

ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES



**ASSESSMENTS OF THE FACTORS THAT AFFECT THE
LOGISTICS SERVICE PERFORMANCE OF ETHIOPIAN
SHIPPING AND LOGISTICS SERVICE ENTERPRISE**

BY

DAMTEW SOLOMON

DECEMBER, 2020

ADDIS ABABA, ETHIOPIA

ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES

**ASSESSMENTS OF THE FACTORS THAT AFFECT THE
LOGISTICS SERVICE PERFORMANCE OF ETHIOPIAN
SHIPPING AND LOGISTICS SERVICE ENTERPRISE**

BY

DAMTEW SOLOMON

**A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY SCHOOL OF
GRADUATE STUDIES IN PARTIAL FULFILMENTS OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS
DEVELOPMENTAL ECONOMICS**

DECEMBER, 2020

ADDIS ABABA, ETHIOPIA

ST. MARY’S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

**ASSESSMENTS OF THE FACTORS THAT AFFECT THE
LOGISTICS SERVICE PERFORMANCE OF ETHIOPIAN
SHIPPING AND LOGISTICS SERVICE ENTERPRISE**

APPROVED BY BOARD OF EXAMINERS

As members of board of examining of the final MA thesis open defense, we certify that we have read and evaluated the thesis prepared by Damtew Solomon under the title “Assessments of the factors that Affect the logistics Service Performance of Ethiopian Shipping and Logistics Service Enterprise” we recommend that this thesis to be accepted as fulfilling the thesis requirement for the Degree of Master of Art in Development Economics.

Dean, Graduate Studies

Signature & Date

Advisor

Signature & Date

External Examiner

Signature & Date

Internal Examiner

Signature & Date

DECLARATION

I declared that this thesis entitled as “*Assessments of the factors that affect the logistics service Performance of Ethiopian Shipping and Logistics Service Enterprise*” is my work and has not been presented for the award of any degree or diploma in this or any other university. All sources of materials used in the thesis have been accordingly acknowledged.

Damtew Solomon

Signature: _____

Date: December, 2020

Place of Submission: ST. Marry University-Green Campus

Addis Ababa, Ethiopia December, 2020

ENDORERSEMENT

This is to certify that this thesis entitled as *“Assessments of the Factors that Affect the logistics service Performance of Ethiopian Shipping and Logistics Service Enterprise”*, A Thesis submitted to St. Mary’s university school of graduate studies department of Development economics, done by Damtew Solomon is an authentic work carried under our guidance.

Advisor

Signature

Date

Acknowledgment

First of all, I would like to thank the Almighty God and his beloved mother St. Virgin Mary for giving me strength and tolerance to go through all the way to complete this document. My heartfelt gratitude goes to my advisor, Wondimagegne Chekol (PhD) I am very much indebted for his ultimate guidance, his patience and helpful advice during the process of research writing. I would like to thank all of my respondents and employees for giving their ideas, opinions and suggestions in performing the research task. Finally, I would like to thank my family, friends and all who helped me in the finalization of research work.

Table of contents

Contents	Page
Acknowledgment	i
Table of contents	ii
List of Tables	v
List of Figures.....	vi
Acronym and Abbreviation.....	vii
Abstract.....	viii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	3
1.3 Objectives of the Study	5
1.3.1 General Objective.....	5
1.3.2 Specific Objective	5
1.4 Research Questions	5
1.5 Significant of the Study.....	5
1.6 Limitations and Scope of the Study	5
1.7 Organization of the Study	6
CHAPTER TWO	7
LITRATURE RIVIEW	7
2.1. Theoretical Literature Review	7
2.1.1 Concepts of Logistics and Its Definition.....	7
2.1.2 Role of logistics Performance	8
2.1.3 Performance Measurement	9
2.1.4 Selection Criteria for Performance Measurement	9
2.1.5 The role of the LPI.....	10
2.1.6 Ethiopian Logistics Performance Index (LPI) for the Evaluation Period of (2007-2018)..	11
2.1.7 Interrelationships between Transportation and Logistics.....	13

2.1.8	Transport Infrastructure	14
2.1.9	Information Technology	15
2.1.10	Delaying in Freight and Clearance.....	16
2.1.11	Competitive Logistics Service	16
2.2	Empirical Review and Gap Analysis	17
2.2	Conceptual Framework of the Study	21
CHAPTER THREE		22
RESEARCH METHODOLOGY		22
3.1	Description of the Study Area.....	22
3.2	Research Approach and Design	22
3.3	Population and Sample Design	23
3.3.1	Target population	23
3.3.2	Sampling Techniques.....	23
3.3.3	Sample Size Determination.....	23
3.4	Methods of Data Collection	25
3.5	Data Source.....	25
3.6	Variable Specification.....	26
3.7	Model Specification	26
3.8	Data Analysis Method.....	28
3.8.1	Likelihood-Ratio Test	28
3.8.2	Parameter Estimation for Logistic Regression.....	28
3.8.5	The Wald Statistic	29
3.8.6	Goodness of Fit of the Model	29
3.8.7	The Hosmer –Lemeshow Test	29
3.8.8	Chi-square Test of independency.....	30
3.9	Reliability.....	30
CHAPTER FOUR.....		32
RESULTS AND DISCUSSIONS		32
4.1	Descriptive Analysis Parts	32
4.1.1	Respondents Background Information.....	32
4.1.2	Measurement’s for logistics Service Performance of ESLSE.....	36
4.2	Econometric Analysis	39
4.3	Diagnostic Test	44

4.3.1	Test of Multicollinearity	44
CHAPTER FIVE		46
SUMMARY, CONCLUSION AND RECOMMENDATIONS		46
5.1	Summary	46
5.2	Conclusion	46
5.3	Recommendations.....	47
Reference		49
Appendix I		53

List of Tables

	Page
<i>Table 3.1 proportionate allocation of sample for employee</i>	24
<i>Table 3.2 Variable Specification</i>	25
<i>Table 3.3 Reliability Statistics Dimensions</i>	30
<i>Table 4.1 Frequency for Gender of the Respondent</i>	31
<i>Table 4.2 Frequency for Age of the Respondents</i>	32
<i>Table 4.3 Frequency for Educational Background of the Respondent</i>	32
<i>Table 4 4 Frequency for Working Experience of the Respondent</i>	33
<i>Table 4.5 Frequency for Working Position of Employee Respondents</i>	34
<i>Table 4.6 Frequency for the Organization of the Customer</i>	34
<i>Table 4.7 The Frequency table for the respondents</i>	35
<i>Table 4.8 Classification table</i>	39
<i>Table 4.9 Variables in the Equation</i>	39
<i>Table 4.10 Omnibus Tests of Model Coefficients</i>	40
<i>Table 4.11 Model Summary</i>	40
<i>Table 4.12 Hosmer-Lemeshow goodness of fit test</i>	40
<i>Table 4.13 output coefficient for variable</i>	41
<i>Table 4.14 Test of Multicollinearity</i>	43

List of Figures

Figure 2.1: relationships of the logistics service performance of ESLSE and independent variables.....20

Acronym and Abbreviation

ESLSE Ethiopian Shipping and Logistics Service Enterprise

LSPELSE Logistics Service performance of Ethiopian Shipping and Logistics Service Enterprise

LPI Logistic Performance index

OR Odd ratio

Abstract

Based on subsequent World Bank's report the logistics performance of Ethiopia were very low, does not show significant progress year to years and it is hampering growth of trade and manufacturing industries. The main objective for this study was Assessments of the factors that affect the logistics service Performance of Ethiopian Shipping and Logistics Service Enterprise (ESLSE). A mixed type of research approach was followed to exploit the data. The sample size was determined by both stratified and purposive sample size determination technique from group of employee and customer respectively. Thus for the data analysis purposes closed ended questionnaire was distributed for 128 samples of employee group and 70 samples of customer group from the main office. The study used explanatory types of research design with the SPSS 21 and STATA tools for the analysis of the resulting data. It also incorporated binary logistic regression model to show the relationship between dependent and independent variables. The findings of the study indicated that the logistics service performance of Ethiopian shipping and logistics service enterprise were low and significantly affects by transportation infrastructure, ICT and delaying. Therefore, based on the finding in order to maximize the logistics service performance it has been recommended that, the enterprise must work mainly on developing transportation infrastructure problem specially the enterprise's dry port and ethio-Djibouti corridor road infrastructure as well as improving well designed ICT service, minimizing the transportation time of goods from Djibouti port to the country's ports and giving competitive, efficient and seffective logistics service for their customers.

Key words

Logistics Service Performance, Transportation infrastructure, ICT, Delaying, uncompetitive Logistics service

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The ability to manage logistics processes in today's global business environment is a crucial factor in national competitiveness of logistics enterprise (The World Bank, 2016). Low infrastructure performance (quality of roads, high time consumption, service delivery and ICT) appears to constrain for the logistics performance in the developing countries (The World Bank, 2010). According to UN-OHRLLS, (2013), the ability of shipping to deliver goods and services on time and at the lowest possible cost is a key determinant of integration into the world economy today. "The minimization of the use of resources is a common motivation in logistics for import and export" (Sun, 2014). Logistics firms have a strong incentive to provide predictable deliveries in both the developed and the developing world. Supply chain reliability continues to be a major concern among traders and logistics providers. In a global environment, consignees require a high degree of certainty on when and how deliveries will take place. This is more important than the speed of the delivery (World Bank, 2016).

Agrawal, (2013) and Kallo, (2014) noted that inefficient logistical operation would result in delivery delay, a high cost of logistics, loss of customers, poor quality of service and discrepancy on quantity delivered, production interruption and extension of lead time, length of documentation process, ineffective ICT and inadequate dry ports. Global supply chains are becoming more complex, and the safety, social, environmental, and other regulations affecting traders and operators are becoming more demanding.

The World Bank's Logistics Performance Index (LPI) provides the most comprehensive international comparison tool to measure the trade and transport facilitation friendliness of countries. Understanding and decomposing the components of trade and logistics performance can help countries improve freight transport efficiency and identify where international cooperation could help overcome barriers (Çelebi, 2015).

Efficient logistics service, transportation infrastructure and information technology (IT) are vital tools for improvements of logistics performance (World Bank 2016). Countries which have been already developed their infrastructural facilities have managed to provide modern transportation and communication services with minimum cost and service time with noticeable differences in international business area. In contrast developing countries were not lucky to support their international trade as needed because of their poor transport infrastructural facilities. Specifically, it is believed that the best logistical practices that can be obtained through the integration of those logistic activities in the enterprise and the interaction within the organization produce a better service provision (efficient and effective).

