutually inclusive, self-strengthening relay of a set of driving forces linked with technology, infrastructure and management Rodrigue and Slack (1998). The concept whereby cargo is carried in boxes of standard dimension allows these containers to be handled mechanically, transferred from one mode of transport to another efficiently and without disturbing the actual cargo inside; owing to high unit volume weight handled per move (UNCTAD, (1981);Wubshet.A,(2018).

2.2.4. Components of Multimodal Transport System

Multimodalism refers to transportation of goods between two points by more than one mode of transport. This could be road-rail, road-rail-sea, road-air or any other combination (Prabhankar (2016); Wubishet.A (2018)

Figure 2.1 Components of Multimodal Transport System.

Origin/Supplier
→
 Destination/Customer



Source: Adapted from D’Este (1996) and ESLSE Multi Modal Operation High Level Map

2.2.5. The Relevance of Multimodal Transport and Logistics Services for Development

International freight costs have an impact on trade equivalent to customs tariffs or the exchange rate. A reduction in the cost of transport directly stimulates exports and imports, just as an increase in the exchange rate make exports more competitive, and a reduction in national customs tariffs lowers the cost of imports UN (2002).

Spending on transport is also increasing because of improved quality of service, especially greater dependability and “just in time” (JIT) delivery. As a result, the inventory component within the overall cost of logistics declines, while the transport component raises Prologus (2003). If the shipping of imports becomes more expensive, higher inflation ensures as a result of the increased cost of imported goods. If export freight costs increase, the result is drop in earnings for the exporting country or simply the loss of a market, depending on the elasticity of demand and the availability of substitutes. Econometric estimates suggest that the doubling of an individual country’s transport costs lead to a drop in its trade of 80 percent or even more Limao.et al (2001).

Trade is increasingly taking place in intermediate goods, which are used in international production processes and which require JIT deliveries of inputs. JIT in turn requires a particularly sophisticated and efficient transport system, which tends not to be available in developing countries. In a context where management does not know whether delivery of required raw materials or intermediate goods is going to be on time, either expenditure on inventory holding goes up or the producer becomes uncompetitive himself, because he will not be able to deliver JIT to his own customers. Trade, logistics services and development are thus evermore closely linked with one another Alcorta (1995).

2.2.6. Multimodal Transport Requirements

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 necessarily for an efficient multimodal transport system. This is commercial practices, administration requirements, and transport infrastructures.

2.2.7. Commercial Practices

2.2.7.1. Merchants

There are international conventions in force governing contracts for the international sale of goods, so disputes and misunderstandings have often arisen between buyers and sellers, mainly because of different interpretations about the terms used in the contracts. In order to avoid such situations which hinder the smooth flow of international trade, the ICC has introduced standardized trade terms (Alcorta, (1995) known as INCOTERMS (International rules for the interpretation of trade terms). In Practice, The ICC Rules were accepted as the appropriate standard for the Model Combined Transport Bills of Lading designed by such industry associations as the Baltic and International Maritime Council (BIMCO) and the International Federation of Freight Forwarders (FIATA) (INCOTERMS). These terms deal delivery conditions between the buyer and the seller, and their main purpose is to divide the costs and risks of transport movement and related operations between the two parties (ASEAN (2014).

2.2.7.2. Banking Practices and Documentation System

In the transport of goods in break bulk form, the critical point at which the carrier accepted responsibility for the goods often passed from the seller to the buyer was the ship's rail. In the financing of such sales, (ICC Publication No.460) documentary credits, the seller then provides the bill of lading to the bank in exchange for payments. The seller's bank exchanges the bill of lading for payment from buyer. The buyer then provides the bill of lading to the carrier and takes delivery of goods (UNMOFV (1992).

2.2.7.3. Administrative Requirements

2.2.7.3.1. Trade Facilitation

One of the main problems that occur in international trade is that each country has its own rules and procedures concerning the import and export of goods, and also that the cargo velocity today has outpaced the document velocity, in other words, the goods in many cases and on certain routes may arrive before the transport documents. This is one of the reasons for the success of courier services but courier services are however not the ideal solution to the problem of getting the various documents to their destination fast enough (BPBS (1999). For this reason, FALPRO (United Nations Trade Facilitation Program) is standardizing and simplifying documentation and trade procedures through regional or national facilitation

organizations. According to FALPRO, trade facilitation is done through the streamlining of the information flow mainly through simplification, normalization, and harmonization.

2.2.7.3.2. Customs Practice

To implement multimodal transport, customs are required to facilitate the container flows, through minimization of import or export documents and to permit the movement of cargo to and from ports under bond or in a sealed container. Customs procedures can be eased through the adherence to various customs conventions UNCTAD (2017).

2.2.7.3.3. Infrastructure

Transport infrastructure is one the most important part of economic infrastructure Boruch (2009). Transport infrastructure and services, including shipping, ports, roads and railways are essential for global merchandise trade, and related supply chains. Where transport infrastructure is poor, the development of multimodal transport may not be easy. In order to be able to be gain maximum benefit from multimodal transport, infrastructure that is capable of handling containers must be in place UNCTAD (1990).

Today, it is generally accepted that containerization is necessary condition for an increasing proposition of trade in merchandise and intermodal goods, also in developing countries. Especially in multimodal transport, the transport chain usually containerized. Containerized cargo requires less but better qualified personnel in ports, where reforms are still pending in many developing countries. It further requires ports, 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 of the main obstacle to transport providers offering multimodal transport UNCTAD (2003).

Therefore, the logistics infrastructure is a set of various facilities, equipment and means and technical devices which facilitates the completion of logistics processes in the logistics micro and macro systems. The logistics infrastructure within such meaning of the concept comprises, warehousing infrastructure, handling infrastructure, transport infrastructure, transport packaging, and IT infrastructure Skorobogatova and Merlino (2016).

2.2.8. Selection Criteria for Performance Measures

The U.S NCHRP proposed that, selection criteria are instructive us to agencies concerns and the intended use of the performance measures. Agencies that used selection criteria usually are concerned with the actual operationalization of performance measures, and with the many different dimensions of performance measures.

Of course, selection criteria may vary from one agency to the next, depending upon need, resources, and capabilities. One common area of difference is in the degree to which agencies are willing or able to support new data collection procedures in order to implement new performance measures. When selecting performance measures, one has to evaluate measures based on the criteria's such as measurability, forecasting ability, multimodality, clarity, usefulness, temporal issues, geographic scale, multiple indicators of goals, control, relevance, and ability to diagnose problems.

2.2.9. Operational Performance of Multimodal Transport in Ethiopia

Table 2.1 Annual Operational Performance of ESLSE

Service type	measurement	Years			
		2014	2015	2016	2017
Imported goods by ESLSE	Ton	2,767,053	3,340,135	4,966,265	4,538,722
Imported goods by ESLSE vessels	Ton	1,104,813	998,597	952,628	603,237
Proportion (ESLSE vessels/ total import)	%	39.93	29.9	19.18	13.29
Imported containers by multimodal transport	TEU	88,559	120,404	175,672	179,170
Imported vehicles by multimodal transport	Unit	4,225	10,636	14,736	9,464
containers served at dry port	TEU	84,869	114,369	162,047	169,241
vehicles served at dry port	Unit	4,183	8,275	13,224	8,507

Source: (Annual Statistical Bulletin 2010;Wubishet,A(2018))

As indicated in the above table above imported containers by multimodal transport service was increased from 88,559 containers in the year 2014 to 179,170 containers in the year 2017. The import of vehicles also shows increase from 4,225 units in the year 2014 to 14,736 units in the year 2016 and decreased to 9,464 units in the year 2017. In addition to this, containers served at dry ports were also increased at increasing rate from 84,869 containers to 169,241 containers in the year 2014. This is an indication that the using multimodal transport has increased from year to year. This implies that the need for multimodal transportation is to increase in higher rate in incoming years. Therefore ESLSE should be capacitated to handle these volumes of cargoes (Aklile,2017)

As it can be seen from the table below, the number of the containers transported by ESLSE from Djibouti to inland ports is highly increasing from 2004 to 2010. This is in line with the increasing trend of the country's import trade at the indicative Year.

Table 2.2. Total containers forwarded by freight forwarding sector last seven years with multimodal mode of transportation service

EFY	2004	2005	2006	2007	2008	2009	2010
To inland port	270,084	67,389	88,559	113,672	165,577	168,857	163,736
To bonded warehouse				6,856	9,338	10,312	10,175
Total	27,084	67,389	88,559	120,528	174,915	179,170	173,911

Source: ESLSE; 2010 EFY:- Trends in TEU of the containers transported the last seven years by multimodal system from Djibouti to inland port

2.2.10. Definition of logistics performance

Logistics performance is a strong determinant of national income and is the result of actions from a wide array of private and public actors. Understanding and decomposing the components of logistics performance is fundamental to improving the efficiency of transport systems and the quality of regulation of trade and transport. LP is defined as 'analysis of both effectiveness and efficiency in accomplishing a given task' (Mentzer & Konrad, 1991).

Other scholars refer to LP as a metric used to quantify the efficiency and or effectiveness of an action (Neely, Gregory, & Platts, 2005). As Robb, *et al.* (2008) mention, since logistics deal with physical, informational and cash flow management, it is generally recognized as a major determinant of business performance, but practices particularly in terms of performance analysis, are still at the stage of being studied by professionals and academics.

2.2.10.1. Performance Measurement

Performance measurement is to accurately assess how well your business is performing; you need to develop some quantifiable measures. Ideally, your measures clearly identify those aspects of your business processes that need improvement and those that are working well. You can also use performance measures to evaluate your company's productivity over a set period of time. According to Weekly (1995) Measurement is the first step that leads to control and

eventually improvement. If you cannot measure something, you can't understand it. If you can't understand it, you cannot control it. If you cannot control it, you cannot improve it. Performance as defined by Sink, (1991) refers to “action that an organization carries out to accomplish its principles missions and functions for the generation of profit.” performance measurement is a metric that can be used to quantify performances. According to Rose (1995) describing performance measurement activities says’ it is a process that records measures, display results, subsequent actions. Performance measurement activities and processes is the issue that “performance indicators are to a large extent domain specific” (Lai *et al.*, 2004). Hence, there is no unique subset of indicators that can be selected.

2.2.10.2. General Concepts of Performance Measures

According to Weely (1995) ‘performance measurement is a popular issue that is widely discussed but rarely defined.’ Hence, it is necessary to introduce certain relevant definitions of performance measurements and present related discussion points about the concept of performance, frameworks and approaches in performance measurements in light of third party logistic (3PL) service providers. Performance as defined by (Sink, 1991) refers to “action that an organization carries out to accomplish its principles missions and functions for the generation of profit.” Performance measurement is a metric that can be used to quantify performances.

2.2.10.3. Role of logistics performance

As mentioned earlier that LP plays a vital role in achieving the organization’s goals. The evaluation is based on how well goal is met (Mentzer & Konrad, 1991) and to what extend the overall productivity ad performance would reflect LP (Stabler, 1992). Consequently, LP helps the fulfillment of the organization’s objectives and strategy (Braz, Scavarda, & Martins, 2011) as well as satisfying the customers (Kayakutlu&Buyukozkan, 2011). It is important to view the objectives of strategic operational LP in the context of trade and transport facilitation

2.2.10.4. Logistics Performance

Performance has been viewed in a great variety of ways by researchers. The definition and measurement of performance is often a challenge for researchers because organizations have multiple and frequently conflicting goals. Thus, the definition of the performance is ultimately up to the evaluator '. Performance refers to the way in which work is done. There can be a good performance or a poor one. But what is performance measurement? In the literature, it is possible to identify a significant amount of work on the relationship between logistic performance and organizational performance, such as the work of Larson *et al.*, (2007) who demonstrated that the performance of logistics activities can have an impact on organizational performance. Those authors, in a study conducted among business leaders on the impact of the perception of logistics performance on business results, found that a significant number of managers said that the perceived impact of logistics performance consisted of better performance in customer service, better inventory levels and optimization costs. As logistics are increasingly expected to contribute to organizational performance.

Overall coordination should be the main objective in logistics (Andersson, Aronsson, & Storhagen, 1989). Porter (1990) highlights that upgrading and innovation would result in nation's competitiveness. Therefore, measuring the LP is currently becoming a high priority (Griffis, Goldsby, & Cooper, 2007), thus bringing a challenge to the organizations (Forslund, 2007). From the perspective of LP, it has been commonly discussed as early as in 1985 at a seminar in Netherland by The Netherlands Association for Logistics Management. In this seminar, the performance indicators model was produced and the indicators have been applied in several companies (MCB University Press, 1992).

2.2.11. Measurement Variables of Multimodal Transport Operation

Multimodal transport system is measured by using different performance indicators at different countries. There is little uniformity in performance measurement in freight transportation, particularly across the five modes. Some measures by necessary are pertinent to only one or two modes, such "barrel per day" on oil pipeline industry, and carloads originated in the rail road's industry. There is also little agreement on the best or the most critical measure, even among individual providers Cattrell (2008). The key to identifying a performance indicator is that it is

measurable, efficient, able to be forecasted, and easy to understand Harrison et al. (2006).

Lack of uniform measures, which can be used for all modes, makes it hard to compare alternatives and make a mode choice decision. There are diverse array of concern in many stakeholders. Public sector stakeholders are interested in policy and intra structural issues, whereas private sector are more interested in cost, reliability, and travel time measures ATRI (2011). Freight performance measure is challenged by both on overwhelming abundance of data and by lack of complete data for many important freight system performance functions. Systematic data regarding multimodal freight performance are practically nonexistent ATRI (2011). Selecting measures that best capture the important aspects of the problem at hand is ideal Harrison et al. (2006). The success of performance measures rely largely on the availability of data needed to derive the measure U.S TRB (2004).

The inclusion of performance measures has been helpful for providing tools that support, guide, and justify decisions made by agency planners who operate in an environment of high accountability and transparency. These conditions require objective measures that are helpful in communicating to the public and to policy-makers the course of action that will improve the movement of goods and people. Well-developed performance measures can benefit planners by providing the information needed to make decisions. Moreover, performance measures assist an agency in communicating decisions to the public, increasing accountability to use resources where they are needed, and improving the operational condition of transportation systems. The keys to identifying a performance indicator are that it is measurable, efficient, able to be forecast, and easy to understand.

Even if ,there are numerous performance measurement variables with their heterogeneous characteristics, the researcher has identified the following variables for research purpose based on the problems identified, the objective seated, the availability of getting data, and easy for operationalization of variables. As a result the measurement variables are forwarded as Customs, Infrastructure, Competence, Timeliness, Competition and tracking and Tracing which are discussed below looking the above different measurement scenarios. Accordingly, the World Bank (2013) has developed six dimensions of Logistics Performance Index:-

2.2.11.1. Customs; efficiency of the customs clearance process in terms of speed, simplicity and predictability

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.
- To facilitate the entry of all legitimate merchandise into the country.

According to Ruth Banomyong (2000), to implement multimodal transport, Customs are required to facilitate the container flows, through minimization of import/export documents and to permit the movement of cargo to and from ports under bond or in a sealed container.

According to Temple (2001), the international supply chain generally faces at least two sets of customs procedures. So, a simplified and effective procedure is essential for smooth flow of trade cargo and for investment. If customs procedures do not allow deeper penetration of containers the flow is hampered and the Inland Container Depot (ICD) will be less effective. It will result in more transit time, transport cost and uncertain schedule reliability due to multiple handling of cargo

2.2.11.2 Infrastructure: Ports, Roads, Railways, Warehouses, Fleet vehicles, Information Technology.

As per Ruth Banomyong, (2000), 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. To remain competitive, exporters and/or importers must be able to reduce transportation costs that are included in the goods' delivered price. In order to improve or eliminate such hidden costs, it is essential to improve the quality of a region's or a country's international transport and logistics capabilities. The adaptation of commercial practices to international standards is a prerequisite as well as removing any unnecessary trade barriers.

A superior transport infrastructure supports intermodal transport systems, including access roads to terminals and seaport channels (World Bank, 2015).

If the transport infrastructure is weak and ports and terminals lack multimodal access and other facilities then the goods movement and modal transfer will result in higher transit time, transport cost, loss or damage and higher uncertainty and unreliability (Islam, 2005).

2.2.11.3. Competence: skill and expertise to provide quality logistic services

According to Fekadu (2013), availability of skilled manpower, conducive labor regulations and business environment promotes economic activities. On the most of these criteria, Ethiopian logistics system is found to be poor. The main freight transport companies lack capacity in terms of skilled human resources, management skills and number of fleets of vehicles. They are fragmented. The main companies are government owned, this will result in inefficiency.

2.2.11.4. Timeliness; frequency with which shipments reach the consignee within the Scheduled or expected time

Timeliness of shipments in reaching destination measures how reliably shipments meet the promised delivery times. More reliable delivery will lower transit time of transport from origin to destination and will enable a greater control of costs, schedules and cargo safety (World Bank, 2015).

According to Henstra & Woxenius (1999), transport related decisions are dependent upon a set of transport service requirements, such as lead time, reliability, etc. This means that the shippers generally do not specifically demand a special transportation mode, but rather a transport performance. Shippers expect to receive a reliable door-to-door service from transport/logistics service providers.

2.2.11.5. Competition; ease of arranging competitively priced shipments

According to Ruth Banomyoung (2000), the MTO's competitiveness in offering his services will depend on how he can take advantage of all possible management techniques available to make better use of the existing capacity and operating conditions of each specific link of the transport chain. The MTO is thus providing logistical services. The exporter will benefit by being more competitive in reaching the foreign buyer at minimum costs, minimum time with goods delivered in good conditions.

If a mechanism of effective competition in multimodal markets could be established, the quality of MT services will certainly be improved to a great extent (GuibinXu, 1999).

According to Islam (2005), if there is not port and terminal competition, the quality of services is restricted and transit time and transport costs increased. On the other hand, the inland transport market is virtually enjoying an effective competitive regime, which is free from government restrictive regulation.