If there is smooth flow, the clearing process is completed in less time with possible cost, therefore all the stakeholders is benefited. In practices goods were stocked in the dry ports warehouse for more than a month. As well as the clearing process faced delayed in one or another stakeholder's. Because of the delay every stakeholders loss time, money and material resources. This delaying leads the company to poor performance and it has negative impact on the overall countries economy. In other case infrastructure is an essential part of logistic systems. High logistics costs usually do not result from poor infrastructure but mostly from delaying (Shambachew And Bekele, 2015). Delaying in customs clearance and transportation leads high trade costs and opportunity costs for firms since they are slower to market and may lose contracts with importers, as well as higher storage fees at the port of entry.

For the performance of Ethiopian shipping and logistics service enterprise different factors are raised. According to Fekadu, (2013) Supply chain reliability and predictable service is the key determinant. He also states Logistics management system, coordination of goods transports system, logistics infrastructure and inadequate fleets of freight vehicles in number and status (Old aged vehicles), ICT infrastructure as well as warehouse management system are the constraints of the performance of Ethiopian logistics activity. According to kalkidan, (2017) one contributing factor for low logistics performance is freight transportation delaying.

Information technology is valuable in managing and controlling the documents as well as the departments which is found main office at Addis Ababa and at Djibouti port. Other applications help optimize the number of deliveries and manage the daily distribution of containers. Additionally IT applications have more operational and short-term focus, automating activities

such as inventory management, distribution, controlling of documents. By applying information technology ESLSE has been able to leverage its infrastructure, systems and processes in a more cost-effective manner. The reason why I want to study this thesis is with the complaints what the customers is raised some times and depending on the reports of the enterprise regarding to performance.

Finally, this thesis is expected to contribute ESLSE performance level identification and determination of the major factors that are affecting logistics performance. Therefore, this research thesis was conducted to assess the determinant factors that are affecting the logistics service performance of Ethiopian shipping and logistics service enterprise. In addition, the study suggested future action that has to be taken to improve the logistics service performance of the enterprise.

1.2 Statement of the Problem

Companies have to measure and monitor their performances constantly, in order to stay in the market. As well as they must be take an appropriate corrective action. Logistics performance is central both in international trade and domestically to the economic growth and competitiveness of countries, and the logistics sector is now recognized as one of the core pillars of economic development (Ensermu, 2017).

Ethiopian Shipping and Logistics Service Enterprise (ESLSE) is Company that is established and owned by the government as one of logistics service provider. According to Tamrat, (2019) in the presence of inefficient logistics services, ESLSE cannot determine its performance in the global market and the country cannot achieve its strategic objectives as one of the major logistics service providers.

According to the Logistics Performance Index (LPI) of World Bank report (2016), the rank of Ethiopia shows a relative deterioration between 2007 and 2016. In the first LPI of 2007, Ethiopia ranked 104 out of 150 countries; in 2010, it ranked 123 out of 155 countries; in 2012, 141 out of 155, in 2014 the country score the large performance from the previous year, 104 out of 160 countries and in the most recent version 2016 Ethiopia getting worst from the previous score reached 126 out of 160 countries. For this reason Fikadu, (2013) raised some factors as constraint of Ethiopian logistics system activity like Logistics management system, coordination of goods

transports system, logistics infrastructure and inadequate fleets of freight vehicles in number and status (Old aged vehicles) as well as warehouse management. In addition to these factors, the performance in ESLSE is affected by excessive delay in clearance and transportation, and lack of capacities (Technical, financial, IT, human and material). Another contributing factor for low logistics performance is freight transportation delaying (kalkidan, 2017). Even if all aspects are not attributed only to the enterprise, the performance of the enterprise does not satisfactory. There for the study regarding to these factors will need and the enterprise must solve the problems to improve logistics performance.

Although many authors have written articles on the provision of ESLSE logistics services and various performance indicators, there are very few literatures regarding to the factors that affect performance of ESLSE. Fekadu, (2013) studied general logistics practices in Ethiopia. In his study logistics management system and lack of coordination of goods transport, low level of development of logistics infrastructure were assessed as the constraints of Ethiopian logistics system. But his study did not consider the variable delaying of clearance and transportation that are affecting the performance of ESLSE. However, Birtukan, (2019) studied on the factors influencing logistics service delivery the case of Ethiopian Shipping and Logistics Services Enterprise, without including the main factors, infrastructure and delaying that affect the performance of the enterprise. Her study was focused only on the factors influencing logistics service delivery. Addis, (2017) tried to assess logistics performance on service delivery of ESLSE regarding to the constraints associated with logistics system in Ethiopia. The researcher also list out warehouse, information technology and inventory management system as constraints of logistics system but the study did not include the factors that are highly affects the customer satisfaction and the performance of the enterprise like the transportation infrastructure, delaying and in efficient logistics service. Tamrat, (2019) identify the factors that are affecting the logistics performance from the perspective of Ethiopian logistics service providers. Even though the author has identified the factors for logistics performance, he did not show briefly the impacts of these factors on the performance of **ESLSE**. Thus, this research work has focused on assessment of the factors that affect the logistics service performance of Ethiopian Shipping and logistics service enterprise.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study is to assess the factors that affect the logistics service performance of Ethiopian Shipping and Logistics Service enterprise.

1.3.2 Specific Objective

The specific objectives for this study were

- To assess the factors that affecting the logistics service performance of **ESLSE**.
- To analyze the logistics service performance of **ESLSE**.

1.4 Research Questions

- What are the factors that affect the service performance of **ESLSE**?
- What is the level of logistics service performance for **ESLSE**?

1.5 Significant of the Study

The expected result of the study would help to reveal the relationships between the proposed factors and the logistics service performance of ESLSE. Therefore, it would be a contribution to the management body of the company to have a better image and facilitate realistic, appropriate and timely measures to improve logistics management activities. It will also use as a reference for other who would like to conduct further studies and provide useful information to policy makers, researchers, academic scientists and other stakeholders. In addition to these the study will use like a tools that the enterprise should facilitate for improving the logistics performance.

1.6 Limitations and Scope of the Study

This study is encircled only in Ethiopian Shipping and Logistic Service Enterprise on assessment the factors that affect the logistics service performance of ESLSE and limited on the determinant factors which are transportation infrastructure, ICT, delaying and uncompetitive logistics service. Furthermore, due to time and budget constraint the study focused on the employee and customers of the enterprise in the main office Addis Ababa.

1.7 Organization of the Study

The study was organized in five parts. Part one presents the introduction and gives background information about the nature of the research; the second part, the review of related literature was accessed basic concepts, measurement variables, and other related concepts critically essential to the study. The third part 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 the actions required solving the problems arising from the finding of the study.

CHAPTER TWO

LITERATURE REVIEW

The literature review explains concept of logistic, the role of logistics, logistic related performance and discusses the result of previous studies related to logistic performance. Additionally the literature focused on the theoretical review, the empirical review, the conceptual framework and the operationalized variables.

2.1. Theoretical Literature Review

2.1.1 Concepts of Logistics and Its Definition

Council of Logistics management CSCMP,(2018) defined that logistics is ‘part of the supply chain process that plans, implements and controls the flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers’ requirements. Mangan, (2008), states Logistics as service in the right place, at the right cost, at the right quality. Also Lowe, (2002) defines logistics as: Total concept covering the planning and organizing of the supply and movement of materials/goods, from original source through stages of production, assembly, packing, storage, handling and distribution to final consumer. Distribution is but one element of whole logistics concept and transport a single element only of physical distribution.

Logistics was initially a military activity concerned with getting soldiers and arms to the battle front in time for fight, but it is seen as an integral part of the modern production process. The term, logistics, was initially developed in the context of military activities in the late 18th and early 19th Before the 1950s, logistics was under the dormant condition. Production was the main part of the managers concerned and industry logistics was once regarded as ‘necessary evil’ in this period.

From the 1970s ahead, more and more applications and researches of logistics appeared. Due to the petroleum price rise in 1973, the effects of logistics activities on enterprises grew Santosh and Shirisha, (2014). Centuries and it launched from the military logistics of World War II. And now, a number of researches were taken and made logistics applications from military activities

to business activities. The further tendency of logistics on the early 21st century is logistics alliance.

Logistics becomes more important and complex today it is because of new requirements of the service-oriented economy, disparate business functions, and the impact of various contemporary IT. Best logistics practices can come through integration of those logistics activities in the firms and create interaction within the organization and can avoid setting up conflicting goals between departments Rui Mansidão and Coelho, (2014).

2.1.2 Role of logistics Performance

According to Chow, (1994) conceptualized that logistics performance is a subset of a larger organizational performance. According to Fugate et al. (2010) the concept by highlighting that logistics performance positively impacts organizational performance. According to Green et al., (2008) logistics performance is “the ability to deliver goods and services in the precise quantity and at the precise times as required by the customers.

Logistics management (right performance) tries to have the “right product”, in the “right quantity”, at the “right place”, at the “right time”, with the “right cost”. However, balancing between total logistics cost and customer service level is essential to successful logistics. It is now also recognized that distribution and logistics can be source of competitive advantage to company by helping to achieve either least cost or by offering value in the form of positioning the product or service exactly where, when and how the customer wants it.

Logistics performance is a strong determinant of national income and is the result of actions from a wide array of private and public sectors. 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 and Konrad, 1991). Other scholar refers LP as a metric used to quantify the efficiency and or effectiveness of an action (Neely, 2005). This topic continues and LP has been seen as multi-dimensional and is defined as the degree of efficiency, effectiveness and differentiation associated with the accomplishment of activities (Fugate, et al., 2010) Researchers have always find it difficult to define LP because organization’s have multiple and frequently conflicting goals.

At the logistical level, the importance of analyzing performance was first shown in the work of (Bowersox, 1996) as cited in (Rui and Luís, 2014), who reported that measurement of logistics performance consisted of a methodology for analyzing resources of the logistic function, and its main objectives were monitoring and control of the logistics operations. After this initial step, analysis of logistics performance has become an important issue in the area of management science research, but despite this attention from researchers, there is little convergence both in terms of methods and in terms of results for its validity.