2.2.11.6. Tracking and Tracing; ability to track and trace consignments

According to (GuibinXu, 1999), container tracking and tracing system is enabling transport operators and trading partners to track containers from their origin to destination and to predict the estimated time of arrival of inbound loads. This technology would play a very important role in promoting multimodal transport. The importance of tracking and tracing of shipments is considered to be quite high in terms of customer service and essential for managing logistics networks efficiently. Global industries are facing problems both from tracking and tracing in their logistics supply networks, that creates huge coordination problems in the overall product development sites. This problem loses the track among production, delivery and distribution in the complete logistics chain from source to destination, which is responsible for opportunity cost through customers' dissatisfaction. Tracking system helps to identify the position of the shipment and informed the customer in well advance. Without tracking system it is almost impossible to find out delivered items and often considered as lost or stolen item that causes business loss (AHM and Helo, 2011)

2.2.12. Freight Transport Multimodal Development

During the last half century the maritime transport system has experienced rapid changes (Hayuth, 1987), which can be classified into two broad categories: evolution in the growth of ship and port size, and revolution in the system of linkages. The first revolution was in the ship-to-shore transfer i.e. containerization; the second was in the ship-to-rail transfer i.e. intermodal (or multimodal) revolution (Ashar, 1999). Using more than one mode of transport in a coordinated and seamless way can be termed as multimodal transport (D'Este, 1996).

Freight transport multimodal development requires, apart from operational and infrastructural features, a conducive administration and legal environment, and efficient interchange of information (D'Este, 1996). Developing such an integrated transport system is challenging in particular in developing countries. The challenges can be categorized and discussed in six major areas: globalization of trade and investment, the role of government, new technology and methodology, standardization, changes in logistics concepts and changes in the inland transport system (Islam and Gray, 2003).

2.2.13. Globalization & Competition

Globalization, among other factors, has forced as well as enabled companies to be competitive, extend markets and get supplies from worldwide sources (Zeng and Rossetti, 2003). Globalization focuses on achieving 'one village' i.e. a border-less world in terms of trade and investment (Zinn, 1999) and has extended its arena by including the flow of information as well. Today successful multinational companies develop their products in the U.S. and Europe and manufacture them in developing countries and then sell them worldwide (Zeng and Rossetti, 2003). Thus, globalization has had a great impact on Freight transport systems, because international trade, financial flows, foreign direct investment (FDI) and other forms of trans- border linkages among private firms have become the main features of globalization (UNCTAD, 2000a).

The argument for free trade was based on the considerations of specialization and international division of labour (Foster, 2003). In contrast, geographical and institutional divisions affect the construction of infrastructure, availability of transport networks and options, the operation of the transport service and thereby its quality (Rejmaud, 1998). These features can measure the level or degree of attachment of any country to the global village. Because of a dependence on global production and consumption as well as global competitiveness, trading companies are constrained in terms of transport by factors such as transit time, transport cost and costs from loss, damage and delay. The cost of transport is generally relatively higher in developing countries (UNCTAD, 1994b; Roberts, 2004).

Industries in developing countries have to operate with highly inefficient transport systems and thereby lowering the competitiveness of their products in the global market (Gulyani, 2001;

ADB, 2003). Nevertheless, globalization has increased prosperity and the potential for developing countries. At the same time it has raised the risk of marginalization. Asymmetries and imbalances in the international economy have been intensified (UNCTAD, 2000b).

2.2.14. The concept and development of Multimodal Transport in Ethiopia

The Multimodal Transport system has been introduced in Ethiopia since 2007 for containerized and Ro/Ro cargo of up to 3 tones carried by ESLSE. Multimodal transport system in Ethiopia is intended to provide an integrated transport services by streamlining sea and land legs of operation on end –to-end basis and facilitate expeditious transfer of goods through the port for delivery at inland destinations. Early on, the service was started on small scale basis focusing only on government containerized and Ro/Ro cargos (EMAA, 2014).

The Ministry of Transport ordered beginning of 2012 all import of the country (Under Letter of Credit) to be handled on Multimodal Transport and by the sole operator, ESLSE. Thus, the service has been scaled up to apply for all imports including government and private companies alike. The system is 100% under the control of the Ethiopian government.

According to Fortune (2011), the multimodal transport system was introduced with the aim of easily moving freight from port Djibouti on time. The system was started after the issuance of Multimodal Transport Implementation Directive on July 2010. According to the source, the directive defined the multimodal transport system as “a system where by transportation of goods is under a single contract but performed by more than two means of transportation; the carrier is liable for the entire journey including the shipment’s delivery at final destination; the transportation can be made by sea, rail, and trucks (roads)”.

Fortune (2011) stated that the directive made all shipments that belong to government to be transported through Ethiopian Shipping and Logistics Service Enterprise (ESLSE) and to be delivered to dry ports and warehouses authorized by Ethiopian Revenue and Custom Authority

On the other hand, ESLSE performance on multimodal system is not encouraging so far. Sources indicated that the system is inefficient and ineffective yet. Report by Addis Ababa Chamber of Commerce and Sector Association (AACCSA, 2012) indicated that many businesspersons spoke their frustration with the multimodal transport of goods service by

ESLSE. According to AACCSA (2012), on business luncheon on December 31, 2012, at Hilton Hotel, many businesspersons spoke furiously on the problem of multimodal freight transport system in Ethiopia. According to the report by AACCSA (2012), many businesspersons believe that the major problem of the multimodal transport was the monopolistic operation of the system by the government, lack of infrastructure, daring to engage in operation by ESLSE without proper readiness, lack of experience, insufficient freight vehicles, and procedures at custom terminals were among the problems raised in the luncheon. From the chamber report, businessperson also forwarded their recommendation for the ESLSE authorities who attended the luncheon. Opening the system to private sector/ liberalization, inviting foreign actors, solving infrastructure problems are among the solutions forwarded. On the other hand, it seems the government of Ethiopia also aware of the problem of implementing the multimodal transport system by ESLSE. The government has accepted technical proposals from six international consultants to improve the regulation of multimodal system in Ethiopia (Fortune, 2012).

Since the start of the service ESLSE has made consistent progress in increasing the volume of cargo handled with the multimodal transport system and is able to raise the coverage over 60% of its container lifting. The port dwell time has been improved significantly from above 30 days at the time of start of the service to 7 days recently. With the improvement of quality and reliability of the services it has also succeeded in redressing customer dissatisfaction and wins their confidence. The Company is making continuous improvements to strengthen and further expand the coverage of multimodal transport system (EMAA, 2014).

2.2.14.1. Infrastructure Development in Ethiopia

Brooks (2008) stated that, transportation infrastructures such as highways and railways can reduce distribution margins of the transportation cost in narrowing the gap between prices faced by producers and consumers, thereby facilitating better improvements for both; in general efficient transportation infrastructures lower transaction costs, raise value added, and increase potential profitability.

According to Tadesse Kenea (2014), the country's capacity to provide multimodal transport service that is reliable and cost effective is depend on many factors among which are the use of

advanced technology and infrastructure. In this regard Ethiopia is not exceptionally free from the challenges rather it may be severe.

In the 2012/13 World Economic Forum (WEF) World Competitiveness Report, Ethiopia's infrastructure development is ranked 119 out of 144, far behind Vietnam and China (95 and 48, respectively), but relatively better than Tanzania and Uganda (132 and 133, respectively) (World Bank Report, 2013).

2.2.14.2. Dry port Concept

The word dry port has been defined by many scholars and the definitions reflect the broad view of the concept from different perspectives. The definitions were also born of the fact that the periodical steep rise in container flows resulted in crowded terminals, congestion and prolonged dwell time for containers. As a solution to these problems at the main sea ports, the trans-ocean vessels started to call at single hub port while feeder vessels, haulages, trucks and trains connected many smaller inland or dry ports, (Baird A.J, 2002). According to UNCTAD (1991) dry port is "An inland terminal to which shipping companies issue their own import bills of lading for import cargos assuming full responsibility of costs and conditions and from which shipping companies issue their own bills of lading for export cargos."

Rosoet *al.* (2009) define dry port as; "an inland intermodal terminal directly connected to seaport(s) with high capacity transport mean(s), where customers can leave/pick up their standardized units as if directly to a seaport." A dry port can be understood as an inland setting with cargo-handling facilities to allow several functions to carry out, for example, cargo consolidation and distribution, temporary storage of containers, custom clearance, connection between different transport modes, allowing agglomeration of institutions (both private and public) which facilitates the interactions between different stakeholders along the supply chain, etc (Ng and Gujar, 2009).

2.2.14.3. Dry Ports in Ethiopia

As one of the landlocked developing countries Ethiopia continuously face the challenge of physical isolation, supply chain related barriers from the sea and the high costs of trading with the rest of the world (United Nations Economic Commission for Africa, 2011). In order to

counter these challenges associated with landlocked-ness, Ethiopia established several dry port to take the advantage of dry port. Many landlocked developing countries continuously face the challenge of physical isolation, supply chain related barriers from the sea and the high costs of trading with the rest of the world (United Nations Economic Commission for Africa, 2011). In order to counter these challenges associated with land locked ness, the dry port concept evolved. Dry ports also evolved out of the challenges that faced existing sea ports i.e., due to the increase in size and capacity of container vessels, sea ports increasingly faced the challenge of inability to handle import and export cargo in a regular manner. This resulted into congestion at different sea ports due to long waiting time of trucks and haulage vehicles (Woxenius , Roso, & Lumsden, 2004). (Notteboom & Rodriguez J. P., 2009), observed that the evolution of dry ports was looked at as the cycle in the continuous development of containerization and intermodal transport. Multi modal transport and dry ports turned out to be the focal point in the new supply chain and logistics strategy formulation.

Dry Port Services Enterprise was established by the Council of Ministry Regulation No. 139/2007 with the objective of facilitate the country import/export and minimize the congestion at the port of Djibouti. A Dry Port (sometimes inland port) is an inland intermodal terminal directly connected by road or rail to seaport and operating as a center for the transshipment of sea cargo to inland destinations. In addition to their role in cargo transshipment, dry ports may also include facilities for storage and consolidation of goods, maintenance for road or rail cargo carriers and custom clearance services. (ESLSE Statistical Bulletin, EFY 2000-2007).Nowadays, there are seven dry ports in Ethiopia; these are Modjo, Kality, Gelan, Semera, Dire Dawa, Kombolcha and Mekelle.

Table 2.3 Dry Port and Terminal area and carrying capacity

Dry Port	Area in Hectare	Terminal Capacity in TEU
Modjo	23.67	12675
Kality	3.20	1260
Gelan	4.00	2352
Kombolcah	8.00	3776
Mekelle	3.05	1439
Dire Dawa	0.80	288
Semera	2.50	980

Source: ESLSE Statistical Bulletin (EFY 2000-2007)

The Dry Ports are equipped with port machinery: 18 reach stackers, 47 forklifts, 1 crane, 3 empty container handler, 11 terminal trucksters and 18 terminal chassis.

The average dwell time of cargoes at dry port reached 50 days, which is the challenge for the productivity of the dry ports (ESLSE unpublished report).

2.2.14.4. Modjo dry port and Kaliti dry port

Ethiopia, as a landlocked country, has established its trade route along the Ethio-Djibouti corridor. The Ethio-Djibouti corridor is a main outlet to the sea and 925 Kilometers from Addis Ababa. It is the main route for Ethiopia's import and export trade which is dominated by freight transport. Due to economic deregulation that has been enacted in many sectors including freight transit and a program of privatization, state assets in combination with a rapidly growing economy powered by the Ethio-Djibouti corridor resulted in the growth of the transport industry. According to ESLSE, in response to the steadily growing volume of cross boundary trade, as a result, Ethiopia has moved to establish various inland dry ports.

(Yodit.R(2016);Abdurezak.M(2016))

According to the ESLSE (2014), currently ESLSE is administering seven dry ports including Modjo dry port and it was found out that main Services given at the Dry port are: handling the

import-export good, loading and unloading import-export goods, containerizing goods and unpacking containerized goods, serving as a temporary storage place, giving weigh bridge service, container wash and maintenance service, custom clearance service, banking and insurance service.

Modjo dry port was the first dry port in Ethiopia started operations in the first half of 2009. It is located at Modjo, nearly 75 km East of Addis Ababa. The other one is the current Kaliti branch of ESLSE Was previously organized as Comet Transport Share Company. It is located in Addis Ababa at Kaliti sub city Kebele 11 and advantageously situated next to Addis Djibouti road close to the southern ring road. Originally, it provided the following types of Services: freight transport, Maintenance, Warehousing & Cargo Handling, Dry Port facility, and others. Among these services the proposed study is concerned with the company's Dry Port Service. The - company has developed a dry port service to facilitate Import & Export in the country by providing an integrated logistics service.(Yodit.R(2016);Abdurezak.M(2016))

2.3 Empirical Study

World Bank, LPI (2010) based on a worldwide survey of global freight forwarders and express carriers and measures performance along the logistics supply chain within comparisons across 130 countries. Found trade logistics performance is directly linked with important economic outcomes, such as trade expansion, diversification of exports, and growth. The ability to connect to the global logistics web depends on a country's infrastructure, service markets, and trade processes. Having an LPI lower by one point—such as 2.5 rather than 3.5—implies two to four additional days for moving imports and exports between the port and a company's warehouse.

Similarly World Bank, LPI (2012) based on comparisons across 143 countries. Found logistics efficiency as vital for trade and growth and the ability to connect to the global logistics web depends on a country's infrastructure, service markets, and trade processes. A country's ability to trade globally depends on its traders' access to global freight and logistics networks. And the efficiency of a country's supply chain (in cost, time, and reliability) depends on specific features of its domestic economy (logistics performance). Better overall logistics performance and trade facilitation are strongly associated with trade expansion, export diversification, attractiveness to

foreign direct investment, and economic growth. In addition to these World Bank, LPI (2014), based on comparisons across 160 countries. Found reliable logistics is indispensable to integrate global value chains—and reap the benefit of trade opportunities for growth and poverty reduction. The ability to connect to the global logistics web depends on a country's infrastructure, service markets, and trade processes. Logistics performance is strongly associated with the reliability of supply chains and the predictability of service delivery available to producers and exporters. Inefficient logistics raises the costs of trading and reduces the potential for global integration. Predictable, reliable supply chains are central to good logistics performance.

World Bank, LPI (2016) based on comparisons across 160 countries. Found logistics performance both in international trade and domestically is central to the economic growth and competitiveness of countries, and the logistics sector is now recognized as one of the core pillars of economic development. Policy makers not only in the best performing countries, but

Also in emerging economies, increasingly see the need to implement coherent and consistent policies to foster seamless and sustainable supply chain operations as an engine of growth. Efficient logistics connects firms to domestic and international markets through reliable supply chain networks. Conversely, countries characterized by low logistics performance face high costs, not merely because of transportation costs but also because of unreliable supply chains, a major handicap in integrating and competing in global value chains.

World Bank, LPI (2018) performance measured with The Domestic LPI looks in detail at the logistics environments in 100 countries. For this measure, surveyed logistics professionals assess the logistics environments in their own countries. This domestic evaluation contains more detailed information on countries' logistics environments, core logistics processes and institutions, and time and distance data. This approach looks at the logistics constraints within countries, not just at the gateways, such as ports or borders. It uses four major determinants of overall logistics performance to measure performance.

Researcher had also significantly identified about Multimodal transportation practice in Ethiopia Shipping and logistic Enterprise although it's very recent phenomena even the practice is not reached one decade .However researcher evaluated related study empirically and

categorized with their topics as prepared; Different elements are introducing as driving factors of Challenge of Multimodal transport operation in different time Which showed the Cause and effect scenario Tilahun and Mekonen (2016)” Challenges in the operation of multimodal transport system: The case of Ethiopian shipping and logistics services enterprise” This study aimed to investigate the challenges of Multimodal Transport System at Ethiopian Shipping & Logistics Services Enterprise. The related theoretical literatures and empirical studies issues were incorporated in this study to provide a theoretical basis for the development of the research. The key challenges related to the operations of Multimodal Transportation System are identified. Accordingly, poor network connectivity, the problem of ICT usage at each level, the lack of railway infrastructure, lack of competition in the multimodal transport system, the distance between origin or source materials and customers to get on time, poor coordination, lack of integrity with Stakeholder relationship, shortage of trucks by ESLSE, length of procedures and the involvement of different stakeholders, shortage of skilled human power, resistance from the Djibouti, and employment issues, were identified as serious challenges. On the other hand, bureaucratic nature of clearance procedures at Ethiopian customs and inadequate knowledge or wrong perception about Multimodal Transport System was reported by respondents.

By the same Title Habtesilasa(2018) is to identify the challenges of multimodal transport service of ESLSE in the Europe trade routes operation from origin up to destination and to analyze the contribution of network partners to ESLSE solving these challenges . The findings of this study revealed that multimodal transport service was impacted by a number of challenges even if the network partners contributed some solutions. The results of the study showed that the lack of skilled logistics personnel; poor ICT system; lack of integration between network partners; lack of effective infrastructure; inadequate and ineffective capacity of trucks; -material theft; corruption; security risk; lack of prompt response in the operation between network partners; monopoly of the operation by ESLSE; and lack of quality of transported cargo are the main challenges for multimodal transport services.

The study conducted by Belay T. (2016) titled as assessment of customer satisfaction on multimodal transport system: the case of selected private import business. According to this

study, customer satisfaction was measured with three measurement dimensions such as multimodal transport service value (MMTS), logistics service value (LSV) and customer service quality (CSRQ). The result showed under the descriptive analysis of multimodal transport indicates that the majority of customers are satisfied with regard to variables such as documentation, arrangement of inland transportation, schedule reliability, customs clearance. Contrary to this, World Bank (2017) report shows that Ethiopian logistics service sector is characterized by long transit time; the business requires obtaining more documents, problems in ICT infrastructure facilities, non-dependable port and customs clearance process and higher transport cost. Research findings are limited to both time and place. The study should be appropriately surveyed to get the real picture of the study and has to be supported by other evidences collected in collaboration with questionnaires (wubishet.A(2018)).