2.1.3 Performance Measurement

According to Harrington, (1995) Performance measurement is the first step that leads to control and eventually improvement. *“If you cannot measure it, you cannot control it. If you cannot control it, you cannot manage it. If you cannot manage it, you cannot improve it”* (Harrington, 1991). The underlying concept of measuring the performance of an organization is for thorough understanding of the current situation and seeking for an improvement. You can also use performance measures to evaluate your company's productivity over a set period of time (Harrington, 1995).

The purpose of performance measurement is to find out whether things are going the right way and, if not, to find what the causes that generated a poor performance were (Griffis and Closs, 2004). Performance measurement also plays an important role in the management of any organization (Griffis and Closs, 2007) and it is a particular value to logistics managers. According Gunasegaram and Kobu, (2007) performance measurement is seen as an avenue for logistics managers to achieve sustainable competitive advantage by providing timely, reliable indications of both performance successes and shortcomings. After this step, there have to be found solutions for improving performance. There are several reasons for measuring performance: for improving performance, for avoiding inconveniences before it's too late, for monitoring customer relations, for process and cost control and for maintaining quality (Ackerman, 2003: 1)

2.1.4 Selection Criteria for Performance Measurement

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.

2.1.5 The role of the LPI

Allowing for comparisons across 160 countries, the LPI is used by companies to identify challenges and opportunities related to the receiving country's transport infrastructure, logistics competence and availability of efficient supply chains. In this context, the LPI is a useful indicator of the host country's trade logistics performance and also a benchmark when choosing locations for various types of operation. This is one of the main reasons why countries tend to focus on their ranking rather than on improvements in actual indicator values of the LPI. (Çelebi, 2015).

Countries at similar performance levels may have substantially different ranks, especially in the middle and lower country income ranges. Particularly, ranking and relative changes in ranks from one LPI edition to another need to be treated with caution. The latest LPI report also provides a country listing with the weighted average of LPI scores and ranks across all editions in 2007-2018. This listing smooth out the inevitable variation from one year to another in survey-based data, and it thus provides a more balanced overall picture. (Çelebi, 2015)

Understanding the trends in the logistics performance requires looking behind the LPI scores and rankings to see the interactions between the logistics performance and policy actions, competitive forces, economic and political environment. This research used the LPI data as indicators of the gaps that were happened in our country.

2.1.6 Ethiopian Logistics Performance Index (LPI) for the Evaluation Period of (2007-2018)

The next paragraphs has been composed by using the World Bank LPI periodic reports data bases for the purpose of showing the performance gap of the country. The researcher have used the data from 2007-2016 because of our country missed the LPI value of 2018 year.

When we compare Ethiopian against Germany, Germany recorded above 4.2 ranking first in the world for that last five evaluation periods while Ethiopia remain below 2.6 and its rank has been somewhere between 126 to 144 out of 160 countries included in the report. This is just to Show how wide the gap is between the two countries nonetheless the two are not comparable with the current economic status. When Ethiopia is compared based on World Bank 2016 report against sub-Saharan African countries and low income countries on the performance of Logistics Company the Sub-Saharan and the Low income group scored 2.4 while Ethiopia scored 2.56 just a little bit higher from the group.

Ethiopians overall LPI score starting from 2007 to 2016 was between 2.4 and 2.6 but in 2016 it was declined to 2.4 and this is one of the key challenges that indicate the logistical performance is not in good share. In addition, the rank in the same time range was swinging between 100th to 150th in the world and 2014 was better than that of 2016 rank. This somehow, indicates the challenges the country is facing in order to become competent in the global economy both for boosting exports and reducing the logistics cost of imports.

Regarding the customs performance Ethiopia scored somewhere between 2.00 to 2.60 over that last 10 years and customs is showing progressive improvement since 2012 this can be attributed to the efforts made by the government to transform customs through adopting best regulatory practices, improving the capacity of the human power and acquiring and implementing IT infrastructure, among others. However, there is still too much gap that has to be improved as evidenced by the World Bank report. Concerning the ranking, in LPI index for customs, Ethiopia stood 80th in 2016 from the world where it has been 139th in 2012 and this is one of the finest ranking out of the measurement indexes to the country for that last 10 years.

The other critical evaluation aspect that has been used for the index was infrastructure, in this regards the country score shows 2.12 in 2016 whereas 1.88 in 2007 when the first score was registered. Even if, the trend from 2007 to 2016 shows a progress, the trend from 2012 to 2016 all the way, there was no much improvement it is just a liner kind maintaining its statuesque. The ranking, in the same way, is not in acceptable performance group. It stood 133rd in 2016 and the best for the country has been in 2012 where it was 124. This is also another burning issue and the country still needs to focus on to improve the overall logistics performance.

Facilitation of international shipment is also the key indicator selected by the World Bank to measure the logistics performance of a given country. In this regard, Ethiopians latest score has been 2.56 and has some improvement since 2012 which was 2.35. The rank also shows the same improvement from 2012 to 2016 ranked 130th to be 102nd respectively. However, its ranks in 2007 have been 97th and in 2010 it was 89th.

Logistics competency of the country in 2016 score was 2.37 where is has been only 2.00 in 2007. Here, we can see that the trend was, though sluggish, improving until 2014 (from 2.00 to 2.62) and declined in 2016 to be 2.37. And the country's rank was not improved in the same manner as that of the score until 2012 this shows that, other countries has been working better that Ethiopia is doing to improve it competency. Conversely, is has showed an improvement in 2014 being 96th and started a downward spiral growth in 2016 and became 117th in 2016.

For accurate and reliable service delivery, a logistics service and inventory management is expected to be visible enough and this can be achieved by using technology plat formed to assist in tracking and tracing of cargos. Devices like GPS, EDI, and Barcode readers are best known for this. In this aspect Ethiopia's score by the LPI was unstable having in intermittent scores starting from 1.83 in 2007 to 2.18 in 2016. The trend was 1.83, 2.89, 2.1, 2.67 and 2.18 for 2007, 2010, 2012, 2014 and 2016, respectively. The ranking was also intermittent where is has been 141 in 2007 and showed improvement in to 2010 being 67th and fall down to 144th 1n 2012 then showed improvement in 2014 being 97th and in 2016 is fall down aging making the county's rank 133rd in the world.

The last indicator used by the World Bank was timeliness of shipment if the cargo arrives on time as per scheduled or not. In this regard, the score is getting worst in consecutive evaluation

periods except there was improvement in 2012. The score was 3.67, 2.65, 2.54, 3.17 and 2.37 starting from 2007 to 2016. Timeliness rank for Ethiopia was pretty much better when the evaluation started in 2007 where it registered a best record being 37th in the world but thereafter, started to decline by nearly four folds becoming 144th except some improvement in 2012 (78th). The latest rank in 2016 was 149th.

It has been widely recognized that the Ethiopian international trade has been in trouble for so long despite the growth it has been registering. The time consuming and costly customs clearance process, the weak and poorly coordinated logistics and transport services and the underdeveloped warehouse and inspection mechanism among others have been obstructing the performance of the sector (Berihun, 2015).

The gap leads our country to lower economic development, it have great impacts on living standards of society and also reduce the competitiveness and the performance of the countries logistics practice. So that it still calls for specific case studies concerned with systematic identification of the above listed factors constraining the performance of the logistics.

In general According to the World Bank report the last identified ranks of Ethiopia with logistics performance index were 126th of the world country in 2016 year. That is why the researcher selected to work on the factors affecting the logistics service performance of ESLSE since it is the main logistics service provider. Thus the study will use to assess and identify the factors which are contributed for low performance of ESLSE.

2.1.7 Interrelationships between Transportation and Logistics

Transportation defined as the activities involved in shipping any goods or finished products from suppliers to a facility or to warehouses and sales locations (Kenyon and Meixell, 2011). It is included because it is a major part of the supply chain due to its power to add value to some goods by moving them from their current location to a more advantageous location. Through research, (Atos,2012; Kenyon2011; Xiande,2008; Hausman,2005; Blanchard, 2004; Schmitz, 2004; Gunasekaran,2003; Lambert, 2000; and Tate 1996) transportation has been found to be a major factor in logistics processes.

Without well-developed transportation systems, the enterprise could not bring its advantages into full play. Besides, a good transport system in the enterprise activities could provide better

logistics reduce operation cost, and promote service quality. The improvement of transportation systems needs the effort from both public and private sectors. A well-operated logistics system could increase both the competitiveness of the government and enterprises. For this reason, transportation systems are considered as a production factor and as one of the key determinants of logistics service performance (Çelebi, 2015). Transportation has a significant impact on the productivity and the cost structure of businesses. For example, good road transportation, better port and hinterland connections may reduce the expenditure required for transportation time and cost (Çelebi, 2015).

2.1.8 Transport 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 the performance of the company may not be easy. In order to be able to gain maximum benefit from company, 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 transport service UNCTAD (2003).

Despite the recent infrastructural developments seen in certain sectors, poor infrastructural development remained a challenge for both the manufacturing and service industry. As a result, the increased cost of doing business eroded competitiveness, and limit access to markets, both domestically and internationally (AfDB, 2011). The infrastructural development in transport and communication sectors seems stagnated in the past decades, and its continued stagnation manifested in poor logistics facilities which are not efficient in terms of cost and time. The poor network of road infrastructure has played its role in worsening the quality of the logistics sector.

The Ethiopian government has made a significant investment in infrastructure over the last decade. It has made Ethiopia Airlines, a leading regional carrier, upgraded its network of trunk roads. However, according to the World Bank (2016), the Logistics Performance Index (LPI) report Ethiopia scored 2.12 out of 5 from top 10 low-income groups of countries.

According to the World Bank Report of (2011), the infrastructure contributed 0.6 percentage point to Ethiopia's annual per capital GDP growth over the last decade. Although Ethiopia's infrastructure indicators compare relatively well with low-income country peers, they remain well below levels found in Africa's middle-income countries. There are several challenges especially in the power and transport sector. Ethiopia needs to double its current power capacity to 8,700 megawatts of generating plant over the next decade to improve infrastructure endowment to region's middle-income countries. This will increase the infrastructure contribution growth by additional 3 percent. The transportation sector also faces challenges of rural accessibility and inadequate road maintenance. Ethiopia launched an ambitious investment program to upgrade its trunk network and established a modern funding mechanism for road maintenance to improve ground transportation (ERC, 2013). The infrastructure development in terms of transportation facilities is highly important for the efficient service of ESLSE. According to Amentae & Gebresenbet (2015), the transportation sector of Ethiopia is less performing as per the African standard.