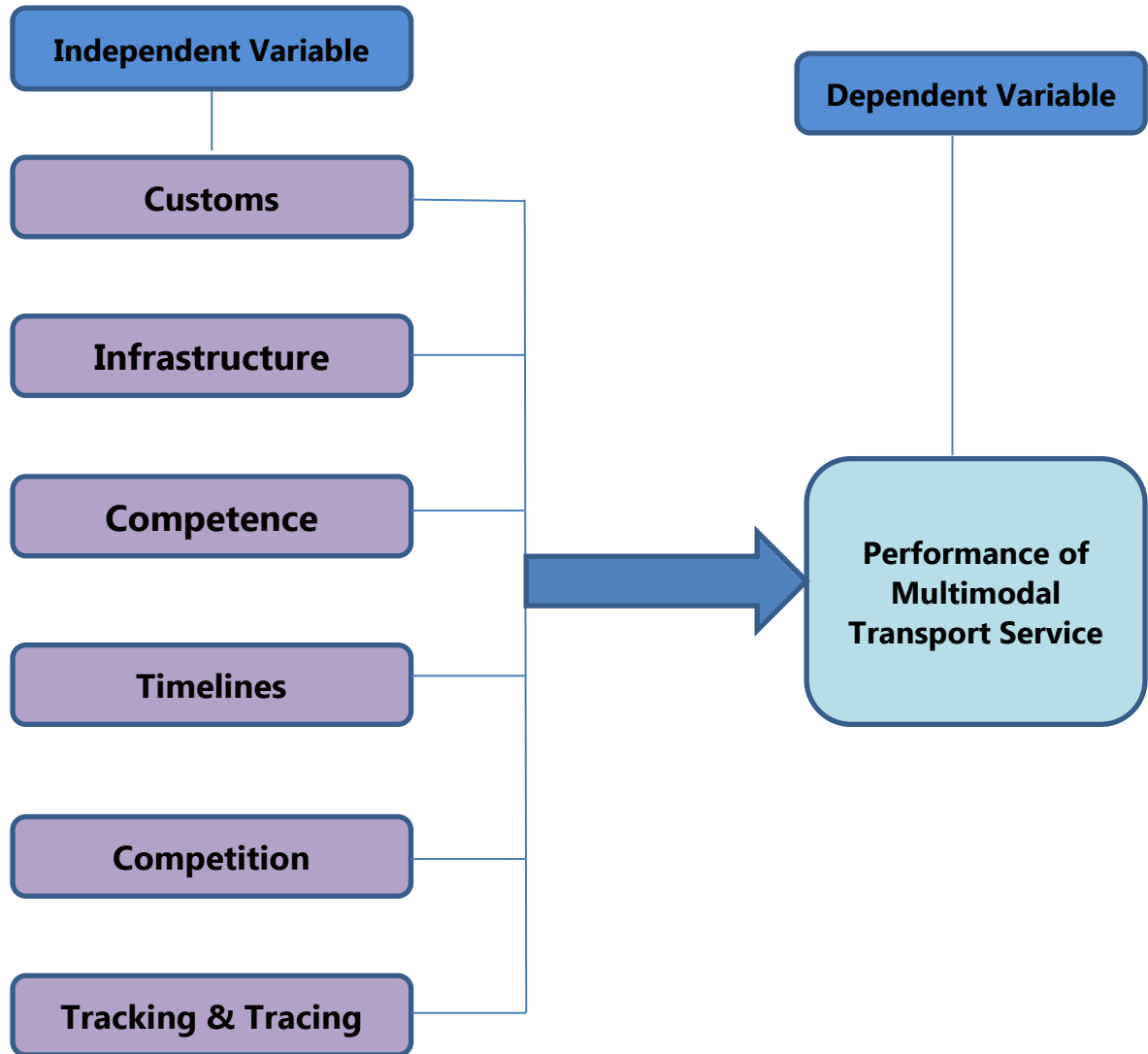
Amentae (2015) “Multimodal Freight Transport Performance by Customers and Employees: Towards International freight Shipping and Logistics Services Enterprise.” This study has not explicitly stated the basic research gaps which are basically used as spring board to perform the study. Research gap is identified by conducting preliminary study or by reading secondary sources of data and any other sources. It has to be clearly stated in order to create a reader to understand what the study wants to investigate. Generally, the above four and other studies conducted over multimodal transport system are mainly performed using descriptive research design. Using this type of research design, cannot show the validity, reliability, the relationship between dependent and independent variables, the strength and predictability of variables. Strong research’s has to be done both descriptively and inferentially which are tasted by various statistical tools.

2.4 Conceptual Framework

Most research reports cast the problem statement within the context of a conceptual or theoretical framework Chalmers (1982). Conceptual framework is an analytical tool with several variations and contexts. A description of this framework contributes a research report in at least two ways because it identifies research variables, and clarifies relationship among the variables. It is essential to bring focus within the context and also acts as a link between literatures, methodology and results Miles and HuberMan (1994).

The conceptual framework of this study was designed based on concepts, literatures, research problems, methodologies, research objectives and basic research questions. The framework has dependent, independent and intervening variables which were used to measure the overall performance of multimodal transport system. The link or the relationship between the explanatory and outcome variables was drawn in the following diagram.

Figure 2.2; - Conceptual Framework of the study



Source: - Compiled Based On the Reviewed Literatures

2.5 Hypothesis Testing Variables.

Quite often a research hypothesis is a predictive statement, capable of being tested by scientific methods that relates independent variables to some dependent variable Kothari (1990). It is usually considered as the principal instrument in research its main function is to suggest experiments and observations Kothari (1990). They are numeric estimates of population values based on data collected from samples Creswell (2009). In quantitative studies, investigators use research questions and hypothesis to shape and specifically focus on the purpose of the study Creswell (2009). The researcher has formulates his hypothesis based on the review of literature. It provides the rationale for the study Sigh (2006). In the context of statistical analysis, we often talk about null hypothesis and alternative hypothesis. The null hypothesis is generally symbolized as H_0 and alternative hypothesis as H_a . Alternative hypothesis usually the one which one wishes to prove and null hypothesis is one wish to disprove. Thus, a null hypothesis represents the hypothesis we are trying to reject, and alternative hypothesis represents all other possibilities Kothari (1990). Depending on the review of different related literatures in the previous chapters, the researcher put forwarded the following hypotheses.

Ha1. Customs has positive and significant effect on the Performance of multimodal Transport Operation Service.

Ha2. Infrastructure has positive and significant effect on the Performance of multimodal Transport Operation Service.

Ha3. Competence has positive and significant effect on the Performance of multimodal Transport Operation Service.

Ha4. Timeliness has positive and significant effect on the Performance of multimodal Transport Operation Service.

Ha5. Competition has positive and significant effect on the Performance of multimodal Transport Operation Service.

Ha6. Tracking and Tracing has positive and significant effect on the Performance of multimodal Transport Operation Service.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari 2004). This chapter describes the research design explored, the research methodology and sampling design of the study. Specifically, it details selection of study area, sample size and sample selection and the procedure followed when gathering data. The chapter concludes with instrumentation, data collection and analysis methods.

3.1 Research Design

Basically the research design outlines the master plan of action to be followed in order to realize the research objectives. This is achieved through the methods and procedures for collecting and analyzing the required information (Zindiye, 2008:16).

A casual research design was used for this study. A survey was administered to a selected sample from a specific population. Robson (1993) suggests that the term ‘survey’ is commonly applied to a research methodology designed to collect data from a specific population, or a sample from that population, and typically utilizes a questionnaire or an informal interview as the survey instrument. The researcher chose a casual methodology and designed a questionnaire survey instrument to investigate the factors affecting the successful growth and survival of service and helps to examine the effect of the factors on the performance Multimodal Transport in Ethiopian Shipping &Logistics Services Enterprise.

3.2 Research Approach

According to Mark et al. (2009:101) mixing approaches gives the potential to cover each method’s weaknesses with strengths from the other method. In this study, a combination of qualitative and quantitative approaches was used. Quantitative is numerical in nature, it was obtained by assigning numerical values to responses whereas qualitative is contextual, that was obtain from field notes.

3.3 Data Collection Methods and Instruments

In order to collect available data from different sources, primary and secondary data collection methods were used. To collect primary data, the researcher has used self-administered questionnaire approach and some of the questions in the questionnaire were adopted from other sources. In an attempt to understand and measure the overall coordination and integration of stakeholders on performance multimodal transport service. It includes closed ended questions. The survey questionnaire was distributed to customers of ESLSE, who are directly affected by the service of multimodal transport system. Closed ended questions were measured containing items of 5 point likert scale which represented 1 as strongly disagree, 2 as disagree, 3 as moderate, 4 as agree and 5 as strongly agree. In addition to Primary data collection methods, the study has used secondary sources of data collected from company's records which is called Statistical Bulletin 2010EFY, national and international publications used to get good insights from best practitioners of multimodal transport system.

3.4 Population of the Study

The study was conducted at MTO Ethiopian Shipping and Logistics Services Enterprise which is situated in the capital city of Ethiopia, Addis Ababa. Due to the constraints of time and budget, it is impossible to collect data from the entire population. According to the information obtained from marketing department total number of the target population has estimated to be 3,000 customers in number who are currently using the service of multimodal transport who had active in Modjjo and Kalitiy dry port and hence the researcher used only those two mentioned dry port for study sample size. Due to convince of place and easy to access the whole customers included in the sample, the head office was used to administer the questionnaire.

3.5. Sampling Techniques and Sampling Procedures

To determine the sample size from the number of people included in the survey, simple random sampling method was conducted. Simple random sampling: Is one in which each element of the population has an equal and independent chance of being included in the sample i.e. a sample selected by randomization method is known as simple random sample and the technique is simple random sampling Yamane (1967). In this case the sampling method used to randomize

customers in the target population was simple random sampling technique. The customers were considered to be homogenous (same service) in their nature and also influenced by the operation of the system. To calculate the sample size Israel (1992) provides a simplified formula. Based on this formula confidence level is 95% and level of precision is 5%.

Sample size was estimated by the following formula (William G.Cochran, 1977)

$n = Z^2\alpha/2\sigma^2e^2...$ (1) Where e^2 is marginal error, σ^2 is population variance since population variance is not known use another formula

$noN = (Z^2\alpha/2pq)/e^2.....$ (2) Israel, Glenn

e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is 1-p. The value for Z is found in statistical tables which contain the area under the normal curve, 95% confidence interval $Z\alpha/2$, $\alpha=0.05$ From the Z standard table $Z_{0.025} = 1.96$, taking p & q equal proportion since the customers are homogenous so that $p=0.2$ and $q=0.8$ were applied and the marginal error e was limited to 0.05. Then using formula 2

$no = (1.96)^2 \times 0.2 \times 0.8 / 0.05^2 = 246$, since $no/N = 246/3000 = 0.082$, since it greater than 5% correction is needed is done by

$n = no / 1 + (no - 1) / N = 246 / 1 + (246 - 1) / 3000 = 228$ Therefore, based on the above analysis the sample size was determined by 228 customer. Those customers were selected by systematic random sampling technique.

3.6 Data Analysis and Presentation

The data collected in the form of survey questionnaire was analyzed quantitatively. To analyze the responses collected from closed ended questions, the researcher has used different formulas and statistical tools such as SPSS depending on the data collected and the purpose of the research.

The data have both descriptive and inferential characteristics accordingly; descriptive analysis was done by using measures of central tendency such as average mean score, Std. Deviation and percentage. In addition to this inferential analysis was done by using statistical tools such as coefficient of correlation, multiple linear regression analysis, ANOVA (analysis of variance).

To summarize and create a clear picture for the reader to understand the result of the study figures, tables, and other tools were used

3.7. Regression Model

3.7.1 Pearson's correlation coefficient

In this study Pearson's correlation coefficient was used to determine the relationships between independent variables (Custom,Infrastructure,Competence,Timeliness,Competition, Tracking and Tracing) and dependent Variable (Performance of Multimodal Transport Service). Pearson correlation was used to test the formulated hypothesis.

3.7.2. Regression Model

In this study the equation of multiple regressions is generally built around two sets of variable, the dependent variables (Performance of Multimodal Transport Service) and independent variables. Regression models with one dependent Variable and more than one independent variables are called multi-linear regression Tabachnick (1996) and Buyukozturk (2002). Multiple regressions also involve constructing an equation to estimate the expected value of the dependent variable which is predicated from number of independent variables.

It is used to see the relation between dependent and independent variable and to predict the value one dependent variable with an increase in each unit of independent variables Gulden and Nese (2013). Accordingly, the researcher was used multiple linear regression model to find a set of predictors among the six performance quality dimension which are most effective in measuring the overall performance of multimodal transport system. Overall, the study was employed multiple linear regression analysis, theories and hypotheses in order to examine the impact of predictor variables on dependent and to point out the difference in determining the overall performance across different group of customers .

According to definition given by many authors Multivariate regression analysis model that account for individual explanatory variables specified for the particular study were formulated in the following:-The equation of logistic regressions on this study is generally built around two sets of variables, namely dependent variable and independent variables as the model used.

The model of multiple linear regressions is presented below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon_i$$

Where:-

- ✓ **Y** is the response or dependent variable – Performance of Multimodal Transport Service
- ✓ **X1**= Custom, **X2**= Infrastructure, **X3**= Competence, **X4**=Timeliness, **X5**= Competition, **X6**= Tracking and Tracing are the explanatory variables.
- ✓ **β_0** is the intercept term - constant which would be equal to the mean if all slope coefficients are 0.
- ✓ **β_1 , β_2 , β_3 , β_4 , β_5 , and β_6** , are the coefficients associated with each independent variable.

ϵ_i is the error term (other factors) those may have its own impact on dependent variable

Before performing regression analysis tests of validity assumptions such as normality, multicollinearity, and autocorrelation and correlation analysis were performed with their own distinctive feature. Each of the tests was performed by reviewing related literatures, theories and other ideas.

3.8 Model Reliability & Validity Test

The model fitting is the first part of the story for regression analysis Penrose et al (1985). Regression analysis is a statistical technique for determining the relationship between a single dependent (criterion) variable and one or more independent (prediction) variables. The analysis yields a predicted value for the criterion resulting from a linear combination of the predictors. According to Pedhazur (1985) regression analysis has two uses in scientific literature: prediction, including classification, and explanation.

To make regression analysis and to assess the overall model effectiveness the study was applied different types of model assumption to overcome model tests. The first step is to determine the criterion variable. Pedhazur (1985) suggests that the criterion have acceptable measurement qualities (i.e. reliability and validity).

3.8.1 Reliability Test

According to Nunnally (1978) reliability is used to check measurements are reliable to the extent that they are reputable and that random influence which tends to make measurements different from occasion to occasion or circumstance to circumstance is a source of measurement error.

Cronbach's Alpha, is most commonly used to assess the internal consistency of a questionnaire made up of multiple likert type of scales and items Cronbach (1990). Cronbach's alpha ranges from 0.00 to 1.00, a negative alpha means you probably need to reverse some items. Reliability coefficient of 0.70 or higher is considered or acceptable in most social science research situations. Cronbach's is often used in assessing the reliability of tests with questions that have more than two possible responses Sapp and Jensen (1997). The alpha value is ranges from a maximum of 1.0 for a perfect score to minimum of zero, good measure of the alpha should be 0.70 or higher Neuman (2007). According to Willima and Berry (2010) exhibiting a coefficient of alpha between 0.80 and 0.96 are considered to have very good reliability, between 0.70 and 0.80 are considered to have good reliability and alpha value between 0.60 and 0.70 indicated fair reliability and when the coefficient of alpha is below 0.60, the scale has poor reliability.

3.8.2. Reliability Analysis

The reliability of an instrument refers to its ability to produce consistent and stable measurements. According to Cooper and Schindler (2003) reliability tests the stability, equivalence and internal consistency of an instrument. The reliability of an instrument refers to its ability to produce consistent and stable measurements. The most common reliability coefficient is the Cronbach's alpha which estimates internal consistency by determining how all items on a test relate to all other items and to the total test - internal coherence or consistency of data. Cronbach Alpha value is widely used to verify the reliability of the construct concept. Therefore, To test the reliability of the

Likert scale used in this study, reliability analysis was done using Cronbach’s Alpha as the measure. (Note that a reliability co-efficient of $\alpha \geq 0.7$ was considered adequate or “acceptable” in most social science research.)

Table 3.1 Reliability Test

INDEPENDENT VARIABLE FACTORS	No.of Items	CRONBACH'S ALPHA
1.Customs	6	0.903
2.Infrastructure	8	0.918
3.Competence	5	0.927
4.Timeliness	6	0.909
5.Competition	5	0.917
6.Tracking and Tracing	7	0.914
Total Scale	37	0.915

Source: Survey Findings, SPSS 2019

The findings indicated that Customs factor, Infrastructure factor, Competence factor, Timeliness factor, Competition factor and Tracking and Tracing factor had a cronbach alpha coefficient of 0.903, 0.918, 0.927, 0.909, 0.917and 0.914 respectively. All constructs depicted that the value of Cronbach’s Alpha are above the suggested value of 0.7 thus the study was reliable

3.8.3 Validity Test

Validation assessment is the process of determining the degree to which a model is an accurate representation of the real world from the respective of the intended use of the model. The goal of validation is to quantify confidence in the predictive capability of the model by comparison with experimental data AIAA (1998). To check the operationalization of variables against some criterion, criterion-related validity type was selected. Criterion-related validity with different validity types usually makes a prediction about how the operationalization will perform based on the theory of the contract Trochim (2016).

Measuring and evaluating the questionnaire consider some specifications for measuring tools, such as the validity of questionnaire. The validity of a measuring tool means that it can measure the

relevant specification not any other variable. Content validity was used for measuring the validity of the questionnaires of this research. For this purpose, the content of the questionnaire was prepared by referring to adopting previous study, theories and the model relevant to the subject and the questions of the research. After doing amendments by advisor the content validity and face validity of the questionnaire was approved.

3.8.4. Ethical Consideration

Regarding the research ethics, the author has kept the research ethics. Data providers, organizations and institutions were properly acknowledged and the information collected from them is used for the purpose of the research objective and the researcher will respect issues related to confidentiality.