2.1.9 Information Technology

Logistics players were highly depending on the information technology (IT) and electronic data interchange Ali *et al.*, (2008). According to Raus *et al.*,(2009) the usage of IT and EDI, could prevent criminal activities, informal payments and improve cost efficiency. Nevertheless, the transition process is required for a smooth transition from traditional to e-customs process.

Information technology is valuable in managing and controlling the documents as well as the departments which is found main office at Addis Ababa and at Djibouti port. Other applications help optimize the number of deliveries and manage the daily distribution of containers. The use of ICT in logistics is non-existent. One area bar code used is at cash register of supermarkets (Fikadu, 2013) but it is not connected with inventory or warehousing management system. MOT's plan is to introduce tracing and tracking using GPS, and software, databases and other logistics ICT applications. Additionally IT applications have more operational and short-term

focus, automating activities such as inventory management, distribution, controlling of documents. By applying information technology ESLSE has been able to leverage its infrastructure, systems and processes in a more cost-effective manner.

2.1.10 Delaying in Freight and Clearance

Freight delay happens when time taken to transport goods from one point to another exceeds what is reasonable under the circumstances and this problem has been an increasingly severe issue. Reasonable time is the amount of time which is meant for the transport of goods from the point of departure to the point of destination, considering normal conditions and using concrete means of transportation. A deviation from normal conditions can be force majeure or some other reason, not caused by the carrier (*Gong et al., 2012*). Time savings during transportation lead to a reduction in the resources required to perform a given volume of output (*Adkins et al., 1967*). In the world report the timelines of Ethiopian logistics performance were ranked 149th among the world countries. According to Kalkidan,(2017) Delaying affects trade performance of Ethiopia in terms of cost, time, reliability and predictability and customer services.

2.1.11 Competitive Logistics Service

Competitiveness has long been the goal of companies and is achieved by the adoption of successful logistics service practices by entrepreneurs or corporate executives (OECD 1992). Practices are ‘characteristics which describe business behaviors which tend to cause the creation of a performance gap.

Freight forwarders are agents not moving freight themselves play a critical role in organizing supply chains and moving goods on transit corridors (World Bank-United Nations, 2014). The role of freight forwarders is to organize international (or eventually domestic) logistics on behalf of shippers and consignee. This includes organizing transportations with railways or trucking companies, and customs representation activities at the border.

They make a key contribution to supply chains by linking with forwarding partners abroad, which essentially insures the continuity of the supply chain, and makes it possible to track shipments in transit (World Bank-United Nations, 2014). Hence, their interaction and collaboration with the port staffs and the activities of other logistics service providers is crucial in determining the performance of enterprise.

2.2 Empirical Review and Gap Analysis

Logistics is the part of the Supply Chain Management that plans, implements, and controls the flow and storage of goods services and related information from the point of origin and the point of consumption in order to meet customer's requirements (CSCMP, 2007). The ultimate objective of logistics function is to support corporate goals by delivering products to the consumer at a time and place of his choosing. However, this objective must be balanced against the cost of providing the service. Logistics is one of the major enablers of growth and commerce activity in a country.

According to Bowersox and Closs, (2010) logistics has become more prominent and is recognized as a critical factor in competitive advantage. The logistics operations process includes the inputting, storing, transporting and distributing of physical goods. Over the years, logistics has developed from single-party logistics (self-managed) to multi-party, using logistics networks focusing on global operations.

Many authors and organizations have been given much attention about logistics performance issue. World Bank is one of them which has compiled logistics performance indices to more than 160 countries for about the last 11 years starting from 2007 up to date and it has provided total countries LPI score and ranks by using six key performance measurement variables including the efficiency of customs, infrastructure facilities, international shipment, quality of logistics service, tracking and tracing ability and delivery time accuracy (World Bank, 2016).

A study which was conducted by Chow *et al.* (1994) is a pioneer and worth mentioning in providing a systematic review on the existing literatures of logistics performance. With the aim of defining and measuring logistics performance, (Chow *et al.* 1994) has provided abridged account on various research works conducted on conceptualizing the notion of logistics performance with respect to their respective data collection methods, sources, and the measures of logistics performance.

Mentzer & Konrad, (1991) reviewed the issue of logistics performance as a matter of achieving logistical objectives and ensuring the optimal utilization of resources for the sake of producing goods or creating a service.

Gacuru et al., (2015) conducted a study among logistics firm on factors affecting logistics performance of trading and distribution firms. The study descriptively analyzed information technology, competence and business to business relationship and their impact on logistics performance. The study concludes that information technology, level of competence and business to business relationship affects logistics performance in trade and distribution firms. Hence, the study recommends that the logistic firms should enhance the use information technologies that are compatible with their logistics activities. Besides, the trade and distribution firms should employ a change agent to oversee the staffs of the logistics forms undergo on the job training, in order to improve their skills and capabilities to enhance the logistics performance. It also underlined the need to exerting efforts to reach across the entire logistics industry to help streamline essential infrastructure and processes to enhance service delivery, reduce costs and improve responsiveness to customer demand in the logistics activities.

Gassenheimer et al., (1989) conducted an empirical analysis on data obtained by mail survey from executives to define and further measure performance with respect to logistics that resulted in identifying length of promised order cycle times for base-line/in-stock products, manufacturer's performance in meeting promised delivery dates, fill rate on base-line/in-stock items, advance notice on shipping delays, accuracy of manufacturer in forecasting and committing to estimated shipping dates on contract/project orders, manufacturer's adherence to special shipping instructions, accuracy in filling orders as appropriate measures for logistical performance. The study basically dealt with measures of logistics performance that can be characterized with their focus on customer satisfaction regarding to transport, warehouse, communication and document clearness. In light of a perspective that dictates the very existence of an ideal logistics service is for identifying the requirement of the customer it serves and ultimately ensuring an excelled customer satisfaction, the attention given to such measures that align with logistics customer service is appropriate and is believed to be highly applicable in a pragmatic manner for an ideal service delivery entity. In other words, such soft measures have a significance importance in capturing the logistical performance aspects of firms.

A study conducted by Larson et al., (2007) 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.

Some authors, such as Zhou and Benton (2007) investigated the link between logistics management practices and distribution performance regarding reliability of service, and concluded that practices related to the distribution and sharing of information have a direct impact on performance. Baker et al. (2006) asserts that, parallel to the development in the significance of distribution and logistics has been the growth in the number of related names and distinctive definitions that are utilized. A portion of the diverse names that have been applied in distribution and logistics include: physical circulation; logistics; business coordination; materials management; purchasing and supply; production flow; sales promotion logistics; inventory network management; demand chain management and many others.

Also, Green et al. (2008), addressing the relationship between logistics practices and organizational performance in a large number of companies in the United States, concluded that logistic practices have a positive impact on business performance, namely in speed of delivery, the responsiveness and flexibility of delivery.

The study which was conducted by Sezen (2005) argued that logistics performance can be evaluated by considering logistics costs, customer satisfaction, product availability in the market, conforming to the promised delivery dates and quantities, flexibility in all logistics activities, and efficiency in inventory management.

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.

Addis (2017) conducted a study among employees, importers, exporters and transportation associations of Ethiopia Shipping and Logistic Service Enterprise on logistics performance. The result of the study revealed that ESLSE had a lower performance in its logistical performance. The findings of the study revealed that each dimension of logistic performance (logistic

differentiation, logistic efficiency and logistic effectiveness) has had a lower performance. The study recommended continuously improving its logistics performance, among other things, by strengthening and developing a good relationship with others to modernize its order management practices. In addition, it also recommended an additional improvement of the relationship between the client and another company or sister company of a foreign country.

Any inefficiency of operations and capacity constraints can threaten the growth of the organization's service and, therefore, a pressing problem that will quickly get worse, unless a critical action is taken (Fekadu, 2013). However, being the planned objective as it is, empirical studies on the subject matter have shown that the Ethiopian logistics system is characterized by a deficient logistics management system and a lack of coordination of freight transport, a low level of development of the logistics infrastructure and inadequate fleets Vehicles in number and age, damage and deterioration of the quality of the goods during handling, transport and storage (Fekadu, 2013).

Birtukan, (2019) conducted a study among different clients and stakeholders on the factors that influence the provision of logistic services in the ESLSE through qualitative research. The result of the study indicated that the transport practice of the company increases the logistics cost. The unsafe and delayed delivery, failure to achieve economies of scale and distance to minimize the unit cost of transport were mentioned as the main problems posed. The researcher also specifically noted that ESLSE has not performed well in its delivery of order management and orders sent to customers from the main location, average order cycle time, the port infrastructure, as well as the size of the dry port. Therefore, the researcher recommended that the company take an immediate corrective action on the gaps identified.

Tamrat, (2019) identify the factors that are affecting the logistics performance from the perspective of Ethiopian logistics service providers with mixed type of research approach both qualitative and quantitative methods. The researcher indicated that the overall performance level of Ethiopian logistics companies was found to be low with the performance indicators of efficiency and effectiveness. Therefore, the researcher recommended that concerned stakeholders and the company must focus on the factors that affect efficiency of logistics performance.

2.2 Conceptual Framework of the Study

Since the overall objective of the study is the Assessment of the factors that affect the logistics service performance of Ethiopian Shipping and Logistics Service enterprise. Logistics Service performance of ESLSE is uses as dependent variable. Influencing factors; such as transportation infrastructure, Information communication technology, delaying in freight and logistics service are use as independent variables.

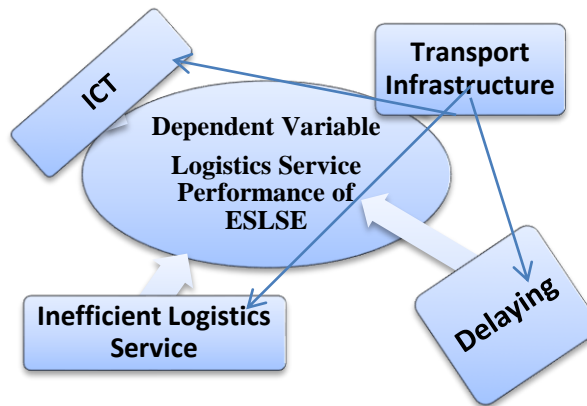


Figure2.1: shows the relationships between the logistics service performance of ESLSE and independent variable.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Description of the Study Area

Ethiopian shipping and logistics enterprise (ESLSE) was established in November 2011 by the council of ministers regulation number 255/2004. The enterprise put in place its own new organizational structure in Dec 2012 on the basis of which, it has one chief executive officer and four deputy chief executive officers appointed by the government to lead and direct the enterprise at top management level. The enterprise has four sectors led by the four deputy CEO's, namely: Shipping Sector, Freight Forwarding Sector, Port& Terminal sector and Corporate Services Sector. The enterprise is giving so many services to the country, such as Shipping Sector (Sea Transport Services, Agency Services, Stevedoring, Shore handling), Freight Forwarding Sector (Multimodal transport service, Unimodal transport service, Customs and port clearing Trucking) ,Corporate services sector handling the finance management ,budgeting and Port& Terminal Sector (Receiving and delivering cargos) to generate income. The enterprise conduct logistics and shipping transport services to government organization, NGO, manufacturing sector, service sector, importer, exporter, industrial organization, investor and other organization.

Now days, ESLSE has a multitude of vessels; heavy duty trucks, sea and dry port facilities, and machineries that enable it render efficient sea and land transport services as well as sea and dry port services. ESLSE has its headquarters located in the heart of Addis Ababa, Ethiopia, with main branches at Djibouti, Modjo, and Kality (the former Comet) and other branches in Mekelle, Dire Dawa, Kombolcha, Semera, Gelan towns and wereta customers bonded warehouse for both passenger cars as well as containers were instituted as part of the logistics service chain.

3.2 Research Approach and Design

Since the nature of the data for this study was both qualitative and quantitative, mixed research approaches were used. From the points of view of the objectives and the research questions of

the study, it implies explanatory types of research design. The explanatory research design is chosen because the study attempts to explain the cause and effects of one variable on another.

3.3 Population and Sample Design

3.3.1 Target population

The population of this research is specific employees of Ethiopian shipping and logistic serves enterprise which are working only on main office off Shipping Sector, Freight Forwarding Sector, Port& Terminal sector and Corporate Services Sector. The Other Target population in the study were Customers which coming to the enterprise to be served in the main office.

3.3.2 Sampling Techniques

For this study among probability sampling technique stratified random sampling technique were used for the group of employee and from non-probability random sampling technique purposive sampling technique were used for the groups of customers. A purposive sample refers to selection of units based on personal judgment rather than randomization. This judgmental sampling is in some way “representative” of the population of interest without sampling at random. This study used judgmental sampling based on the respondents’ nature and their participation in the business. The main motive for using purposive sampling technique for group of customer is to reduce the cost of the surveys and the time required to complete surveying. In addition to this reason, the total numbers of customers for the enterprises were not known.

Therefore, sampling formula was not applied. Instead, the data was collected from customers coming for service to the enterprise.

3.3.3 Sample Size Determination

The source of primary data for this study will be the customers of ESLSE and employee from Shipping Sector, Freight Forwarding Sector, Port& Terminal sector and Corporate Services Sector. There for samples will draw from the four perspectives of employee population group. For these types of data stratified sampling technique is more appropriate. To choose a **stratified sample**, the populations were divided into four sub groups called strata (Strata 1, Strata 2, Strata 3, and Strata 4). After stratification the researcher have used **proportionate sample technique** to take out the sample size from each stratum. The total populations for employee group were 708 (data source from the enterprise).

To calculate the sample size for the employee group, the simplified formula which were provided by Yamane, (1967) were used.

$$n = \frac{N}{1+N * e^2} \quad \text{Where,}$$

N = is the population size

n = is the sample size

e = is the level of precision

Based on this data, assuming that 0.08 level of precision, the sample size is determined as:

$$n = \frac{708}{1+708 * (0.08)^2}$$

$$n=128$$

- Additionally about 70 samples were taken from the customer's groups by purposive sampling selection technique.

Proportionate allocation for employee population group:

$$n_i = \frac{n}{N} \cdot N_i$$

Where

n_i is sample size of the i^{th} stratum

N_i is population size of the i^{th} stratum

$n = n_1 + n_2 + n_3 + n_4$ is the total sample size

$N = N_1 + N_2 + N_3 + N_4$ is the total population size

k=the total no of strata

$i=1, 2, 3, 4$

There for by using the above formula the sample sizes of the four stratum were calculated as follows.

Table 3.1 proportionate allocation of sample for each strata of employee

	Strata1 (Shipping Sector)	Strata2 (Freight Forwarding Sector)	Strata3 (Port& Terminal sector)	Strata4 (Corporate Services Sector)	Total
Total number of population for each strata	209	144	217	138	708
Total no of sample will be taken from each strata	37	24	39	28	128

Source: from the enterprise

3.4 Methods of Data Collection

The study uses closed ended questionnaires to collect the intended primary data. Questionnaires were used because it is a more efficient tool for explanatory research, and most statistical analysis software can be used to process them. The secondary data was collected by searching the website of the World Bank and enterprise.

3.5 Data Source

The primary data was collected through questionnaires from the enterprise employee of head office and customers. To show the score and the rank of the country out of 160 countries on the logistics performance index the researcher has utilized secondary data from the website of World Bank and also used reports of the enterprise.

3.6 Variable Specification

Table 3.2 Variable specification

Variables	Short name	Measurement
Logistics Service performance of Ethiopian shipping and logistics enterprise	Lspeslse	If LSPELSE=low {0} =O. wise {1}
Transportation infrastructure	Trinf	If low transportation infrastructure is a factors for LSPELSE = Yes{1 O.W{0
Information communication technology	Ict	If un availability of well-designed ICT infrastructure is a factors for LSPELSE =Yes{1 O.W{0
Delaying	Delaying	If delaying of transportation and clearance is a factors for LSPELSE = Yes{1 O.W{0
Un competitive Logistics service	Logservice	If un competitive logistics service is a factors for LSPELSE = Yes{1 O.W{0

3.7 Model Specification

To determine the relationship between the dependent variable and the independent variables among Ordinary least square (OLS) methods, the study has used binary logistic regression analysis. Since the nature of the dependent variable for the research data is dichotomous, there for model for the study have been be constructed by an iterative maximum likelihood procedure. The programs have started with arbitrary values of the regression coefficients and constructed an initial model for predicting the observed data.

Binary or binomial logistic regression is the form of regression which is used when the dependent variable is dichotomous and independent variables are any type (discrete and continuous). The dependent variables can take probability of success 'p' and '1-p' probability of failure. In terms of the dependent variables and the explanatory variables of the study, binary logistics model equation has been converted in to the following;

$$\text{logit}\left(\frac{P}{1-P}\right) = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4)$$

where :

- ✓ P = is probability of above average.
- ✓ 1-P = is probability of below average.
- ✓ β_0 = constant term.
- ✓ x_1, x_2, x_3, x_4 = are the independent variable.
- ✓ $\beta_1, \beta_2, \beta_3, \beta_4$ coefficient of independent variable.
- ✓ $e = 2.718$

The ratio of probability success to probability of failure is $P/1-P$ is odd ratio.

$\frac{P}{1-P} = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4)$ means that $\exp(\beta_j)$ where $(j=1, 2, 3, 4)$ is a factor by which the odds of occurrence of success change by a unit increase in the j^{th} independent variable. If we take the natural logarithm of odd ratio obtain estimated model given by

$$Z_i = \ln\left(\frac{P}{1-P}\right) = Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

If $Z = \ln\left(\frac{P}{1-P}\right)$ is positive, it means that the value regresses increases.

If $Z = \ln\left(\frac{P}{1-P}\right)$ is negative, the odds that the regress and equals 1 decreases as the value of X increases.

ODD RATIO (OR): is the measures of how much the grater or less the odds are to subject possessing the risk of factors that to experience particular outcomes. We can write as follow:

$\frac{pi}{1-pi} = e^{zi}$ is called odd ratio. The general formula of binary logistic regression model with one of independent variables is given by:

$$\ln\left(\frac{p}{1-p}\right) = \exp\beta x$$

Where: p is probability of success for value of x

X is the in dependent variables (risk factor)

1-p is probability of failure

Odds = $\frac{p}{1-p}$ new the odds for another group would also be $\frac{p}{1-p}$ that group the odds and logit is related as follows:

$$\text{Log}(\text{odds}) = \text{logit}(p) = \ln\left(\frac{p}{1-p}\right)$$

$$P = \frac{e^{\beta_0 + \beta X}}{1 + e^{\beta_0 + \beta X}}$$

3.8 Data Analysis Method

The data was analyzed by statistical instruments called STATA and SPSS. Both descriptive and inferential statistics were employed to analyze the collected data. Under descriptive study frequency tables and percentage were used in order to summarize and create a clear picture for the reader. Inferential analysis was done by using statistical binary logistics regression tools such as Hosmer and Lemeshow test, Chi-square test of independency. Moreover, inferential statistics were used to make some necessary tests like checking whether the data is fit or not.

3.8.1 Likelihood-Ratio Test

An alternative and widely used approach to test the significance of a number of explanatory variables is to use the likelihood ratio test. This is appropriate for a variety of statistical models. The likelihood ratio test is better, if the sample size is small or the parameters are large. The likelihood-ratio test uses the ratio of the maximized value of the likelihood function for the full model (L_1) over the maximized value of the likelihood function for the simpler model (L_0). It is compared with a χ^2 distribution with 1 degree of freedom. This log transformation of the likelihood functions yields a chi-squared statistic. (*Hosmer, D.W and Lemshow test 1989, green 1991, cullet 1991*)

The likelihood-ratio test statistic is:

$$-2 \log\left(\frac{L_0}{L_1}\right) = -2[\log(L_0) - \log(L_1)] \dots \dots \dots (1)$$

3.8.2 Parameter Estimation for Logistic Regression

The maximum likelihood and non-iterative weighted least squares are the two most computing estimation methods used in fitting logistic regression model. In contrast, the maximum likelihood estimation method is appropriate for estimating the logistic model parameters due to this less restrictive nature of the underlying assumptions in this study the maximum likelihood estimation

technique applied to estimate parameters of the model $P(y_i=1 | X) = P_i = \frac{e^{x\beta'}}{1 + e^{x\beta'}}$. Since observed values of Y say, Y_i 's ($i=1, 2, 3, 4$) are independently distributed as binomial with parameter P_i .