CHAPTER FOUR

RESULTS AND DISCUSSIONS OF THE FINDINGS

4.1 Introduction

In this chapter the survey was undertaken to Factors Affecting Performance of Multimodal Transportation Operation Service in the case of Ethiopian Shipping and Logistics Services Enterprise, both descriptive and inferential data analysis and procedures are presented. The descriptive statistics utilized in this research, describe the respondent's characteristics with mean score, standard division and percentages. Inferential analysis is concerned with the various test of significance about correlation, comparison of variables and regression analysis in order to made conclusions. Inferential statistics (correlation and regression) to test the researcher of the data analysis follows the phases discussed in chapter three (under research design and analysis methods). The first phase involves editing, coding and the tabulation of data. This assisted in identifying any inconsistencies in the responses and the assignment of numerical values to the responses in order to continue with the analysis. The data was then checked for possible mistaken entries and corrections made appropriately. The data were entered by using SPSS version 20.

4.2 Rate of Response

A total 190 questionnaires were returned out of 228 questionnaires distributed to respondents which made the response rate 83%. An acceptable figure to make the study effective and generalizable In this section of data analysis and interpretation, the first part presents and discusses descriptive statics results related with the demographic factors and the independent variables of the study and then followed by analysis of variance to examine in the variation on the performance of Multimodal Transportation Operation Service in relation to the independents variables of the study

4.4 Results and Discussion

4.4.1 Characteristics of respondents on Demographic Factor

Gender, Age, Educational Qualification and work with ESLSE of the respondents

Information on the Gender, Age and Educational Qualification of the respondents is provided in

Table4.1:- Responses on the Gender, Age and Educational Qualification respondents

MEASURE	ITEM	FREQUENCY	VALID PERCENTAGE (%)
Gender	Male	135	71.1%
	Female	55	28.9%
	Total	190	100%
Age	< 20 age	2	1.1%
	21 – 30	45	23.7%
	31 – 40	69	36.3%
	41 – 50	58	30.5%
	>51	16	8.4%
	Total	190	100%
Level Of Education	High School	26	13.7%
	Diploma	50	26.3%
	Degree	77	40.5%
	MA/MSc	37	19.5%
	Total	190	100%
Works experience of customers with ESLSE	<5	51	26.8%
	6-10	92	48.8%
	>10	47	24.7%
	Total	190	100%

Source: Survey Findings, SPSS 2019

The information presented in Table4.2 is statistically described as follows:-

➤ **Gender of the respondent's:-**

In this study 55% of the participants were female; whereas 135% was male. The respondents were composed of relatively more male customers and lesser female customer's .This was because during data collection the researcher met more male customers than female by chance or may be the company has lesser female customers than male customers for multimodal transport.

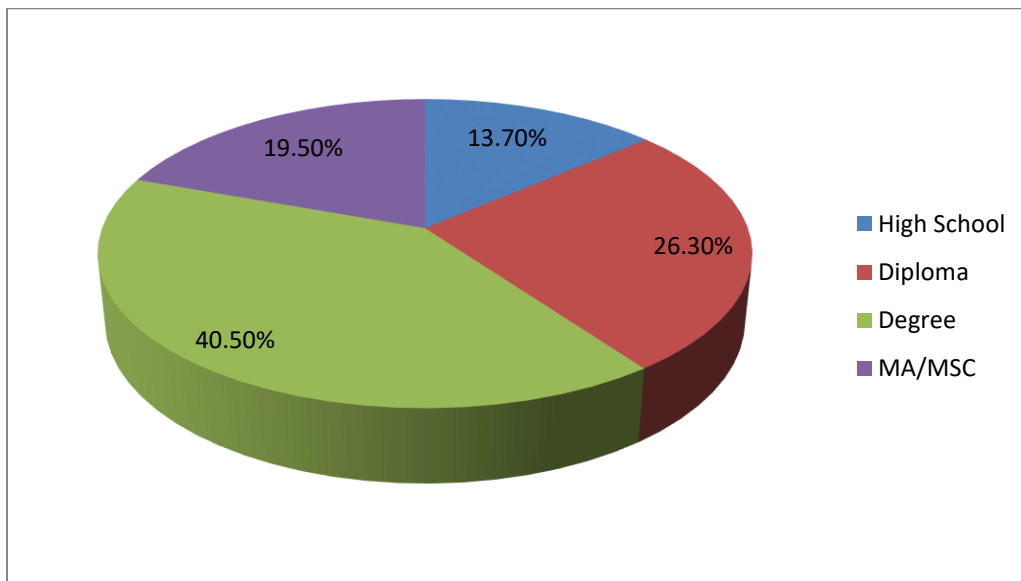
➤ **Age of the Respondent's:-**

As clearly seen on the table4.1, the majority of the respondents (36.3%) were between the age of 31-40, 30.5% of the respondent were the age between 41-50, 23.7% of the respondent were the age between 21-30and 8.4% of the respondent were the age above 50 years and the remaining 1.1% of the respondent were below 20 years old. This shows that the majorities of the respondents were on working age and have capital owner to develop the sector.

➤ **Educational qualification of the respondent's;-**

According to the Fig 4.1below, the educational background of the customer respondents were mainly graduates at 1st degree level (40.5%),followed by diploma graduate (26.3%) and 19.5% of the respondents were MA/MSc. Finally the remaining 13.7% of the respondents were high school complete. This showed the majority of respondents are participated on import sector.

Fig4.1:-Educational back ground



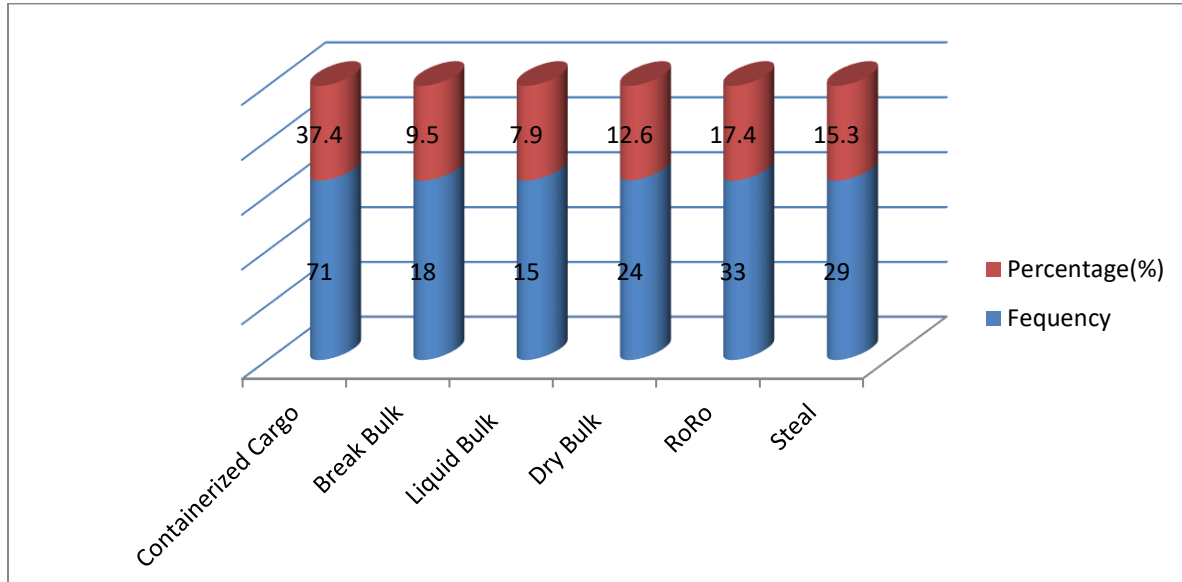
Source: Own Survey, 2019

➤ **Work Experience of Customers with ESLSE**

As shown in the above table4.1, work experience of multimodal transport customers shows that, 48.8% worked from 6-10, 26.8% worked less than Five years, and 24.7% worked above 10 years' experience with ESLSE.

4.4.2 Respondents of Import Cargo Type

Fig4.2:-customer imported type cargo

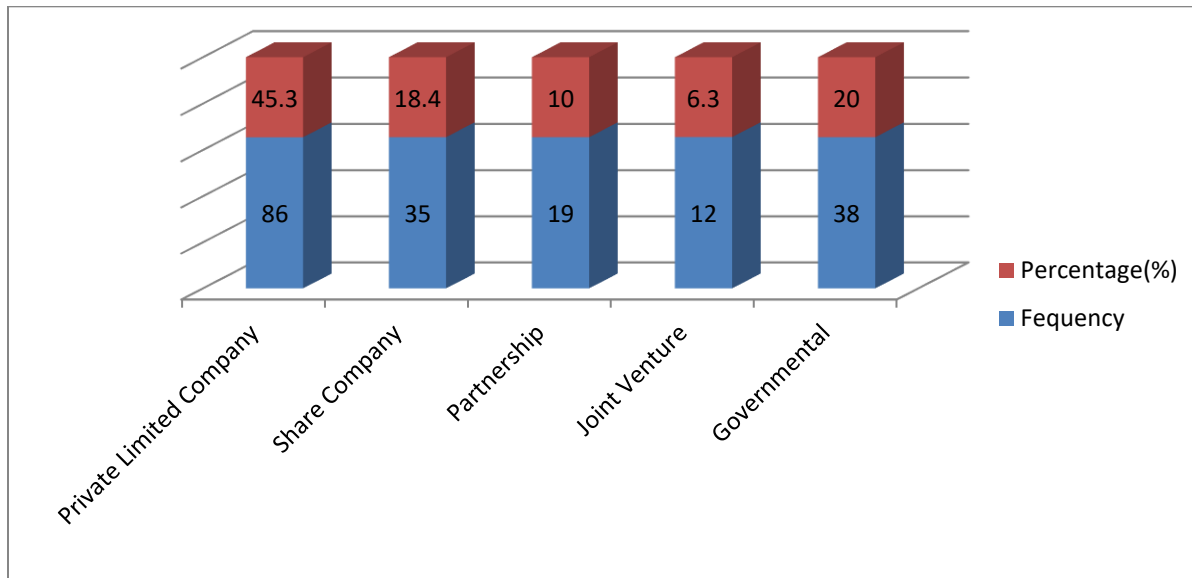


Source: Own Survey, 2019

As the above cylindrical chart shows figure4.2, 37.4 percent of customers were imported containerized cargo, 9.5 percent imported breaks Bulk, 7.9 percent imported liquid bulk, 12.6 percent imported dry bulk, 17.4 percent imported RORO type of cargo, and 15.3 percent imported Steel profile. The share of imported containerized cargo indicates, the majority of cargo was imported through the use of containers which are the result of multimodalism way of transportation.

4.4.3 Business Operated Type of Respondents:-

Fig4.3:-customer types of business



Source: Own Survey, 2019

According to owner of respondents above Figure4.3, 45.3% were private limited companies, 18.4% share companies, 10% partnership and 6.3 % were Joint venture and 20% were Governmental organization respectively. The result indicates that private limited company owner's share the highest percentage than all other type of business.

4.5 Descriptive Analysis Parts:-

In orders to analyze, describe and summarize the characteristics of responses, mean score, standard division and percentages were used. These research designs were used to point out the degree of variability and percentage share of responses that were answered questions stated in below questionnaire for targeted respondent of the research.

4.5.1 Custom factor

According to Ruth Banomyong (2000), a literature review depicts that to implement multimodal transport; customs are required to facilitate the container flows, through minimization of import/export documents and to permit the movement of cargo to and from ports under bond or in a sealed container.

Table4.2:- Descriptive Statistics Value of Custom factor

S.N	Variables	N	Mean	Std. Deviation
1	Customs have developed a system or procedure for multimodal transportation of container	190	3.48	1.158
2	The Custom clearance process for multimodal shipments of container is efficient	190	3.24	1.170
3	All multimodal shipments of container are cleared and delivered as scheduled	190	3.04	1.147
4	The customs clearance procedure for multimodal shipments is transparent	190	3.27	1.145
5	The customer receive adequate and timely information when regulations of custom change	190	3.24	1.197
6	The existing coordination level between customs officers and ESLSE	190	3.37	1.192
	Valid N (list wise)	190		
	Grand Mean/ Grand Standard Deviation		3.27	1.177

Source: Own Survey, 2019

Table above shows the mean score and standard deviation the six items of custom performance dimension in evaluating the performance of multimodal transport service. According the table result above, Customs have developed a system or procedure for multimodal transportation of container scored a mean score value of 3.48 and standard deviation value equal to 1.158, for the statement The Custom clearance process for multimodal shipments of container is efficient scored a mean value 3.24 with standard deviation value 1.170, for the statement All multimodal shipments of container are cleared and delivered as scheduled scored a mean value 3.37 with standard deviation value 1.192, for the statement The customs clearance procedure for multimodal shipments is transparent scored a mean value 3.27 with standard deviation value 1.145, for the statement The customer receive adequate and timely information when regulations of custom change scored a mean value 3.31 with standard deviation value 1.151 and finally for the statement The existing coordination level between customs officers and ESLSE scored a mean value 2.97 with standard deviation value 1.245. This result implies that all except The existing coordination level between customs officers and ESLSE in all customs dimension scored above the midpoint or the average result fall above the neutral and below agree level. However, customers are disagreed or dissatisfied

with the existing coordination level between customs officers and ESLSE. This means coordination level between customs officers do not achieve with the desired ESLSE Multimodal Performance.

4.5.2 Infrastructure factor

According to Ruth Banomyong, (2000), in order to benefit fully from multimodal transport service the minimum level of transport related infrastructure must be in place. Thus, the importer will benefit from multimodal transport service, as goods he has ordered, will be delivered to his premises at minimum cost and in good conditions.

Table4.3: Descriptive Statistics Value of Infrastructure factor

S.N	Variables	N	Mean	Std. Deviation
1	The inland transport infrastructure is suitable for origin-to-destination containerized cargo movement	190	2.69	1.142
2	Road transport is adequate to meet the need of inland-containerized cargo movement	190	3.48	1.158
3	Railway is capable to meet the need of inland-containerized cargo movement	190	3.02	1.215
4	ESLSE have enough number of trucks with significant capacity to render effective and efficient MTO	190	2.94	1.134
5	The dry ports, terminals and warehouse are adequate for handling multimodal cargo	190	2.89	1.117
6	The dry ports, terminals and warehouse are well equipped with the necessary equipment and facilities	190	3.48	1.158
7	The dry ports & terminals do have enough space and capacity to accommodate all incoming and outgoing cargo even in peak period	190	3.02	1.215
8	Since the past seven years the transport related infrastructure for Multimodal transport service is improved	190	3.37	1.192
	Valid N (list wise)	190		
	Grand Mean/ Grand Standard Deviation		3.11	1.166

Source: Own Survey, 2019

Table4.4 above result revealed that, for the statement the inland transport infrastructure is suitable for origin-to-destination containerized cargo movement scored a mean value 2.69 and standard

deviation 1.142, Road transport is adequate to meet the need of inland-containerized cargo movement scored a mean value 3.48 and standard deviation 1.158, Railway is capable to meet the need of inland-containerized cargo movement scored a mean value 3.02 and standard deviation 1.215, ESLSE have enough number of trucks with significant capacity to render effective and efficient MTO scored a mean value 2.94 and standard deviation 1.134, The dry ports, terminals and warehouse are adequate for handling multimodal cargo scored a mean value 2.89 and standard deviation 1.117, The dry ports, terminals and warehouse are well equipped with the necessary equipment and facilities scored a mean value 3.48 and standard deviation 1.158, The dry ports & terminals do have enough space and capacity to accommodate all incoming and outgoing cargo even in peak period scored a mean value 3.02 and standard deviation 1.215 and Since the past seven years the transport related infrastructure for Multimodal transport service is improved scored a mean value 3.37 and standard deviation 1.192

This result implies that all except The inland transport infrastructure is suitable for origin-to-destination containerized cargo movement, ESLSE have enough number of trucks with significant capacity to render effective and efficient MTO, The dry ports, terminals and warehouse are adequate for handling multimodal cargo. However, customers are disagreed or dissatisfied with out of eight mentioned. This means three of listed dimension do not achieve with the desired ESLSE of Multimodal Performance.

4.5.3 Competence factor

According to Fekadu (2013), a literature review reveals that availability of skilled manpower, conducive labor and business environment promotes economic activities. On the most of these criteria, Ethiopian logistics system is found to be poor.

Table4.4: Descriptive Statistics Value of Competence factor

S.N	Variables	N	Mean	Std. Deviation
1	There is enough skill and expertise in ESLSE to operate multimodal transport systems as multimodal transport operator	190	3.28	1.128
2	Logistics knowledge and skill of management and Employee in ESLSE improved over the last seven year	190	3.39	1.042
3	Positive relationship with supervisor satisfactory	190	3.28	1.060
4	Working environment and follow up of job at daily bases Satisfactory	190	2.65	1.091
5	Work group quality between officer or employee Satisfactory	190	2.65	1.091
	Valid N (list wise)	190		
	Grand Mean/ Grand Standard Deviation		3.05	1.052

Source: Own Survey, 2019

Table4.5 above shows mean score and standard deviation the five items of Competence dimension of performance of multimodal transport service. According the table result above, there is enough skill and expertise in ESLSE to operate multimodal transport systems as multimodal transport operator had been given a mean score value 3.28 and standard deviation value 1.128, Logistics knowledge and skill of management and Employee in ESLSE improved over the last seven year had been given a mean score value equal to 3.39 and standard deviation value 1.042, Positive relationship with supervisor satisfactory had been given a mean score value equal to 3.28 and standard deviation value 1.060, Working environment and follow up of job at daily bases Satisfactory had been given a mean score value equal to 2.65 and standard deviation value 1.091 and Work group quality between officer or employee Satisfactory had been given a mean score value equal to 2.65 and standard deviation value 1.091.

Therefore, from the result we can conclude that Competence dimension of performance of multimodal transport service fall between agree and neutral about the service provided by the Ethiopian Shipping and Logistic Enterprise in Djibouti and Kality Dry port starting fulfilling detail Procedure and all requirements for register in Addis Ababa at the head office.

4.5.4 Timeliness factor

According to World Bank (2015), a literature review indicates that timeliness of shipments in reaching destination measures how reliably shipments meet the promised delivery times. More reliable delivery will lower transit time of transport from origin to destination and will enable a greater control of costs, schedules and cargo safety.

Table4.5:-Descriptive Statistics Value of Timeliness factor

S.N	Variables	N	Mean	Std. Deviation
1	Shipments are coming with minimum process time in Djibouti and reasonable transportation time than ever	190	2.92	1.066
2	shipments reach designated dry ports within the scheduled	190	2.84	1.013
3	Cargo handling time in dry port is short and provided easily with acceptable waiting time	190	2.95	1.040
4	The customer received their shipment within the free time from designated dry ports	190	3.11	.965
5	Since the past seven years the multimodal transport service on meeting scheduled or expected delivery time is improved	190	3.32	1.101
6	The ESLSE on meeting scheduled or expected delivery time is satisfactory	190	3.24	1.128
	Valid N (list wise)	190		
	Grand Mean/ Grand Standard Deviation		3.06	1.052

Source: Own Survey, 2019

Table4.6 above result shows that the Timeliness dimensions of performance of multimodal transport service, the statement Shipments are coming with minimum process time in Djibouti and reasonable transportation time than ever scored a mean value 2.92and standard deviation value 1.066, shipments reach designated dry ports within the scheduled scored a mean value 2.84and standard deviation value 1.013, Cargo handling time in dry port is short and provided easily with acceptable waiting time scored a mean value 2.95and standard deviation value 1.040, The customer received their shipment within the free time from designated dry ports scored a mean value 3.11and standard deviation value .965, Since the past seven years the multimodal transport service on

meeting scheduled or expected delivery time is improved scored a mean value 3.32 and standard deviation value 1.101 and The ESLSE on meeting scheduled or expected delivery time is satisfactory a mean value 3.24 and standard deviation value 1.128

The result indicated that Timeliness dimensions of performance of multimodal transport service are agreed and satisfied specifically on The customer received their shipment within the free time from designated dry ports, Since the past seven years the multimodal transport service on meeting scheduled or expected delivery time is improved and The ESLSE on meeting scheduled or expected delivery time is satisfactory. However, out of this dimensions Shipments are coming with minimum process time in Djibouti and reasonable transportation time than ever, shipments reach designated dry ports within the scheduled, and Cargo handling time in dry port is short and provided easily with acceptable waiting time are neutral. This implies that the majority of the customer is not received their container from the designated dry port within the free time (within 6 days of arrival). As per the information obtained from interview and annual report of ESLSE the average dwelling time at dry port is 59 days. ESLSE Annual Bulletin (2018).

4.5.5 Competition factor

According to Islam (2005), a literature review shows that if there is not port and terminal competition, the quality of services is restricted and transit time and transport costs increased. On the other hand, the inland transport market is virtually enjoying an effective competitive regime, which is free from government restrictive regulation

Table4.6:-Descriptive Statistics Value of Competition factor.

S.N	Variables	N	Mean	Std. Deviation
1	The charges being requested for dry port, terminal and warehouse service are reasonable and competitive	190	2.99	.929
2	the Multimodal transport service is competitive in terms of rendering quick and quality service with reasonable price	190	2.00	1.039
3	Container Demurrage is competitive and fair.	190	2.10	1.042
4	Container clearing and maintenance is competitive and fair	190	2.10	1.042
5	perceived changes with feedback from an advice customer/flexibility	190	3.14	1.032
	Valid N (list wise)	190		
	Grand Mean/ Grand Standard Deviation		2.47	1.017

Source: Own Survey, 2019

According to the table4.7 above result, for the statement when you have a problem, the charges being requested for dry port, terminal and warehouse service are reasonable and competitive scored a mean value 2.99and standard deviation value .929, the Multimodal transport service is competitive in terms of rendering quick and quality service with reasonable price scored a mean value 2.00and standard deviation value 1.039, Container Demurrage is competitive and fair scored a mean value 2.10and standard deviation value 1.042, Container clearing and maintenance is competitive and fair a mean value 2.10and standard deviation value 1.042,and perceived changes with feedback from an advice customer/flexibility a mean value 3.14and standard deviation value 1.032.The Competition dimension of the Multimodal transport service mean value indicated that all items or variables show below the neutral level. This shows almost all customers are disagree with the Competition dimension of the Multimodal transport service of the ESLSE. except perceived changes with feedback from an advice customer/flexibility is agree Thus, the implication shows the majority of customers are not satisfied with the monopolistic privilege of the government owned enterprise ESLSE since additionally the only monopolistic State Owen operator of MTO which used FOB

4.5.6 Tracking and Tracing factor

According to AHM and Helo (2011), a literature review reveals that without tracking system it is almost impossible to find out delivered items and often considered as lost or stolen item that causes business losse(Selam.H(2017).

Table4.7:-Descriptive Statistics Value of Tracking and Tracing factor

S.N	Variables	N	Mean	Std. Deviation
1	Tracking and Tracing shipment is supported by improved computerized system	190	2.91	1.027
2	ESLSE provides information on the location /where a bouts of shipment or tracking information	190	2.26	1.030
3	Cargos are easily located in identifiable way in dry ports and terminal	190	3.05	1.004
4	ESLSE provide arrival notification to its customer	190	3.46	1.067
5	Since the past seven years the ability to track and trace shipment is improved	190	3.38	1.031
6	ESLSE performance on providing appropriate tracking and tracing service is satisfactory	190	2.26	1.031
7	The multimodal transport operation are well managed and efficient	190	2.23	1.029
	Valid N (list wise)	190		
	Grand Mean/ Grand Standard Deviation		2.79	1.031

Source: Own Survey, 2019

Table4.8 above result shows that the Timeliness dimensions of performance of multimodal transport service, the statement Tracking and Tracing shipment is supported by improved computerized system scored a mean value 2.91and standard deviation value 1.027, ESLSE provides information on the location /where a bouts of shipment or tracking information scored a mean value 2.26and standard deviation value 1.030, Cargos are easily located in identifiable way in dry ports and terminal a mean value 3.05 and standard deviation value 1.004, ESLSE provide arrival notification to its customer a mean value 3.46and standard deviation value 1.067, Since the past seven years the ability to track and trace shipment is improved a mean value 3.38 and standard deviation value 1.031, ESLSE performance on providing appropriate tracking and tracing service is satisfactory a mean value 2.26 and standard deviation value 1.030,and The multimodal transport operation are well managed and efficient satisfactory a mean value 2.23 and standard deviation value 1.029.

The result shows that Tracking and Tracing dimensions of performance of multimodal transport service are agreed on Cargos are easily located in identifiable way in dry ports and terminal, ESLSE provide arrival notification to its customer and since the past seven years the ability to track and trace shipment is improved. Though , Tracking and Tracing shipment is supported by improved computerized system, ESLSE provides information on the location where a bouts of shipment or tracking information, ESLSE performance on providing appropriate tracking and tracing service is satisfactory, and The multimodal transport operation are well managed and efficient are neutral.

4.6 Comparing Central Tendency and Dispersion result of each Independent Factors;-

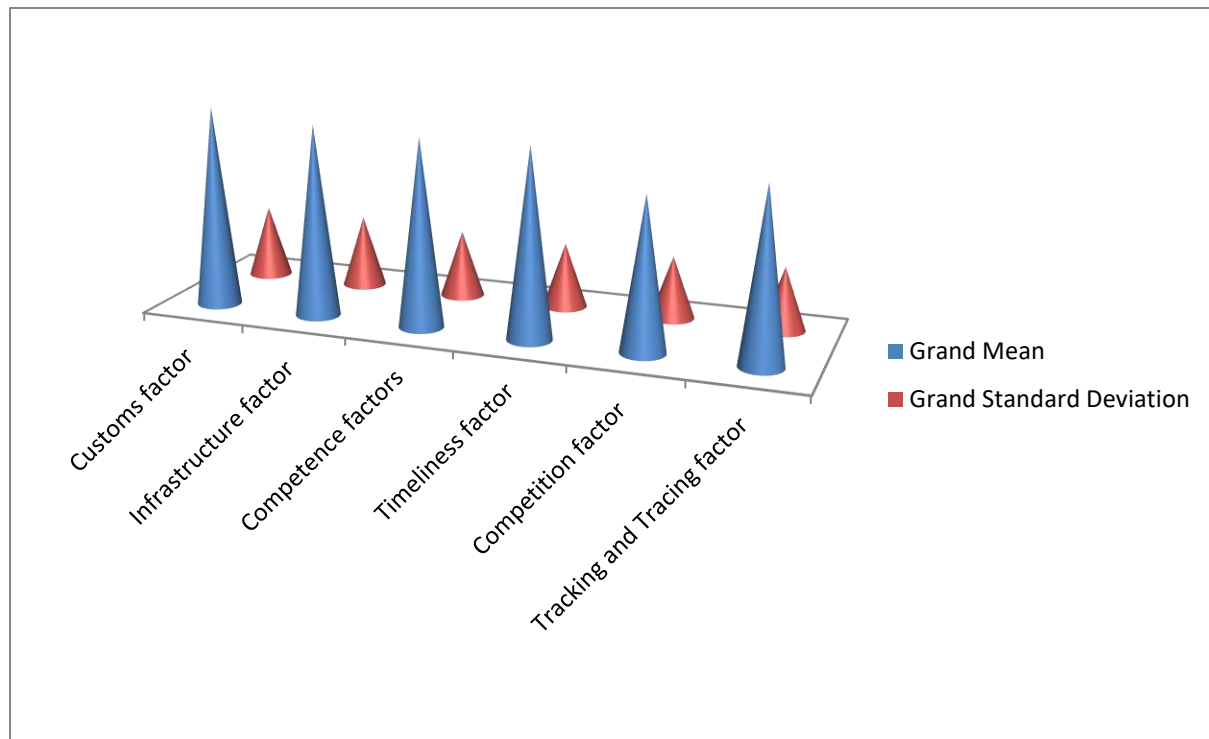
From the respondent as mentioned the frequency of imported cargo types was containerized 71,Breck Bulk 18,Liquid Bulk 24,RORO 33,Steal 29 from out of 190 returned sample size which are affect the central tendency of the factors. Customs factor, Infrastructure factor, Competence factors, Timeliness factor, Competition factor and Tracking and Tracing factor are factors that affect Performance of Multimodal operation Service, and this does not mean that all factors are equally affect .In relatively of each other the Performance of the business. The following table clearly compares the overall impact of all key factors discussed in detail above.

Table4.8:-Comparison of the major factors

S.N	DESCRIPTIVE STATISTICS			Rank of Factors
	Factors	Grand Mean	Grand Standard Deviation	
1	Customs factor	3.27	1.177	1 st
2	Infrastructure factor	3.11	1.166	2 nd
3	Competence factors	3.05	1.082	4 rh
4	Timeliness factor	3.06	1.052	3 rd
5	Competition factor	2.47	1.017	6 th
6	Tracking and Tracing factor	2.79	1.031	5 th

Source: Survey Findings, SPSS 2019

Figure4.4:- statistical representation of major factors Grand mean and Grand standard deviation



Source: Survey Findings, SPSS 2019

This is revealed that As it can be compared the above factors, Custom factors and Infrastructure factors are the series factors that affect the performance of Multimodal transport service activities at a selected area of study, followed by Timeliness factor, Competence factor, Tracking and Tracing factor factors, and Competition factor .which were justify overall coordination of stack holder relatively of custom and infrastructure other relatives independent variable parameters mentioned in different literature as follows.

According to Debela (2013) “Ethiopian logistics system is characterized by poor logistics management system and lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage. This coupled with lack of sea port resulted in poor linkage of producers (farmers) to the consumers (market) and non-competitiveness of Ethiopian goods on global market, which compromised livelihood of the people and economy of the country. There is a very high rate of traffic accident (first in the world) and congestion in cities and at city inlets/outlets to which freight vehicles contribute significantly He

recommended that efficient and effective logistics system needs to be put in place to solve the socio-economic problems and there is an urgent need for research on the logistics gap identified, and human resource needs in freight transport and logistics needs of the country”

4.7 Average Cargo waits and took starting from Djibouti

Table4.9:-Average cargo wait at Djibouti

	Frequency	Percent	Valid Percent	Cumulative Percent
<10	12	6.3	6.5	6.5
11-15	68	35.8	37.0	43.5
>16	110	57.9	56.5	100.0
			100.0	
Total	190	100.0		

Source Own Survey, 2019

As shown on the above table4.10, 56.5 percent above 16 days, 37 percent is between 11 up to 15 days,6.5percent is less than 10 days. This percentage implies, most of the respondent is above 16days.

This possible to conclude that, Containerized cargos were not taken from Djibouti port with the specified grace period. Increase in the dwelling time of cargo which cause to the payment of unnecessary extra storage cost if cargo is not taken within 8 days which is paid in terms US dollar. According to recent operational Statistical Bulletin of report ESLSE (2018) container dwelling time at Djibouti port was 9 up to 11 days.

4.8 Average Cargo waits and took starting from Dry Port

Table4.10:Average cargo wait at Dry ports

	Frequency	Percent	Valid Percent	Cumulative Percent
<40	33	17.4	17.6	17.6
41-45	77	40.5	40.0	58.5
>46	80	42.1	42.4	100.0
			100	
Total	190	100.0		

As shown on the above table 4.11 , 42.4 percent above 46 days, 40 percent is between 41 up to 45 days,17.6percent is less than 10 days. This percentage implies, most of the respondent is above 46days.

From the result we can conclude that average transit time of cargo at dry port was 46 days which is greater than the promised average transit time of 40 days. This also infers recent operational Statistical Bulletin of report ESLSE (2018) container dwelling time of cargo at dry port was 43.4 days. In general, the increase in dwelling time of cargo will charge container demurrage for each of days 30 days waiting time. This will increase the overall cost multimodal transport.

4.9 Purpose of stake Holders on Multimodal transport operation service

According to Ford and Håkansson (2011), every business is relationships because, all companies need other companies' resources and skills to operate their business, without relationships it cannot be produced and deliver the products. It is emphasized by Partanen and Möller (2012), in order to offer the best possible product or service to customers, it is significant for the firm to co-operate within a network Therefore, this all will be done through the relationships between the company and its suppliers, development partner, customers. Hence, in order to deeply find out the researcher had been identified and interested on coordination and integration of stake holder as one of research gaps used. Due to the delaying of the Cargo at Djibouti and Dry port. Before transferring the cargo, Stake holders also contribute there Owen overall effect of delay cargo for discharging and releasing to the customer due to their complex internal working operational Procedure. For the ease of research; researcher identified some of external stake holders which work very closely within the organization (source; researcher Observation of ESLSE daily job commencement at dry port).purpose of External stake holders are those who work controlling and checking before the cargo discharged from Djibouti and at Dry Port .Ethiopian Revenues and custom Authority(ERCA) purpose in Multimodal service at Dry port and providing effective tax and customs Administration and sustainability in revenue collection all the import cargo before enter into the country ,Drug Administration and Control Authority(DACA) associated with drug Any substance or mixture of substances or medical equipment or supplies, used for human and animal health care to controlled poisoned ,chemical substance, and radioactive pharmaceutical before entering the country, Ethiopian Road Authority(ERA) purpose is controlling vehicle speed limits, vehicle year of

manufacturing and types of engine controlled as per standards of the procedures of the country ,Quality and Standard Authority of Ethiopia purpose(QSAE) is testing the most common of conformity assessment it can include other activity like measure and calibrate like steel profile cargo . There for, those complexity and extended paired of time Cause for importers is unable to use its cargo grace time and incurs additional expense to customer as shown above proof that Increase the average dwelling time of imported containerized goods at the dry port to not attained the standard lead Average time for Cargo delivery and waited long time at Dry Port. One recent example of such a coordination issue is the case of the Ethiopian Maritime Affairs Authority (EMAA), which prepared a directive, for the approval by the Ministry of Trade, to penalize traders that do not collect their items within 45 days. However, the recent offer by ESLSE for traders to collect their goods for free does not tally with this tendency. Hence, no one knows which directive is valid at a given point in time. This creates confusion among traders and their relationship with the various logistics agencies. It also indicates the potential arbitrariness of handling the trade logistics problem and coordination failure among ESLSE, EMAA, and Ministry of Trade. (World Bank Report, 2013)

4.10 Inferential Analysis Part:-

This study needed to establish relationship between; the six factors that affecting the performance of Multimodal transport service, as well the relationship of independent variables with the dependent variable which is performance. The inferential statistics analyses aimed to reach conclusions are drawn and decisions are made from the results of research hypothesis.

4.10.1 Correlation and Regression Analysis

According to Julie (2005) Correlation coefficient is a measure of relationship (association) and strength between two variables. The correlation coefficient ranges between -1 and 1. If the two variables are in perfect positive linear relationship, the correlation coefficient will be 1 and if they are in perfect negative (inverse) relationship, the correlation coefficient will be -1. The correlation coefficient is 0 (zero) if there is no linear relationship between the variables.

A low correlation coefficient (r), between 0.1 and 0.29, suggests that the relationship between the two variables is weak or non-existent. If r is between 0.3 and 0.49, the relationship is moderate and

a high correlation coefficient, i.e. $r > 0.5$, indicates a strong relationship between the variables. The direction of the dependent variables change depends on the sign of the coefficient. If the coefficient is a positive number, then the dependent variable will move in the same direction as the independent variable and if the coefficient is negative, then the dependent variable will move in the opposite direction of the independent variable.

In this study, Pearson's correlation coefficient is used to find out the relationship of Custom, Infrastructure, Competence, Timeliness, Competition, Tracking & Tracing with Performance of Multimodal Transport Service (Independent variable & dependent variable). The results of correlation coefficient may be interpreted as follows according to researcher data respondent. First Spearman's Rho would be testified in order to identify the relation of independent variable.