3.8.5 The Wald Statistic

The Wald test is a way of testing the significance of particular explanatory variables in a statistical model. In logistic regression the response variables has binary outcome or each explanatory variable in the model there is associated parameters. For a particular explanatory variable, or group of explanatory variables if the Wald test is significant, then we can conclude that the parameters associated with these variables are not zero, so that the variables should be included in the model. If the Wald test is not significant then these explanatory variables can be omitted from the model. Wald χ^2 statistics used to test the significance of individual coefficients in the model and are calculated as follows:

$$Z = \frac{\hat{\beta}_j}{SE(\hat{\beta}_j)} \dots\dots\dots (2)$$

3.8.6 Goodness of Fit of the Model

The goodness of fit or calibration of a model measures how well the model describes the response variable. Assessing goodness of fit involves investigating how close values predicted by the model with that of observed values.

3.8.7 The Hosmer –Lemeshow Test

The final measure of model fit is the Husker and Lemeshow goodness-of-fit statistic, which measures the correspondence between the actual and predicted values of the dependent variable. The Hosmer–Lemeshow test is a commonly used to test for assessing the goodness of fit of a model and allows for any number of explanatory variables, which may be continuous or categorical. The test is similar to a χ^2 goodness of fit test and has the advantage of partitioning the observations into groups of approximately equal size, and therefore there are less likely to be

groups with very low observed and expected frequencies. In this case, better model fit indicated by a smaller difference in the observed and predicted classification.

3.8.8 Chi-square Test of independency

Chi-square test of independency is used to test the relationship between two categories.

$$X^2 = \sum_{i=1}^n \frac{(oi - ei)^2}{ei} \dots\dots\dots(3)$$

Where, x^2 =chi-square

O_i =is the observed class frequencies and

e_i =is the corresponding expected class frequencies.

Since the observed class frequencies and the corresponding expected class frequencies are observed from a single sample of size n sum of the observed and expected class frequencies are the same.

The hypothesis:

H0: logistics service performance of ESLSE and the factors are independent Vs

H1: logistics service performance of ESLSE and the factors are dependent

Decision Rule

If P value less than α , reject H_0 and concludes that the two factor variables are not independent, otherwise accept H_0

3.9 Reliability

Reliability is term that indicates the extents to which a variable or a set of variables is consistent in what it is intended to measure (Dunn, 1999). Reliability analysis used to measure the consistency of items of a questionnaire. There are different methods of reliability test, for this study Cronbach 's alpha was considered to be suitable. Cronbach 's alpha is also the most common measure of reliability.

Table 3.3 Reliability statistics Dimensions

Employee		Customer	
Cronbach's alpha	N of item	Cronbach's alpha	N of item
.761	15	.723	15

Source own survey, 2020

Thus, to test the reliability of the instrument, Cronbach alpha relating to all dimensions was computed. Alpha value ranges between 0 and 1. It is recommended that the value of Cronbach's alpha around 0.8 is good. The alpha values in this study are around 0.761 for employee and 0.723 for customer, which is in the acceptable range. Thus, the internal consistency of the instrument is sustained.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

This chapter deals with presentation, analysis and interpretation of the data obtained through survey questionnaire and secondary source of data. To collect primary data 128 samples from the employee and 70 from the customer were selected. All the respondents respond the provided questionnaire.

4.1 Descriptive Analysis Parts

4.1.1 Respondents Background Information

This section describes the respondents' general characteristics about Gender, Age, education, work experience and working position or Organization.

The result shows on table 4.1 below that majority of the respondents are male. 85(66.4%) of the respondents were male and 43(33.6%) of the respondents were female for employer and 50(71.4%) of the respondents were male and 20(28.6 %) of the respondents were female for customer.

Gender of the Respondent

Table 4.1 Frequency table for Gender of the respondent

Gender	Employee		Customer	
	Frequency	Percent	Frequency	Percent
Male	85	66.4	50	71.4
Female	43	33.6	20	28.6
Total	128	100.0	70	100.0

Source: Own survey Data, 2020

Age of the Respondents

Table 4.2 Frequency table for Age of the respondents

Age	Employee		Customer	
	Frequency	Percent	Frequency	Percent
20-30	63	49.2	24	34.3
31-40	38	29.7	26	37.1
41-50	19	14.8	16	22.9
51-60	8	6.3	4	5.7
Total	128	100.0	70	100.0

Source: Own survey Data, 2020

About 49.2 % of sample respondents age ranges from 20 to 30 years, each age group of 31 to 40 and 41 to 50 account 29.7% and 14.8 % respectively. The others age groups, which include 51 to 60 account 6.3 % for employee. About 34.3 % of sampled respondents age ranges from 20 to 30 years, each age group of 31 to 40 and 41 to 50 account 37.1% and 22.9% respectively. The others age groups, which include 51 to 60 account 5.7% for Customer. The result shows that majority of the respondents are on the age group of 31 to 40.

Educational Background

Table 4.3 Frequency table for Educational Background of the respondent

Education Level	Employee		Customer	
	Frequency	Percent	Frequency	Percent
Less than or Equal to 12th Grade	-	-	14	20.0
Certificate	3	2.3	14	20.0
Diploma	25	19.5	24	34.3
Degree	79	61.7	16	22.9
Masters and above	21	16.4	2	2.9
Total	128	100.0	70	100.0

Source: Own survey Data, 2020

While about 79(61. %) of sampled respondents were degree in their educational qualification, 21(16.4%) are masters and above, diploma holders share of around 25(19.5 %), also about 2.4 % of employee respondents are certificate holder. This indicates that the majority of respondent is educated and we can be concluded that the respondents have good knowledge to give relevant information regarding the topic under study. About 16 (22.9 %) of sampled respondents were degree in their educational qualification, 24(34.3.6%) are diploma, and share of around 14(20.0 %), Certificate, 2(2.9%) customer respondents holds masters and above.

Working Experience of the Respondents

Table 4.4 Frequency table for working experience of the respondent

Working year	Employee		Customer	
	Frequency	Percent	Frequency	Percent
From 1-5	52	40.6	10	14.28
6-10	41	32.0	18	25.75
11-15	17	13.3	19	27.14
above 16 years	18	14.1	23	32.9
Total	128	100.0	70	100.0

Source: Own survey Data, 2020

As shown in the above table 4.4, work experience of employer shows that, 40.6% of the respondents have worked in the company from 1-5 years and 32.0% worked in the enterprise 6-10 , 13.3% of the employee worked from 11-15 year and above 16 years about 14.1% of the employee worked in the enterprise. About 14.28% of the customer's respondents are worked with the enterprise from 1-5 years. Additionally about 25.75% of the customers respondents worked with the enterprise from 6-10, 27.14 % worked from 11-15 years and Above 16 years, 32.9% accounted as costumers of the enterprise.

Working Position of the Respondents

Table 4.5 Frequency table for working position of employee respondents

Working position	Frequency	Percent
Junior Level	28	21.87
Medium Level	33	25.78
Senior Level	34	26.56
Management Level	21	16.4
Other	12	9.37
Total	128	100.0

Source: Own survey Data, 2020

From table 4.5 we have seen that 28(21.87%) of the employee respondents are working in Junior Level, 33(25.78%), works with Medium Level, similarly 34(26.56%) works in Senior Level , about 21 (16.4%), of the respondents are working in Management Level in the last about 9.37% of respondents said that un specified work position.

The Organization for the Respondents

Table 4 6 Frequency table for the organization of the customer

Organization	Frequency	Percent
Importer	12	17.14
Transporter	15	21.42
Exporter	10	14.28
Transistor	27	38.6
Other	6	8.57
Total	70	100.0

Source: Own survey Data, 2020

In the above table 4.6, 12(17.14%) of the respondents were importer, 15(21.42%) of the respondents were transporter, about 10(14.28%) of the respondents exporter, the maximum Level 27(38.6%) of the respondents were transistors, in the last about 8.57% of respondents said that unspecified organization.

4.1.2 Measurement's for logistics Service Performance of ESLSE

Table 4.7 the frequency table for the respondents

Measurements		Employee		Customer	
		Frequency	Percent	Frequency	Percent
Logistics Service performance of ESLSE	Low	77	60.2	52	74.3
	Medium	36	28.1	15	21.4
	High	14	10.9	3	4.3
	Total	127	99.2	70	100.0
	System	1	.8	-	-
	Total	128	100.0	-	-
Factors that affects the Logistics Service performance of ESLSE, highly	Transportation infrastructure	51	39.8	26	37.1
	ICT	27	21.1	20	28.6
	Delaying	20	15.6	13	18.6
	Logistics service	25	19.5	11	15.7
	Others un specify	3	2.3	-	-
	Total	126	98.4	70	100.0
	Missed System	2	1.6	-	-
Total	128	100.0	-	-	
availability of low transportation infrastructure is factors for the Logistics Service performance of ESLSE	No	27	21.1	13	18.6
	Yes	101	78.9	57	81.4
	Total	128	100.0	70	100.0
Poor dry port infrastructure affects the Logistics Service performance of ESLSE	No	19	14.8	10	14.3
	Yes	101	78.9	59	84.3
	Total	120	93.8	69	98.6
	Missed System	8	6.3	1	1.4
	Total	128	100.0	70	100.0
Poor road infrastructure of Ethio-Djibouti corridor affects the Logistics Service performance of ESLSE	No	39	30.46	19	27.1
	Yes	85	66.40	51	72.9
	Total	124	96.9	70	100.0
	Missed System	4	3.1	-	-
	Total	128	100.0	-	-
Un availability of well-designed Information communication technology affects Logistics Service performance of ESLSE	No	32	25.0	18	25.7
	Yes	96	75.0	52	74.3
	Total	128	100.0	70	100.0
Delaying on the clearing and transportation process affects the Logistics Service performance of ESLSE	No	37	28.9	12	17.1
	Yes	90	70.3	58	82.9
	Total	127	99.2	70	100.0

	System	1	.8	-	-
	Total	128	100.0	-	-
uncompetitive logistics service affects the Logistics Service performance of the enterprise	No	28	21.9	16	22.9
	Yes	100	78.1	54	77.1
	Total	128	100.0	70	100.0
Have you face bureaucratic service in the enterprise	No	-	-	12	17.1
	Yes	-	-	58	82.9
	Total	-	-	70	100.0

Source: Own survey Data, 2020

In orders to analyze, describe and summarize the characteristics of responses, mean and percentage 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 the questionnaire. The first objective of the study was to assess the factors that are affecting the service performance of Ethiopian shipping and logistics service enterprise (ESLSE). In this context, transportation infrastructure, information technology, Delaying and uncompetitive logistics service were raised to the constraints of the enterprise performance. The second objective of the study was to identify the main factor that affect the Logistics service performance of Ethiopian shipping and logistics service enterprise (ESLSE). From the finding the most respondents agreed with transportation infrastructure is the main factors for the service performance of the enterprise.

To this end, respondents were asked to answer a set of questions related to the factors of the performance of the enterprise and give their opinion.

From the above table 4.7 majority of the employee respondents 77 (60.2% of them had been respond the Service performance of the enterprise were low. (15)28.1% of the respondents agreed with as the enterprise have medium level with its Logistics Service performance. About 10.9 percent of the employee respondents' said that the Logistics Service performance of the enterprise is high. Similarly in the table, respondent's agreement on the level of Logistics Service performance of ESLSE for customer was displayed. About (52) 74.3% of them had been respond the Logistics Service performance of the enterprise were low, (15)21.4% of them medium and (3)4.3% of the customers respondents' said that the Service performance of the enterprise is high.

In the second row the results for the respondents' agreement on the factors which is highly affects the Logistics Service performance of ESLSE were displayed. About (51)39.8% of the respondents said that the transportation infrastructure were highly affects the Logistics Service performance of the enterprise, (27)21.1% of them choose ICT, 19.5, 15.6 percepts of the respondents agreed with the Logistics Service performance of the enterprise were affected by logistics service and delaying respectively. About 2.38% of employee responded the Logistics Service performance of the enterprise was affected by out of these specified factors. According to the customer respondents about 37.1% of them said the Logistics Service performance of Ethiopian shipping and logistics service enterprise was highly affected by transportation infrastructure, 28.6% and 18.6% of them said ICT and delaying respectively. The remaining 15.7% of the respondents said that uncompetitive logistics service is the factor that is highly affects the enterprise factors.

From the above table 4.7 about 101(78.9 %) of sampled respondents were agree with as availability of low transportation infrastructure is factors for the Logistics Service performance of ESLSE. The other 27(21.1%) of the employee respondents give the answer as availability of low transportation infrastructure is does not factors for the Logistics Service performance of ESLSE. In the same way about 57 (81.4%) of customer respondent were responded availability of low transportation infrastructure is factors for the Logistics Service performance of ESLSE. The remaining 13(18.6) answer availability of low transportation infrastructure is factors for the Logistics Service performance of ESLSE.

About 101 (78.9 %) of sampled respondents were agree with as poor dry port infrastructure affects the Logistics Service performance of the enterprise. The other 19(14.8%) of the employee respondents give the answer as the poor dry port infrastructure does not affects the Logistics Service performance of the enterprise. The remaining in the same way about 59 (84.3%) of customer respondent were responded that poor dry port infrastructure affects the Logistics Service performance of the enterprise, 10(14.3%) of the respondent answer Poor dry port infrastructure does not affects the efficiency Service performance of ESLSE.

In the fifth row About 90 (70.3 %) and 51 (72.9%) of sampled the respondents of employee and customer respectively were agree Poor road infrastructure of Ethio-Djibouti corridor affects the Logistics Service performance of ESLSE. The other 31(24.2%) and 19(27.1%) of the employee

and customer respondents respectively give the answer as Poor road infrastructure of Ethio-Djibouti corridor does not affects the Logistics Service performance of ESLSE. The remaining 4(3.1%) of the employee respondents does not answer this question they missed the system.

From the respondents about 96(75.0 %) and 52(74.3%) of sampled the respondents of employee and customer respectively were agree unavailability of well-designed Information communication technology affects Logistics Service performance of ESLSE. The remaining 32(25%) and 18(25.7%) of the employee and customer respondents respectively give the answer unavailability of well-designed Information communication technology does not affects Logistics Service performance of ESLSE.

From the output About 96(75.0 %) and 58(82.9%) of sampled the respondents of employee and customer respectively were agree Delaying on the clearing and transportation process affects the Logistics Service performance of ESLSE, 37(28.9%) and 12(17.1%) of the employee and customer respondents respectively give the answer Delaying on the clearing and transportation process affects the Logistics Service performance of ESLSE

From the above table 4.7 about 100(78.1 %) and 54(77.1%) of sampled the respondents of employee and customer respectively were agree with poor logistics service affects the Logistics service performance of the enterprise. The remaining 28(21.9%) and 22(22.9%) of the employee and customer respondents respectively give the answer Poor logistics service does not affects the Logistics Service performance of the enterprise.

In the last row of table 4.7 above the respondents who were asked that if they are challenged with bureaucratic service, about 58 or 82.9% of the respondents face with bureaucratic service among different branches of the enterprise.

4.2 Econometric Analysis

This section presents the factor that affects the Logistics Service performance of Ethiopian shipping and logistics service enterprise by using binary logistics regression models. So to show the factors on the Logistics service performance, the dependent variable LSPESLSE was regressed against four explanatory variables.

Result of binary Logistic Regression analysis

Table 4.8 Classification table

Classification Table ^{a,b}					
Observed			Predicted		
			Logistics service performance of ESLSE		Percentage Correct
			Low	Not low	
Step 0	Logistics service performance of ESLSE	Low	138	0	100.0
		Not low	59	0	.0
	Overall Percentage				70.1
a. Constant is included in the model.					
b. The cut value is .500					

Source: Own survey Data, 2020

The above Classification output table tells us how many of the observed values of the dependent variable have been correctly predicted within the value of 1, for low logistics service performance of ESLSE or 0 the logistics service performance of the enterprise is not low. Given the base rates of the two logistics service performance options, about 70.1% of the respondents decided that the logistics service performance of ESLSE is low and the remaining 29.90% of the respondents agreed with the logistics service performance of the enterprise were not low.

The overall accuracy of the model to predict the logistics service performance of ESLSE, in the above table out of 198 total sampled included in the model 70.1% were correctly predicted.

Table 4.9 Variables in the Equation

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.850	.273	15.049	1	.000	.427

Source: Own survey Data, 2020

Under **Variables in the Equation** table we have seen that the intercept for the model is $\ln(\text{odds}) = -.850$. If we exponentiate both sides of this expression we find that our predicted odds $[\text{Exp}(B)] = .427$. That is, the predicted odd of agreement with the idea of logistics service performance of the enterprise were low. Since 59 of the respondents said that logistics service performance of the enterprise were not low and 138 of them agree with the idea of logistics service performance of the enterprise were low, our **observed odd is $59/138 = .427$** .

Block 1: Method = Enter

Table 4.10 Omnibus Tests of Model Coefficients

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	71.12	4	.000
	Block	71.12	4	.000
	Model	71.12	4	.000

Source: Own survey Data, 2020

Under the model coefficient table, since the corresponding p- value for the model is 0.000, is less than level of significance ($\alpha=0.05$), so we reject $H_0 (\beta_j=0)$, therefore the binary logistic model is good fitted. This value indicates that the overall significance of the model, considering all four variables (predictors) included in the model. And in this case the chi-square test is significant and interpreted us the model fits well.

Table 4.11 Model Summary

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	54.878 ^a	.771	.732

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Source: Own survey Data, 2020

From the above table Cox and Snell R^2 indicate that 77.1% of the variation in the dependent variable the logistics service performance is explained by explanatory variables which are transportation infrastructure, ICT, delaying and logistics service. Nagelkerke's R^2 in Model Summary table is 73.2 which indicate that 73.2% of the variability in logistics service performance is explained by the explanatory variables.

Table 4.12 Hosmer-Lemeshow goodness of fit test

Hosmer and Lemeshow Test			
Step	Chi-square	Df	Sig.
1	2.243	6	.896

Source: Own survey Data, 2020

H_0 : The model is good fit. $V_S H_1$: the model is poor fit or not good fit.

The recommended test for overall fit of a binary logistic regression model is the Hosmer-Lemeshow test.

From the table of Hosmer and Lemeshow test the p-value = 0.896 is greater than the commonly used α value 0.05, therefore do not reject the null hypothesis. Since the large p-value indicates well fit, we conclude that the model is good fit.

Table 4.13 output coefficient for variable

Variables in the Equation									
		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Trinf	-.400	.0440	82.65	1	.00**	.789	.409	2.297
	ICT	-.349	.0418	69.71	1	.049*	.705	.441	2.265
	Delaying	-.236	.0413	32.65	1	.027*	0.600	.444	2.238
	Logservice	.125	.0448	7.78	1	.781	.778	.471	2.727
	Constant	-.503	.0620	65.81	1	.417	.604		

a. Variable(s) entered on step 1: Trinf, ICT, Delaying, Logservice.

Note: *, **, indicate significance at the level 10% and 5% respectively.

We are also given a **Wald Chi-Square** statistic, which tests the unique contribution of each predictor, in the context of the other predictors -- that is, holding constant the other predictors -- that is, eliminating any overlap between predictors. Notice that each predictor meets the conventional .05 standard for statistical significance except for variable Logistics service. The Wald χ^2 has been criticized for being too **conservative**, that is, lacking adequate power. An alternative would be to test the significance of each predictor by eliminating it from the full model and testing the significance of the increase in the -2 log likelihood statistic for the reduced model.

The estimate column contains the regression coefficients. For each predictors the regression slope is the predicted change in log odds of falling into the target group (as compared to the reference group on the dependent variable) per one unit increase on the predictor(controlling for the remaining predictors). The coefficient is the predicted change in log odds per unit increase on the predictor.

The odds ratio (OR) column contains values that are interpreted as the multiplicative change in odds for every one unit increase on predictor. In general, an odds ratio (OR) >1 indicate that as scores on the predictor increase, there is an increasing probability of the case falling into the target group on the dependent variables. An odds ratio (OR) <1 can be interpreted as decrease the probability of being in target group as scores on the predictor increase. If OR=1, then these indicates no change in the probability of being in the target group as score on the predictor change.

As we have seen from the output poor transportation infrastructure, unavailability of well-designed ICT infrastructure and delaying have negative effects on the logistics service performance of the enterprise. The rest uncompetitive logistics service has positive effects.

According to the respondents transportation infrastructure is negative and significant ($b = -.400$, $s.e. = .440$, $p = .00$) predictor of the probability for low logistics service performance of the enterprise. With the OR indicating that for every one unit increase of poor transportation infrastructure the odds of logistics service performance for the enterprise change by .789s (meaning that the odds are decreasing).