Table 4.11; - The correlation matrix between Independent Variables

SPEARMAN'S RHO		CORRELATION MATRIX						P M
		Custom	Infrast.	Compt.	Timelin.	Comp.	Trk&Tr	
Custo	Correlation coefficient	1.000	.360**	.253**	.316**	.169**	.333**	.899**
	Sig. (2tailed)	.	.000	.000	.000	.000	.000	.000
	N	190	190	190	190	190	190	190
Infras	Correlation coefficient	.360**	1.000	.088**	.299**	.231**	.311**	.894**
	Sig. (2tailed)	.000	.	.000	.000	.000	.000	.000
	N	190	190	190	190	190	190	190
Comp	Correlation coefficient	.253**	.088**	1.000	.075**	.158**	.099**	.889**
	Sig. (2tailed)	.000	.000	.	.000	.000	.000	.000
	N	190	190	190	190	190	190	190
Timel	Correlation coefficient	.316**	.299**	.075**	1.000	.215**	.424**	.889**
	Sig. (2tailed)	.000	.000	.000	.	.000	.000	.000
	N	190	190	190	190	190	190	190
Comp	Correlation coefficient	.168**	.231**	.156**	.215**	1.000	.266**	.884**
	Sig. (2tailed)	.000	.000	.000	.000	.	.000	.000
	N	190	190	190	190	190	190	190
Trak&	Correlation coefficient	.333**	.311**	.099**	.424**	.266**	1.000	.884**
	Sig. (2tailed)	.000	.000	.000	.000	.000	.	.000
	N	190	190	190	190	190	190	190
PM.	Correlation coefficient	.899**	.894**	.889**	.889**	.884**	.884**	1
	Sig. (2tailed)	.000	.000	.000	.000	.000	.000	.
	N	190	190	190	190	190	190	190

** . Correlation is significant at the 0.01 level (2-tailed). **Source: Survey Findings, SPSS 2019**

As we can see from above table there is no strong pair-wise correlation between Independent Variables. As a rule of thumb, Bryman and Cramer (1999,) stated that the independent variables that show a relationship at or in excess of 0.80 suspected of exhibiting multi co-linearity. In this study as shown in table 13 below, the relationship is equals or exceeds spearman correlation coefficients of 0.80. Finally the result observed form the table is generally indicates that the correlation coefficients for the relationships between independent variables are linear and positive correlation coefficients.

Table4.12:- The relationship between independents variables and Dependent Variables

		Performance of Multimodal
Customs	Pearson Correlation	0.899**
	Sig. (2-tailed)	0.000
	N	190
Infrastructure	Pearson Correlation	0.894**
	Sig. (2-tailed)	0.000
	N	190
Competence	Pearson Correlation	0.889**
	Sig. (2-tailed)	0.000
	N	190
Timeliness	Pearson Correlation	0.889**
	Sig. (2-tailed)	0.000
	N	190
Competition	Pearson Correlation	0.884**
	Sig. (2-tailed)	0.000
	N	190
Tracking and Tracing	Pearson Correlation	0.886**
	Sig. (2-tailed)	0.000
	N	190

** . Correlation is significant at the 0.01 level (2-tailed). **Source: Survey Findings, SPSS 2019**

The table justify in the aboveTable4.12 that, the relationship between the selected variables and the performance of Multimodal operation service for a sample of 190 respondent of customer registered in the head office at Addis Ababa (but the target)in those who wish to collects the cargo at Modjo and kality dry port specifically. Findings from the correlations in table indicate the following results:-

- ❖ There is a strong positive significant correlation between Custom and the performance of Multimodal operation service ($r=0.899$, $p < .01$) which are statistically significant at 99% confidence level of importer which are engaged in Containerized cargo, Break Bulk, RoRo, Liquid Bulk, Dry Bulk and Steal profile.
- ❖ There is a strong positive significant correlation between Infrastructure and the performance of Multimodal operation service ($r=0.894$, $p < .01$) which are statistically significant at 99% confidence level of importer which are engaged in Containerized cargo, Break Bulk, RoRo, Liquid Bulk, Dry Bulk and Steal profile.
- ❖ There is a strong positive significant correlation between Competence ($r=0.889$, $p < .01$), Timeliness and performance of Multimodal operation service ($r=0.889$, $p < .01$)
- ❖ Competition and performance of Multimodal operation service ($r=0.884$, $p < .01$) which are statistically significant at 99% confidence level of importer which are engaged in Containerized cargo, Break Bulk, RoRo, Liquid Bulk, Dry Bulk and Steal profile.
- ❖ There is a strong positive significant correlation between Tracking & Tracing and performance of Multimodal operation service ($r=0.886$, $p < .01$) which are statistically significant at 99% confidence level of importer which are engaged in Containerized cargo, Break Bulk, RoRo, Liquid Bulk, Dry Bulk and Steal profile.

Generally From this we can conclude that according to the collected data there is statistically significant (at $P < 0.05$) positive relationship between Custom, Infrastructure, Competence, Timeliness, Competition, Tracking & Tracing, and performance of Multimodal operation service at Ethiopian Shipping and Logistic Service Enterprise which are register in Addis Ababa whose Cargo agreed to transport Modjio dry port and Kality dry port there for the sample size distributed both of dry port. The next step is to test the assumption to find out step by step multiple linear regression analysis in ESLSE.

4.10.2 Testing assumptions of multiple linear regression

According to Julie (2005) before proceeding to multiple regressions analysis, first the researcher has to check the following assumptions such as sample size, outliers, normality, linearity, multicollinearity and singularity, and found they were not a problem for the researcher. Then the researcher proceeds to the regression analysis

4.10.3 Multicollinearity Test

Multicollinearity is refers to the relationship among the independent variables. Multicollinearity exists when the independent variables are highly correlated ($r=.9$ and above) (Julie, 2005)

Table4.13 .Multicollinearity Statistics.

Model	Collinearity Statistics	
	Tolerance	VIF
CUSTOM	.747	1.339
INFRASTRUCTURE	.797	1.255
COMPETENCE	.905	1.105
TIMELINESS	.744	1.343
COMPETITION	.870	1.150
TRACKING & TRACING	.716	1.397

Source: Own Survey, 2019

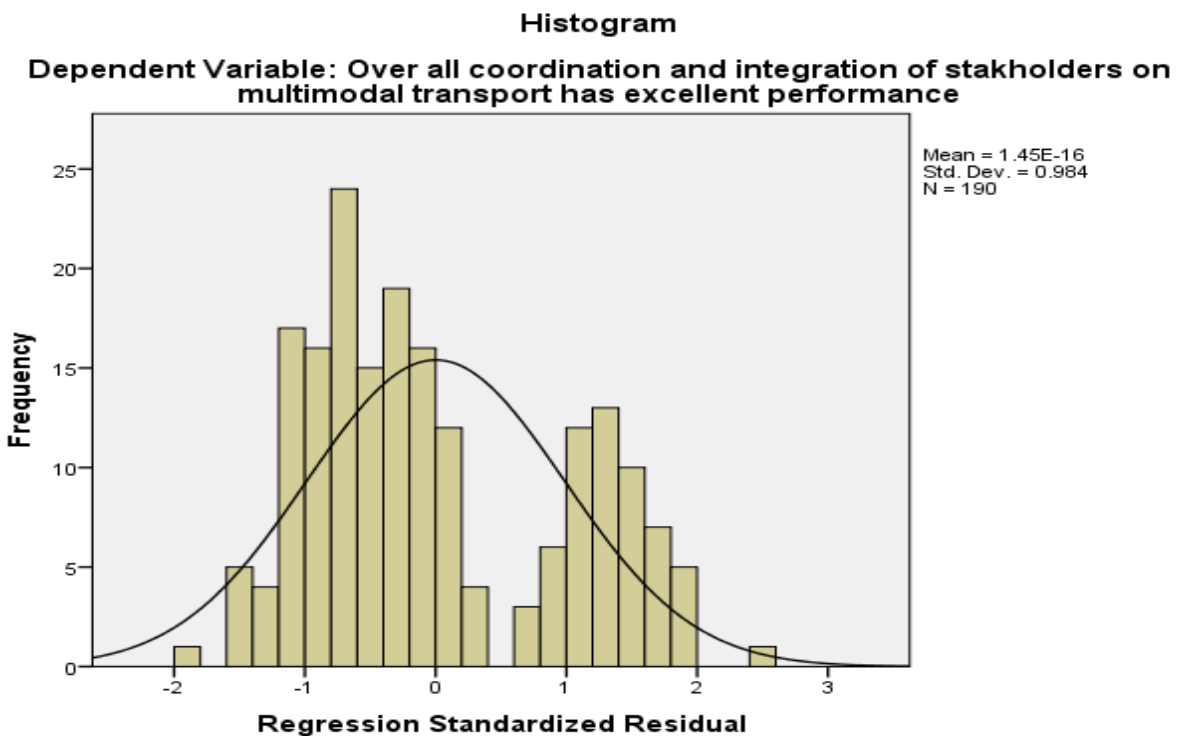
According to Julie (2005) to check multicollinearity effect two things should be checked Tolerance and VIF from the coefficient table. If the value of Tolerance is very small (less than .10), it indicates that the multiple correlation with other variables is high, suggesting the possibility of multicollinearity. The second value given is the VIF (Variance inflation factor), which is just the inverse of the Tolerance value (1 divided by Tolerance). If VIF values shows above 10 would indicating multicollinearity. the value of VIF does not exceed 10 and the value of tolerance is not

below 0.1. Therefore, it indicates that there is no multicollinearity among the predictor variables and the study does not violate the assumption.

4.10.4 Test of Normality

The distribution of scores on the dependent variable should be normal describing a symmetrical, bell-shaped curve, having the greatest frequency of scores around the mean, with smaller frequencies towards the extremes. For this research, the visualized histogram indicates that data used in the study is normally distributed and therefore it has fulfilled the assumption

Figure 4.5:-Normality of bell shape

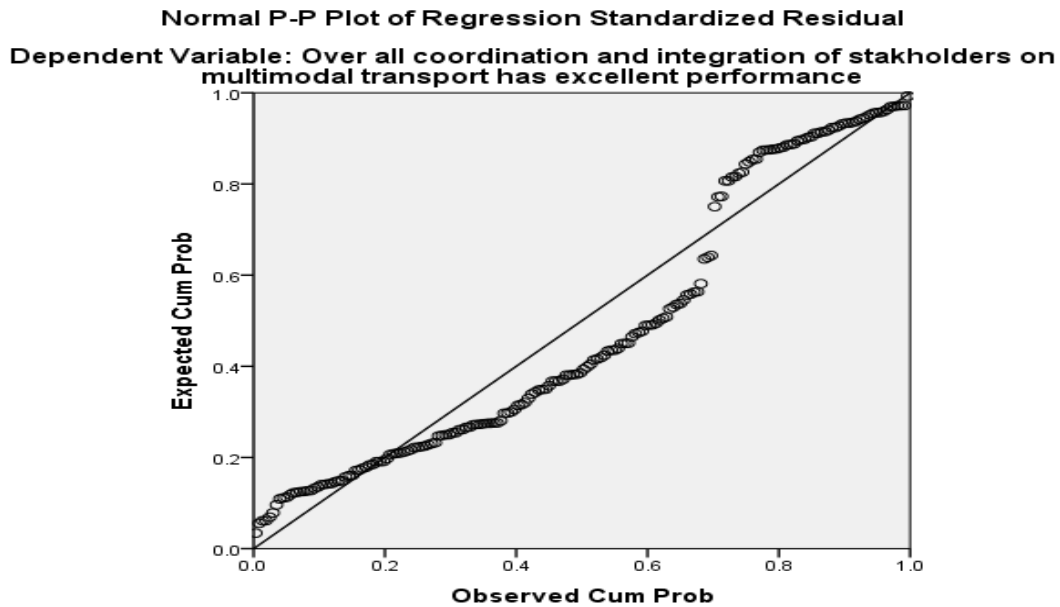


Source: Own Survey, 2019

4.10.5 Test of linearity

Linearity assumption of multiple regressions was tested using scatter plot test (Kothari, 2004) and it was found that there is linear relationship between independent and dependent variables. According to the linearity result, the distributions of residuals are near to the mean zero.

Figure 4.6:-Linearity test



Source: Survey result, 2019

Therefore, based on the above result of assumptions multicollinearity, normality, linearity, outlier effect, missing data are not a problem for this study and we can proceed to multiple linear regression analysis.

4.10.6 Multiple Regression Analysis

Regression analysis is a statistical measure that attempts to determine the strength of the relationship between one dependent variable and a series of other changing variables (known as independent variables). More specifically, regression analysis helps one understand how the typical value of the dependent variable (criterion variable) changes when any one of the independent variables is varied, while the other independent variables remain constant.

For the purpose of determining; TRACKING&TRACING, COMPETENCE, COMPETITION, INFRASTRUCTURE, CUSTOM, TIMELINESS. To carry out this the researcher the extent to which overall Multimodal transport service (depends) on the independent variables such as used multiple regression analysis models below table

Table4.14:- Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.806 ^a	.595	.583	0.51496	.595	8.430	6	625	.000

a. Predictors: (Constant), TRACKING&TRACING, COMPETENCE, COMPETITION, INFRASTRUCTURE, CUSTOM, TIMELINESS

b. Dependent Variable: Over all coordination and integration of stakeholder's on multimodal transport has excellent performance

Source: Own Survey, 2019

Table above indicates R, R Square, Adjusted R Square and standard error of the estimate. Further, it lists the independent variables that are entered in to the regression model. R (.806) is the correlation of independent variables with the dependent variable. The model summary, above shows the R Square is .595 This tells us how much of the variance in the dependent variable (Performance of Multimodal operation service in the Ethiopian Shipping and Logistic Service Enterprise) are explained by the independent variables (as Custom, Infrastructure, Competence, Timeliness, Competition and Tracking & Tracing). This means that our model (independent variables) explains 59.5% of the variance in the performance of Multimodal operation service (dependent variable)

4.10.7. ANOVA

Table4.15:- ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	39.457	6	8.076	8.430	.000 ^b
	Residual	40.312	625	1.480		
	Total	79.769	631			

a. Dependent Variable: Over all coordination and integration of stakeholder's on multimodal transport has excellent performance

b. Predictors: (Constant), TRACKING&TRACING, COMPETENCE, COMPETITION, INFRASTRUCTURE, CUSTOM, TIMELINESS

Source: Survey result, 2019

From the above ANOVA table, it has been determined that independent variable dimensions have significant effect on Performance of Multimodal operation Service at $F = 8.430$ and Sig. is $.000$. Hence, the result shows that the alternative hypothesis — independent variable dimensions have significant effect on Performance of Multimodal operation Service in ESLSE is accepted which leads to rejection of the null hypothesis. Overall the model is significant to carry out regression analysis.

4.10.8 Coefficients for Performance of Multimodal operation Service dimensions

Table4.16:- Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.234	.526		.445	.002
CUSTOM	.065	.027	.172	2.115	.036
INFRASTRUCTURE	.056	.023	.011	.144	.000
COMPETENCE	.022	.029	.002	.023	.000
TIMELINESS	.029	.029	.003	.033	.000
COMPETITION	.001	.027	.179	2.387	.018
TRACKING&TRACING	.003	.027	.089	1.075	.000

a. Dependent Variable: Performance of Multimodal operation Service

Source: Survey result, 2019

- The standardized beta coefficient column shows that, the contribution of an individual variable to the model or the dependent variable
- The unstandardized coefficients B column, gives us the coefficients of the independent variables in the regression equation including all the predictor variables as indicated below.

Hence Unstandardized coefficient B column is used for this study purpose as standards used in literature. The regression function can be derived from the above table as follows: - The model of multiple linear regressions is presented below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon_i$$

$$Y = 0.234 + .065 (\text{Custom}) + .056 (\text{Infrastructure}) + .022 (\text{Competence}) + .029 (\text{Timeliness}) + .001 (\text{Competition}) + .003 (\text{Tracking \& Tracing}) + \epsilon_i$$

Where: Y is Performance of Multimodal operation Service and X1, X2, X3, X4, X5 and X6 are Custom, Infrastructure, Competence, Timeliness, Competition and Tracking & Tracing respectively.

The result of this study implied that all dimensions (Custom, Infrastructure, Competence, Timeliness, Competition and Tracking & Tracing) have positive and significant effect on Performance of Multimodal operation Service in Ethiopian Shipping and Logistic Service Enterprise. The highest correlation by the model result shows us multiplying by their coefficient cause to increase Performance of Multimodal operation Service by the same proportion in Ethiopian Shipping and Logistic Service Enterprise. Coefficients of β (beta) showed that Custom was the largest influence on the performance of Multimodal transport service followed by Infrastructure, Timeliness, Competence, Tracking and Tracing and Competition

Table 4.17:- Hypothesis Summary

Hypothesis		Result
Ha1.	Customs of multimodal Transport Operation Service has positive & Significant effect on their Performance.	Accept
Ha2.	Infrastructure of multimodal Transport Operation Service has positive & Significant effect on their Performance.	Accept
Ha3.	Competence of multimodal Transport Operation Service has positive & Significant effect on their Performance.	Accept
Ha4.	Timeliness of multimodal Transport Operation Service has positive & Significant effect on their Performance.	Accept
Ha5.	Competition of multimodal Transport Operation Service has positive & Significant effect on their Performance.	Accept
Ha6.	Tracking and Tracing of multimodal Transport Operation Service has positive & Significant effect on their Performance.	Accept

4.11 Analysis of Open Ended Questions

- **Major problems of overall coordination and integration of stakeholders on performance multimodal transport**

The customers were asked to mention major problems and suggest solutions to improve the overall coordination and integration of stakeholders on the performance of Multimodal

transport service in Ethiopia. The question which builds from the dependent variable part in order to simplify for the respondents of participant if they answered strongly disagree or disagree, they would motivate further to respond Accordingly, the request and the answer is forwarded as follows:-

Please reflect the challenges of multimodal transport service you observed shortly as customer, and How to overcome the challenge on your experience as working with the company? Since the open end question was directly correlated with the respondent of dependent variable that helped the overall magnitude of respondents as below table described. Frequency and percentage of dependent variable directly related with open ended question. If respondent answered likert scale one(1) and likert scale two(2) this was a tactical approach for respondents to find out the real cause of problems and expected to mention their own solution:-

Table4.18:-over all coordination and integration of stake holder on performance of multimodal transport service performance (dependent variable)

S.no	5-likert scale type	Frequency	Valid Percent
1	Strongly disagree	80	42.1
2	Disagree	53	27.9
3	Neutral	2	1.1
4	Agree	54	28.4
5	Strongly Agree	1	0.5
	Total returned	190	100.0

Source: Survey result, 2019

As shown on the above Table, the outcome of 190 respondents the dependent variable (performance of Multimodal Transportation operation service) measured in the likert scale by stating if overall coordination and integration of stakeholders on multimodal transport has excellent performance. Hence, the respondents share there Owen answers, 80% are strongly disagree, 54% agree, 53% are disagree, 2% are neutral, and 1.1% of respondent are strongly agree. As shown from the given respondents the researcher proposed for open ended question for part 4 in the questioner

contributors had given strongly disagree (80%) and disagree(53%) out of 190 respondent. Therefore, more than 50% of respondent had been written some of the bottle necks of overall coordination and integration of stake holder on performance Multimodal Transport operation service. As also computed the percentage of strongly disagree (1) and disagree (2) more than 50% of agree (4) these means based on the respondents were dissatisfied on the performance of multimodal service. World Bank LPI also shows Ethiopia is ranked 126th in 2016 (LPI score is 2.37) and 104th in 2014 (LPI score is 2.59) among 160 countries on overall performance with much improvement from 2007-2012. Besides, Ethiopia's LPI score on the six measures shows that the country is lagging behind the average sub-Saharan Africa and low-income countries. Yet, specific indicators for customs and logistics infrastructure have shown steady improvement during this period but, tracking and tracing, international shipment and in particular timeliness show deterioration compared to previous LPI reports. This is implied by higher logistic cost, longer transit time and poor service reliability, (Ethiopian Maritime Affairs Authority, National Freight Logistics strategy for Ethiopia, 2016; Aklile.M (2017)).However, the respondents issued their own solution accordingly as follows:-

- For convince of the researcher, questioner was Collected for report based on the respondent had given feedback they faced the challenge and there solution and categorized as per researcher independent variable as proposed. Some of Challenges are mentioned from the respondents network connectivity, lack of ICT usage at each level, lack of railway infrastructure, and lack of clear laws and regulations that support the involvement of privately owned service providers, lack of professional workers(employee's knowledge and skill is limited), Poor documentation process and handling, pay extra storage for multi modal operation service ,and also challenge for loading /unloading related activities due to Adequate containers and other port machineries (forklift, terminal tracker, and terminal chassis)
- Over all recommendation of the respondent of their perspective of solution .Since the demand of Multimodal transportation service had been increasing due to growing of importing cargo. Therefore, all stakeholders, customers, the government body should working hand to hand. According to as per procedures and multimodal activities should be supported by online technology. Because the demand of country importing cargo is growing and also adapting new technology improving knowledge human resource is mandatory.

CHAPTER FIVE

5. SUMMERY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the conclusion and recommendation of the researcher. The conclusion of this study is based on the findings and the recommendation part was presented based on the conclusions.

5.1 Summary and key findings

The purpose of this study was to measure the performance of Multimodal Transport operation service in the case of Ethiopian Shipping and Logistic Enterprise. The study was carried out using descriptive research design and a quantitative research approach to collect primary data from customers of ESLSE, out of 228 questionnaires, 190 questionnaires were analyzed using SPSS version 20 to achieve the research objective of this study.

The Descriptive analysis of Performance of Multimodal Transport operation service are analyzed based on Custom, Infrastructure, Competence, Timeliness , Competition, Tracking and Tracing performance part of the service provided by the ESLSE. According to the result obtained from chapter four the researcher was summarized and presented as follows:

On average all respondents or customers are agreed on Custom dimension of performance Multimodal transport of the six items except The existing coordination level between customs officers and ESLSE in all customs dimension scored above the midpoint or the average result fall above the neutral and below agree level. However, customers are disagreed or dissatisfied with the existing coordination level between customs officers and ESLSE. This means coordination level between customs officers do not achieve with the desired ESLSE Multimodal Performance provided by ESLSE at selected dry port which is Modjio and kaliti, related to Infrastructures dimension is imply that all except The inland transport infrastructure is suitable for origin-to-destination containerized cargo movement, ESLSE have enough number of trucks with significant capacity to render effective and efficient MTO, The dry ports, terminals and warehouse are adequate for handling multimodal cargo. Customers are disagreed or dissatisfied with out of eight mentioned. This means three of listed dimension do not achieve with the desired ESLSE of Multimodal Performance, on Competence dimension of performance of multimodal transport service fall between agree and neutral about the service provided by the Ethiopian Shipping and

Logistic Enterprise in Djibouti and Kality Dry port starting fulfilling detail Procedure and all requirements for register in Addis Ababa at the head office; customers are also agree and neutral on the Timeliness dimension service quality provided by ESLSE This implies that the majority of the customer is not received their container from the designated dry port within the free time and related to Competition dimension of the Multimodal transport service mean value indicated that all items or variables show below the neutral level. This shows almost all customers are disagree with the Competition dimension of the Multimodal transport service of the ESLSE. except perceived changes with feedback from an advice customer/flexibility is agree Thus, the implication shows the majority of customers are not satisfied with the monopolistic privilege of the government owned enterprise ESLSE since additionally the only monopolistic State Owen operator of MTO which used FOB, and Tracking and Tracing dimension result shows that performance of multimodal transport service are agreed on Cargos are easily located in identifiable way in dry ports and terminal, ESLSE provide arrival notification to its customer and since the past seven years the ability to track and trace shipment is improved. Though , Tracking and Tracing shipment is supported by improved computerized system, ESLSE provides information on the location where a bouts of shipment or tracking information, ESLSE performance on providing appropriate tracking and tracing service is satisfactory, and The multimodal transport operation are well managed and efficient are neutral.

Additional to above the researcher compare the central tendency and dispersion of each independent factor. How affect performance of Multimodal operation service, and this doesn't mean that all factors are equally affect in relatively of each other the performance of business .Hence, researcher found that Custom factor and infrastructure factor are the series factor that affect the performance of Multimodal transport service, followed by Timeliness factor, Competence, Tracking and Tracing, and Competition factor Computing with their Grand Mean and Grand Standard Deviation.

Purpose of external stake holder working with the multimodal operation service which causes delay if they don't work properly due to complex internal working operational Procedure which affected on grace paired and dwelling time.

The trend of seven consecutive years data showed by using MTO mode of transportation the number of the containers transported by ESLSE from Djibouti to inland ports is highly increasing from 2004 to 2010E.C. This is in line with the increasing the country's import trade at the indicative Year.

In Inferential Analysis the correlation matrix result shows performance of Multimodal Transport operation service (dependent variable) has direct and positive relation with Custom, Infrastructure, Competence, Timeliness, and Competition, Tracking and Tracing dimensions (independent variables). The model summary result depicted that the model (independent variables) explains 59.5% of the variance in performance of multimodal (dependent variable).

Findings also showed that the hypothesis tests between measuring the performance of Multimodal operation service and independent variable dimensions, there is strong evidence to reject the null hypothesis and accepting the alternative hypothesis with 95 % confidence level of significance.

5.2 Conclusions

In conclusion, companies can benefit the complexity of Logistic performance index from the fact of knowing how interpreted performance of Multimodal transport service considering to specific case of the organization. Therefore, the management can use the specific data obtained from the measurement of founding in their strategies and plans. This will help organizations to better understand and approach a priority step by step in order to tackle the problem by giving solution Thus, understanding customer needs will increase the performance of the company by in large.

Based on the findings we can conclude that Custom, Infrastructure, Competence, Timeliness, and Competition, Tracking and Tracing dimensions has positive and significant effect on Performance of Multimodal operation service in Ethiopian Shipping and Logistic and Service Enterprise at the selected Dry port Modjo and kalitiy registers at head office in Addis Ababa.

5.3 Recommendations

In relation to the finding, the researcher came up with the following recommendations. Since Ethiopia is a land locked country Multimodal transport operation service is the key successes to attain international market to the growth of imported cargo. Hence researcher proofed with related theoretical literatures and empirical studies in depth study to determine the exact cause and effect relationships of the factors that impact on service were incorporated with the World Bank Logistics Performance Index (LPI) as used independent variable in the study to provide the intensity of Practical performance of multimodal operation service in Ethiopian Shipping & Logistics Service Enterprise forwarded as follow.

- ESLSE as a multimodal transport operator recommended coordinate and integrate to all stakeholders mentioned with specified planed time in order to achieve the overall performance of multimodal transport service.
- 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 to attain Infrastructure.
- ESLSE is recommended to provide a timely and fundamental capacity building program by upgrading the employee's professional qualification like Babogaya Maritime & Logistics Academy making one of excellence Maritime training in the country to attain competence.
- ESLSE is Implementing modernized technologies such as Electronic Cargo Tracking System in order to provide efficient tracking and tracing service
- ESLSE is recommended to Adjusting not incur additional cost by respecting and committing strongly working with Djibouti government to avoid non value adding customs formalities to pick cargo early as possible within the grace period. To shorten the length of clearance and customs formalities, ESLSE should reduce the number of required documents and procedures at port Djibouti. Dwelling time of cargo should be reduced at Djibouti and Dry Ports. To shorten the dwelling time at Djibouti, the government of Ethiopia should reduce the transit permit process time at Ethiopian customs, customs clearance time at Djibouti and Dry port.

- Ethiopian government, as infrastructure provider, better invest on road, railway, dry port and terminal infrastructure in line with multimodal transport service to ensure efficient and effective performance of multimodal transport service.
- ESLSE is state own operator and Monopolizing the business which Cause hindering the performance of multimodal transport service. Researcher recommends if the company privatized it would be competitive advantage to attain mentioned competition factor.
- Use of railway transport as comparative advantage which may be the efficient and the least cost mode of transport with less logistic problem with respect to inland road transportation to attain over all mentioned factor.
- Equipping the dry ports, terminals and warehouse with highly modernized loading/unloading machineries so that the cargo handling time at the dry ports minimized to attain customs and infrastructure.

5.4 Recommendations for Further Study

Multimodal transport operation service is resent phenomena that still need to be investigated further.it would be beneficial to carry out research that improves the overall performance of multimodal transport system in Ethiopia from a broader perspective. Accordingly, researcher has forwarded perversely.

- Further research is suggested to the impact multimodal transport legislation on the performance of multimodal transport system in Ethiopia (Wubshet.A(2018) incorporated with world bank Lpi complexity of various stake holder involvement would be study further
- The researcher suggested that other researchers to include also export side of Multimodal transportation system.

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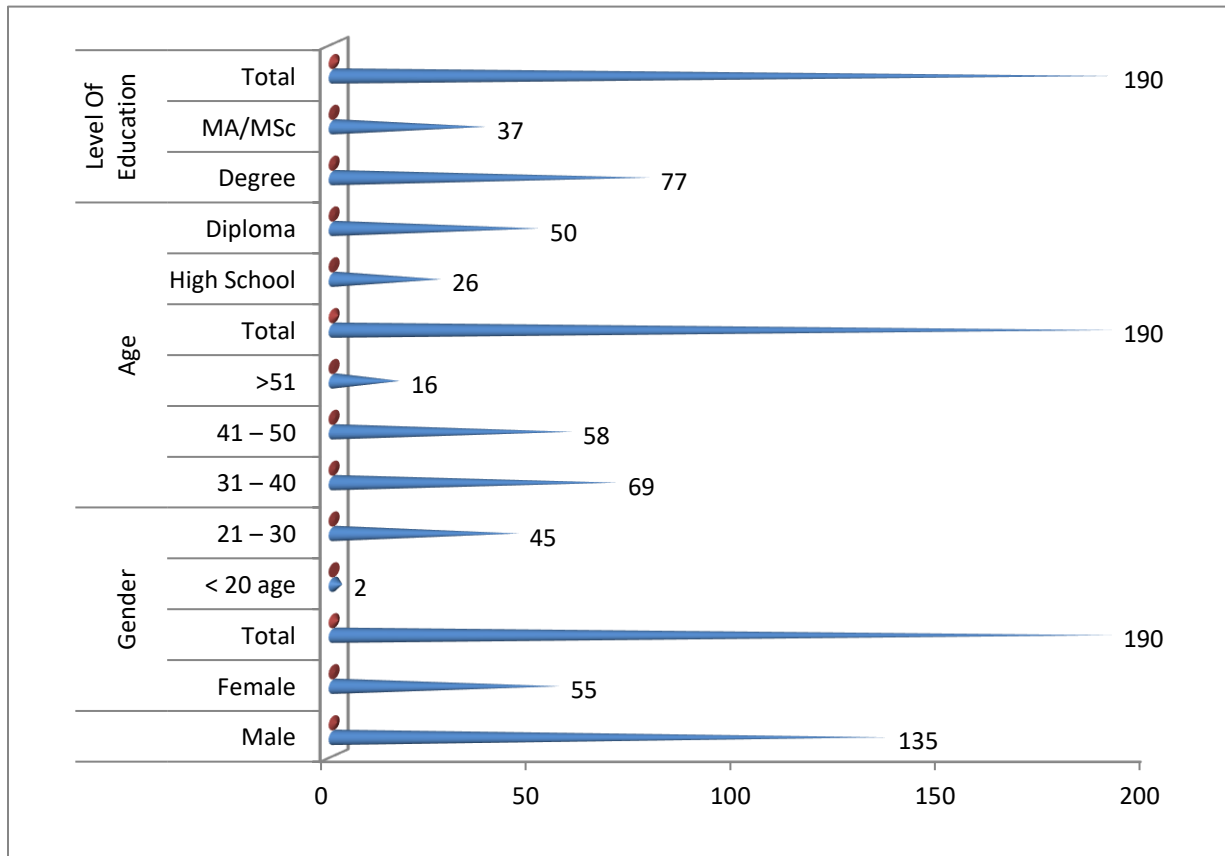
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Appendix

Appendix -1

Statistical Analyses of Gender, Age and Educational Status of Respondents Frequency of Gender ,

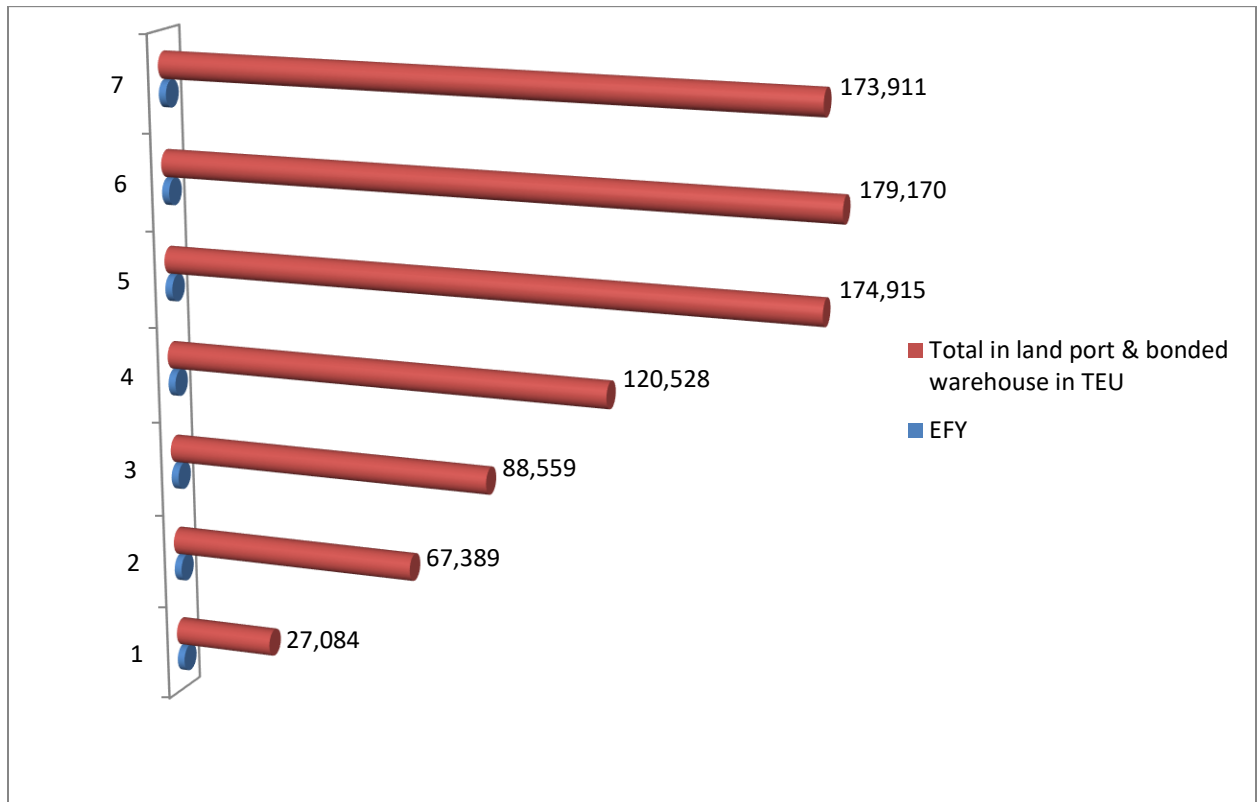
Age



SOURCE;- field survey , 2019

Appendix -2

Total containers forwarded by freight forwarding sector at each year from Djibouti to inland ports and bonded warehouse for the last seven consecutive trends of year transported by multimodal transport service.



SOURCE;- ESLSE

Survey Questionnaire for Customers

St Mary's University School Post graduate Studies

A Survey Questionnaires for research project to be conducted in partial fulfillment of General MBA at St Mary's University

Part1.INTRODUCTION

Dear respondent,

This survey is required to study Factors Affecting the performance of multimodal transport operation service in The Case Of Ethiopian Shipping and Logistics Service Enterprise for imported goods.

Please note that, the information provided will kept confidential and used for academic purposed only. Your cooperation in completing the survey questionnaire by providing quire and reliable information is highly valuable and greatly appreciated. Thanking you in advance for giving your time and sharing experience.

Sincerely,Dawit Ayele Hailu

Instruction

- No need of writing your name.
- For multiple choice questions indicate (√) sign in the appropriate block.
- For likert scale type statements mark (√) sign only once for the given variables

Depending on your level of agreement.

Ref. for #5.Types of Cargo	Examples:-
Containerized Cargo	ISO standard containers, Any Size shipped commodities inside the container
Break Bulk	Oversized and heavy weight equipment
Liquid Bulk	Free flowing liquid e.g, vegetable oil, chemical & refrigerator liquid.
Dry Bulk	Minerals/cement, agriculture product, produces and raw products, grains, iron.
RoRo	Vehicles
Steal	Steal profile in tones.

➤ KEY OPERATIONAL DEFINITION FOR CARGO TYPES

Part 2. GENERAL INFORMATION FOR PARTICIPANTS

1. Gender A. Female B. Male
2. Age A. <20 B. 21-30 C. 31-40 D. 41-50 E. > 50
3. Educational qualification A. High School B. Diploma C. Degree
 D. MA/MSc E. PhD
4. What type of business do you operate:-A. Private Limited Company B. Share Company
 C. Partnership D. Joint Venture E. Governmental
5. Which type of cargo do you import mostly:-A. Containerized Cargo B. Break Bulk
 C. Liquid Bulk D. Dry Bulk E. RoRo (Vehicles) F. Steal
6. How Money years you have worked with Ethiopian shipping and Logistics Service Enterprise
 A. <5 B. 6-10 C. > 10
7. On average How many days your cargo waits and took starting from Djibouti port
 A. < 10 Days B. 11-15 Days C. > 16 Days
- 8 .On average How many days your cargo wait and took starting from Dry port
 A. <40 Days B. 41-45 Days C. > 46 Days

**Part3.Factors Affecting the Performance of Multimodal Transportation
Operation Service (Make tick Mark as √)**

Please indicate your opinion regarding following statements (1.Strongly disagree (SD),
2.disAgree (D), 3.Neutral (N), 4. agree (A), 5. Strongly agree (SA))

9	Multimodal transport service Measurement Indicators for independent variable (factors)	1	2	3	4	5
I. Custom						
1	Customs have developed a system or procedure for multimodal transportation of container.					
2	The custom clearance process for multimodal shipments of container is efficient					
3	All multimodal shipments of container are cleared and delivered as scheduled					
4	The customs clearance procedure for multimodal shipments is transparent.					
5	The customer receive adequate and timely information when regulations of custom change					
6	The existing coordination level between customs offices and ESLSE is strong					
10	Multimodal transport service Measurement Indicators for independent variable (factors)	1	2	3	4	5
II Infrastructure						
1	The inland transport infrastructure is suitable for origin-to destination containerized cargo movement					
2	Road transport is adequate to meet the need of inland- containerized cargo movement					
3	Railway is capable to meet the need of inland-containerized cargo movement.					
4	ESLSE have enough number of trucks with significant capacity to render effective and efficient multimodal transportation service					
5	The dry ports, terminals and warehouses are adequate for handling multimodal cargo					
6	The dry ports, terminals and warehouses are well equipped with the necessary equipment and facilities					
7	The dry ports and terminals do have enough space and capacity to accommodate all incoming and outgoing cargos even in peak periods					
8	Since the past seven years the transport related infrastructure for multimodal transport service is improved					
11	Multimodal transport service Measurement Indicators for independent variable (factors)	1	2	3	4	5
III Competence						
1	There is enough skill and expertise in ESLSE to operate multimodal transport systems as Multimodal transport operator					
2	Logistics knowledge and skill of management and employee in ESLSE improved over the last seven years.					

3	Positive relationship with supervisor					
4	Work environment and follow up of job at daily bases					
5	Work group quality between officer or employee					
12	IV Timeliness					
1	Shipments are coming with minimum process time in Djibouti and reasonable transportation time than ever					
2	Shipments reach the designated dry ports within the scheduled					
3	Cargo handling time in dry port is short and provided easily with acceptable waiting time					
4	The customer received their shipments within the free time from designated dry ports					
5	Since the past seven years the multimodal transport service on meeting scheduled or expected delivery time is improved					
6	The ESLSE on meeting scheduled or expected delivery time is satisfactory					
13	V Competition					
1	The charges being requested for dry port, terminal and warehouse services are reasonable and competitive					
2	The multimodal transport service is competitive in terms of rendering quick and quality service with reasonable price					
3	Container Demurrage is competitive and fair					
4	Container clearing and maintenance is competitive and fair					
5	Perceived Changes with feedback from as advice customer /flexibility					
14	VI Tracking and Tracing					
1	Tracking and Tracing shipment is supported by improved computerized system					
2	ESLSE provides information on the location/where a bouts of shipments or tracking information					
3	Cargos are easily located in identifiable way in dry ports and terminal					
4	ESLSE provide arrival notification to its customer					
5	Since the past seven years the ability to track and trace shipment is improved					
6	ESLSE performance on providing appropriate tracking and tracing service is satisfactory					
7	The multimodal transport operation are well managed and efficient in their service					
15	VII I - Dependent variable- (the level of each factor effect on the Organization in performance of Multimodal transport service operation when):-					
1	Over all coordination and integration of stakeholders on multimodal transport has excellent performance.					

Part 4.

Q1. If your answer for above VII part- is strongly disagree (1) or disagree(2), please reflect the challenges you observed shortly as customer, and How to overcome the challenge on your experience for working with the company?

.....

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ቅድስት ማርያም ዩኒቨርሲቲ
የቢዝነስና ኢኮኖሚክስ የትምህርት ክፍል
የቢዝነስ አስተዳደር ድህረ ምረቃ ፕሮግራም

ክፍል 1: መግቢያ

ውድ የጥናቱ ተሳታፊዎች:-

ይህ መጠይቅ የተዘጋጀው በቅድስት ማርያም ዩኒቨርሲቲ የስራ አመራር ድህረ ምረቃ ት/ቤት ለመመረቂያ ጽሁፍ መስሪያ እንዲሆን ታስቦ ነው። ይህ የዳሰሳ ጥናት በኢትዮጵያ ከውጭ ለገቡ ዕቃዎች የመርከብ እና የሎጂስቲክስ አገልግሎት ድርጅት የብዙኃን ትራንስፖርት አፕሬሽን አገልግሎት(መልቲሞዲያል ትራንስፖርት) አፈፃፀምን የሚመለከቱ ጉዳዮችን ለማጥናት የሚያስፈልጉ መረጃዎችን ለማሰባሰብ ይረዳ ዘንድ ነው ። ጥናቱም ለድህረ ምረቃ ትምህርት ዓላማ ብቻ የሚውል ነው። የእርስዎ ትብብር ለመመረቂያ ጽሁፌ ተጨባጭነት ያለው ድጋፍ የሚያደረግልኝ መሆኑን ከወዲሁ እየገለጸኩ፡ ሁሉንም ጥያቄዎች በመሙላት እንደምትተባበሩኝ በመተማመን፡ ለሚያደርጉልኝ ትብብር በድጋሚ አመሰግናለሁ።

ከትህትና ጋር
ዳዊት አየለ

መመሪያዎች

- በዚህ መጠይቅ ላይ ስም መጻፍ አስፈላጊ አይደለም።
- ለምርጫ ጥያቄዎች ከምርጫው አጠገብ ባለት ክፍት ቦታዎች ይህን ምልክት(√) ያስቀምጡ
- በተሰጡት አማራጮች ውስጥ ምልክቱን (√) አንዱ ቦታ ብቻ ያስቀምጡ

ክፍል አንድ:- የተሳታፊዎች አጠቃላይ መረጃ:

1. ያታ :- ሀ. ወንድ:- ለ. ሴት :-
2. እድሜ ሀ. <20 ለ. 21 - 30 ሐ. 31 - 40 መ. 41 - 50 ሠ. > 50
3. የትምህርት ደረጃ ሀ.ሁለተኛ ደረጃ ለ.ዲፕሎማ ሐ. ዲግሪ መ.ማስተርስ ሠ. ዶክትሬት
4. የተሰማሩበት የስራ መስክ ሀ.የግል ኃላፊነቱ የተወሰነ ኩባንያ ለ.ያጋራ ኩባንያ ሐ.ሽርክና መ.አክሲዮን ማህበር ምንግስታዊ
5. በአብዛኛው የትኛውን ጭነት ነው የሚያስገቡት? ሀ. የታሸገ ጭነት(ማንኛውም መጠን በመያዣው ውስጥ) ለ.የብዙ ጭነት(ተደራራቢ እና ከባድ ክብደት መሣሪያዎች) ሐ.ፈሳሽ ጭነት መ.ደረቅ ጅምላ ጭነት(ማዕድናት) (ተሽከርካሪዎች)
6. ለምን ያህል ጊዜ ከድርጅቱ (ከ ኢባትሎኦድ) ደንበኛ ነዎት ሀ.5 ዓመት በታች ለ6-10 ሐ.ከ 10 ዓመት በላይ

7. በአማካይ ስንት ጭነት ቀናትምን ከጅቡቲ ወደብ ጀምሮ እንደቆየ እና እንደወሰደው ያሳያል ሀ.10 ቀናት በታች ከ6-10 ቀናት ከ.ከ 10 ቀናት በላይ

8. በአማካኝ ጭነትም ስንት ቀናት ያህል እንደቆየ እና ከደረቅ ወደብ እንደወሰደው ሀ.40 ቀናት በታች 41-45 ቀናት ከ 45 ቀናት በላይ

ክፍል ሦስት:-

የባለብዙ ማመላለሻ ትራንስፖርት(መልቲሞዲያል ትራንስፖርት) አፕሬሽን አገልግሎትን አፈፃፀም ላይ ተጽዕኖ የሚያሳድሩ ነገሮች በተመለከተ የተዘጋጀ መጠይቅ:

እባክዎን ለእያንዳንዱ ጥያቄ አማራጮች የርስዎን ስሜት በሚገልጹ ምላሾች ይህን (✓) ምልክት ያስቀምጡ፡-የሥያሜ ቁጥሮች ትርጉምም እንደሚከተለው ነው፡ 1:- በጣም አልሰማምም 2:- አልሰማም 3:- ገለልተኛ ነኝ 4:- እስማማለሁ 5:- በጣም እስማማለሁ

9		1	2	3	4	5
I. ጉምሩክ (Customs)						
1	የጉምሩክ ዕቃዎች የጭነት መጓጓዣ (ትራንስፖርት) ስርዓት / ስርዓትን / አሠራር / ሥርዓት አዳብረዋል ::					
2	ለበርካታ ዕቃዎች ጭነት የጉምሩክ ማጣሪያ ሂደት ውጤታማ ነው					
3	ሁሉም ብዙ የጭነት መጫኛ ዕቃዎች በታቀደው መሠረት ይጸዳሉ እና ይላካሉ					
4	ለበርካታ ዕቃዎች ጭነት የጉምሩክ ማጣሪያ አሰራር ግልፅ ነው ::					
5	የጉምሩክ መመሪያዎች በሚቀየሩበት ጊዜ ደንበኛው በቂና ወቅታዊ መረጃ ይቀበላል					
6	በጉምሩክ ጽ / ቤቶች እና በ ኢባትሎአድ (ESLSE) መካከል አሁን ያለው ቅንጅት ደረጃ ጠንካራ ነው					
II መሰረተ ልማት (Infrastructure)						
1	የአገር ውስጥ የትራንስፖርት መሰረተ ልማት ከመነሻ-ለማጓጓዣ ጭነት እንቅስቃሴ ተስማሚ ነው					
2	የመንገድ መጓጓዣ በመሬት የሚመጡ የጭነት እንቅስቃሴ ፍላጎትን ለማሟላት በቂ ነው					
3	የባቡር ሐዲድ የጭነት እንቅስቃሴ የባህር-ጭነት ፍላጎትን ያለው ለማሟላት የሚችል ነው					
4	ውጤታማ እና ቀልጣፋ ባለብዙ ቁጥር ትራንስፖርት አገልግሎት ለመስጠት ኢባትሎአድ (ESLSE) በቂ ብዛት ያላቸው የጭነት መኪናዎች አሏቸው					

5	ደረቅ ወደቦች ፣ ተርሚናሎች እና መጋዘኖች ባለብዙ ደረጃ ጭነት ለመያዝ በቂ ናቸው						
6	ደረቅ ወደቦች ፣ ተርሚናሎች እና መጋዘኖች አስፈላጊ በሆኑ መሣሪያዎች እና መገልገያዎች በሚገባ የታጠቁ ናቸው						
7	ደረቅ ወደቦች እና ተርሚናሎች በጭነት ጊዜያት ውስጥ ሁሉንም የገቢ እና ወጪ ጭነት ለማስተናገድ የሚያስችል በቂ ቦታ እና አቅም አላቸው ።						
8	ከባለፉት ሰባት ዓመታት ወዲህ መልቲሞዲያል ትራንስፖርት ተዛማጅ መሠረተ ልማት የተሻሻለ ነው						
III ብቃት(Competence)							
1	እንደ መልቲሞዲያል ትራንስፖርት አፕሬተር ለማንቀሳቀስ በ ኢባትሎኤድ (ESLSE) ውስጥ በቂ ችሎታ አለ						
2	በሎጂስቲክስ ዕውቀት እና በ ኢባትሎኤድ (ESLSE) ውስጥ የአመራር እና የሠራተኛ ችሎታ ላለፉት ሰባት ዓመታት ተሻሽሏል ።						
3	ከተቆጣጣሪው ጋር ጥሩ ግንኙነት አለ						
4	የሥራ አካባቢን እና በየዕለቱ መሠረቶችን የሥራ መደቦችን መከታተል						
5	በሠራተኛ መካከል የሥራ ቡድን ጥራት አለ						
12 IV ጊዜ አከባሪነት(Timeliness)							
1	መርከቦች በጅቡቲ አነስተኛ የሂደት ጊዜ እና ከመቼውም ጊዜ በበለጠ የትራንስፖርት ጊዜ እየመጡ ናቸው						
2	መርከቦች በታቀደው መርሃግብር ውስጥ ወደተሰየመ ደረቅ ወደቦች ይደርሳሉ						
3	በደረቅ ወደብ የጭነት አያያዝ ጊዜ አጭር ነው እና በቀላሉ ተቀባይነት ባለው የጥበቃ ጊዜ ይሰጣል						
4	ደንበኛው ዕቃዎቻቸውን በደረቅ ወደቦች ከተቀበሉ ደረቅ ወደቦች በነፃነት ደርሷል						
5	ካለፉት ሰባት ዓመታት ወዲህ መርሃግብር በተያዘለት ወይም በተጠበቀው የመላኪያ ጊዜ ስብሰባ ላይ ባለብዙ-ትራንስፖርት አገልግሎት ተሻሽሏል.						
6	በ ኢባትሎኤድ (ESLSE) መርሃግብር በተያዘለት ወይም በተጠበቀው የመድረሻ ጊዜ ላይ አጥጋቢ ነው						

13	V ውድድር (Competition)					
1	ለደረቅ ወደብ ፣ ተርሚናል እና መጋዘን አገልግሎቶች የሚጠየቀው ክፍያ ምክንያታዊ እና ተወዳዳሪ ነው					
2	የመልቲሞዲያ ትራንስፖርት አገልግሎት ፈጣን እና ጥራት ያለው አገልግሎት በተመጣጣኝ ዋጋ ከማቅረብ አንፃር ተወዳዳሪ ነው					
3	የአቅርቦት አመለካኝ ተወዳዳሪ እና ፍትሃዊ ነው					
4	መያዣውን ማጽዳትና ጥገና ተወዳዳሪ እና ፍትሃዊ ነው					
5	ሠራተኛ ከደንበኛ ግብረመልስ አግኝቷል					
14	VI ግምገማዎች እና ክትትል (Tracking and Tracing)					
1	የመጓጓዣ ጭነት በተሻሻለው የኮምፒዩተር ስርዓት የተደገፈ ነው					
2	በ ኢባትሎኤድ (ESLSE) የመርከቦች ብዛት ወይም የትራክ መረጃ በሚኖርበት ቦታ ላይ መረጃ ይሰጣል					
3	የጭነት መኪናዎች በደረቅ ወደቦች እና ተርሚናል ውስጥ በቀላሉ በሚታወቅ መንገድ ይገኛሉ					
4	በ ኢባትሎኤድ (ESLSE) ለደንበኛው የመድረሻ ማስታወቂያ ይሰጣል					
5	ካለፉት ሰባት ዓመታት ወዲህ የመርከብ ጭነት የመከታተል እና የመከታተል ችሎታ ተሻሽሏል					
6	ተገቢ የክትትል እና ክትትል አገልግሎት በማቅረብ ላይ የ ኢባትሎኤድ (ESLSE) አፈፃፀም አጥጋቢ ነው					
7	መልቲሞዲያል ትራንስፖርት አሠራር በአገልግሎታቸው ውስጥ በጥሩ ሁኔታ የሚተዳደር እና ብቃት ያለው ነው					
15	VII - ባለብዙ የትራንስፖርት አገልግሎት ሥራን በሚፈጽምበት ጊዜ በድርጅቱ ላይ የእያንዳንዱ ውጤት ደረጃ					
1	ባለብዙ ስምሪት ትራንስፖርት ላይ በባ ለድርሻ አካላት ቅንጅት እጅግ የላቀ አፈፃፀም አለው ::					

ክፍል 4 (Part 4).

ጥ1. ከዚህ በላይ ለ VII የሰጡት መልስ በጥብቅ የማይስማማ ከሆነ (1) ወይም አለመስማማት (2) እባክዎን ደንበኛዎ በቅርቡ ያዩዋቸውን ተግዳሮቶች ያንጸባርቁ ፣ እና ከኩባንያው ጋር አብረው ለመስራት ልምድንዎን እንዴት ማሸነፍ ይችላል(መፍትሄ)?

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