Similarly Information communication technology (ICT) is negative and significant ($b = -0.346$, $s.e. = .0418$, $p = .049$) predictor of the probability for low logistics service performance of the enterprise. The OR indicating that for every one unit increase of unavailability of well-designed ICT the odds of logistics service performance for the enterprise change by .705 (meaning that the odds are decreasing).

Delaying is negative and significant ($b = -.236$, $s.e. = .0413$, $p = .027$) predictor of the probability for low logistics service performance of the enterprise. The OR indicating that for every one unit increase of delaying in clearance and transportation the odds of logistics service performance for the enterprise change by .600 (meaning that the odds are decreasing).

Uncompetitive Logistics service is positive and non-significant predictor of logistics service performance of the enterprises ($b = .125$, $s.e. = .0448$, $p = .027$).

When we see the confidence interval for transportation infrastructure $\exp(B_1)$ is 0.409 to 2.297, indicates that transport infrastructure is between 0.409 and 2.297 times as likely to agree with the

idea of poor transportation infrastructure is the factors for low logistics service performance of ESLSE than transportation infrastructure does not affects the logistics service performance of the enterprise.

Similarly the confidence interval for ICT, $\exp(B_2)$ is 0.441 to 2.265, unavailability of well-designed ICT infrastructure is between 0.441 and 2.265 times as likely to agree with the idea unavailability of well-designed ICT infrastructure is the factor for low logistics service performance of ESLSE than unavailability of well-designed ICT infrastructure does not affects the logistics service performance of the enterprise.

The confidence interval for delaying $\exp(B_1)$ is 0.444 to 2.238, indicates that delaying is between 0.409 and 2.297 times as likely to agree with the idea of delaying is the factors for low logistics service performance of ESLSE than delaying does not affects the logistics service performance of the enterprise.

From the table 4.13 above the estimated model is:

$$\text{logit (LSPESLSE)} = -.503 - .400\text{Trinf} - .349 \text{ICT} - .236\text{Delaying} + .125\text{Logservice}$$

4.3 Diagnostic Test

4.3.1 Test of Multicollinearity

Multicollinearity refers to the condition that variable are correlated and it's the features of sample for the population. To test multicollinearity researcher was use VIF.

Table 4.14 Test of Multicollinearity

Variable	Employee		Customer	
	VIF	1/VIF	VIF	1/VIF
Logservice	3.66	0.273461	1.03	0.970336
Ict	2.92	0.342447	1.03	0.975483
Trinf	2.70	0.371003	1.02	0.981841
Delaying	2.67	0.374007	1.01	0.987112
Mean VIF	2.99		1.02	

Source: Own survey Data STATA output, 2020

From the above table the mean of variance inflation factor (VIF) is less than 5 for employee and customer, it shows that there is no a problem of multi-collinearity or linear relationship between a given explanatory variables.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study has dealt with the problem of the logistics service performance of Ethiopian shipping and logistics service enterprise. Specifically, the problem of the study is to assess the factors that affect the logistics service performance of Ethiopian shipping and logistics service enterprise and analyzing the logistics service performance of **ESLSE**.

Both quantitative and qualitative survey study was designed to investigate the factors that affect logistics service performance of ESLSE. Population of 708 employees was identified as operating firms. From this target population by stratified sampling techniques about 128 samples of employee were selected. By purposive selection technique about 70 samples of customers were taken. Knowing how many customers are got service from the enterprise is very challenging, that is why the researcher used purposive sampling technique for customer group.

Quantitative data were collected through a survey questionnaire and the data were analyzed by statistical software called SPSS and STATA through descriptive and inferential statistics procedures. Appropriate tests have been conducted to make sure that the data collected were adequate for making statistical inference. Moreover, appropriate statistical procedures were applied for the purpose of analysis.

5.2 Conclusion

The aim of this study was to assess the factors that affect the logistics Service performance of Ethiopian shipping and logistics service enterprise based on the total over all sample of 198 employees and customers. Both descriptive statistics and inferential statistics methods of data analysis were used. Conclusions were drawn based on the results of the study. The result indicated that most respondents evaluated the organization as poor logistics Service performance and majority of the respondents of employee and customers were not satisfied with the logistics Service performance of the enterprise. In this study poor transportation infrastructure, ICT, Delaying and uncompetitive Logistics service are raised as the factors for the logistics Service performance of Ethiopian shipping and logistics service enterprise. Specifically poor

transportation infrastructure is the most significant factor for the Logistics service performance of the enterprise.

The result of this study clearly shows that the major factors of observed performance of enterprise are as follows.

- The poor transportation infrastructure is the most factors for logistics service performance of ESLSE.
- The transportation infrastructure service of the enterprise increases the delaying time of the transportation and the customers was not satisfied.
- It is also observed that ESLSE have not well performed in use ICT and other technologies to perform
- Delaying in freight forwarding and clearance is factors for the service performance of ESLSE and it is a cause for high transportation cost.
- Long import process of customs affects availability of items timely this show that the overall practice has a negative impact on customers.
- The system which was the customer's gain logistics service did not satisfied them on the performance indicators used in this study.

Generally, the study shows that the logistics service performance of Ethiopian shipping and logistic service enterprise is not satisfactory. The logistics service performance of Ethiopian shipping and logistic service enterprise based on the factors that were identified in this study is at the lowest level. Thus, the study enhanced the importance of improving logistics service performance of ESLSE.

5.3 Recommendations

As indicated in the conclusion part of this study, the major problems for the service performance of Ethiopian shipping and logistics service enterprise were identified. Thus the enterprise should take corrective actions to alleviate the problems related to logistics service performance practices on the indicators of transportation infrastructure, information communication technology, delaying in transportation and clearance and logistics service. Based on the results of the study, the following recommendations are suggested for consideration:

- The enterprise should work on transportation infrastructure and information communication technology to minimize the delaying of transportation and to minimize transportation costs incurred as it has a negative impact on the Logistics service performance of the enterprise and profitability.
- The enterprise must work with the stockholders like road authority to overcome good road infrastructure like express road.
- The enterprise should apply maximum load of trucks and consider the route of the distance to deliver products to customers in order to reduce the delaying time of transportation.
- The enterprise should improve late and unsafe delivery of products to satisfy customers and use skilled human power specially the enterprise's dry ports operation to improve service performance
- The enterprise should have any standard tool to check level of customer satisfaction to take corrective action based on the services that are provided.
- ESLSE should be further familiarized with complete logistics service performance improvement tools and measures of logistics for their customer in order to improve and supplement their logistic.
- ESLSE need to focus on major logistics activities to give an effective logistics service.

All these action together enable the enterprise to improve logistics service performance by giving the service efficiently, timely, competitively and ultimately. As a result of improved logistics service performance for the enterprise, profitability and customer's satisfaction will proceeds.

Reference

- Addis,G. (2017). *Logistics performance on service delivery; the case of ESLSE*. Addis Ababa
- Adkins, W., Ward, G. & McFarland , W. F. (1967). *Value of Time Savings of Commercial Vehicles*, Washington, D.C.
- Agrawal, K.D. (2013). *Textbook of Logistics and Supply Chain Management*. New Delhi: Rajiv Beri for Macmillan India Ltd.
- Ahuja, R. (2001). *Research methods*. Jaipur, India. Rawat publications.
- Arvis, J. M., and Alina, M. L.(2007). *The Logistics Performance Index and Its Indicators*. The World Bank/© The International Bank for Reconstruction and Development / The World Bank
- Ayele, L. (2014). *Challenges of Multi-Modal Transport Services, the Case of Ethiopian Shipping and Logistics Enterprise*. MATHesis, St. Marry University, Addis Ababa.
- Baker, P. (2006). *Designing distribution centers for agile supply chain*, *International Journal of Logistics*. Research and Applications, Vol. 9 No. 3, pp. 207-21.
- Birtukan, E. (2019). *Factors influencing logistics service delivery: The case of Ethiopian Shipping and Logistics Service Enterprise*. Addis Ababa.
- Bowersox, D.J., Closs, D.J. and Stank, T.P. (1999). *21st Century Logistics: Making Supply Chain Integration a Reality*. Council of Logistics Management, Oak Brook, IL.
- Caceres, R., Ch., & Paparoidamis N., G. (2007). *Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty*. *European Journal of Marketing*, 41 (7/8), 36– 867.<http://dx.doi.org/10.1108/03090560710752429>
- Chow, G. H. (1994). *Logistics performance definition and measurement*. *International Journal of physical distribution and Logistics management*, pp. 17-28.
- CSCMP, (2007). *Definition of Logistics - Council of Supply Chain Management Professionals*.
- CSCMP,(2018). *Concils of Supply Chain Management Professionals*. [Online] Available at: <http://www.clm1.org> [Accessed 27 January 2018].
- Ensermu. M. (2017). *Logistics performance on service delivery the case of Ethiopian logistics and service enterprise*. Addis Ababa.
- Ethiopian Railways Corporation (ERC), (2013). Newsletter, Col. 3 issue 3, March.
- Fekadu M. D. (2013). *Logistics Practices in Ethiopia*. SUAS, Swedish University of Agricultural Sciences.

- Fugate, B. S., Mentze, J. T. & Stank, a. T. P., (2010). *Logistics performance: efficiency, effectiveness, and differentiation*. Journal of business logistics, 31(1), p. 44.
- Gacuru, W. & Kabare, K. (2015). *Factors affecting efficiency in logistics performance of trading and distribution firms based in Jomo Kenyatta International Airport area*. International Academic Journal of Procurement and Supply Chain Management, 1 (5), 50-71.
- Gassenheimer, G. J. (1989). *An Empirical Investigation of some antecedents of opportunism in a Marketing Channel*.
- Green Jr, K. W., Whitten, D. & Inman, R. A. (2008). *The impact of logistics performance on organizational performance in a supply chain context*. Supply Chain Management: An International Journal, 13(4), p. 319.
- Green, P. E. and Donald, S. T. (2008). *Research for Marketing Decisions, 4th ed*. Englewood Cliffs, NJ: Prentice- Hall, Inc., pp. 210-211.
- Gorla, N., Somers, T. M. & Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. Journal of Strategic Information Systems 19, 207–228. <http://dx.doi.org/10.1016/j.jsis.2010.05.001>
- Griffis et al., (2004). *Performance Measurement: Measure Selection Based Upon Firm Goals and Information Reporting Needs*. Journal of Business Logistics, p. 14.
- Hesket, J. L. (1973). *Business Logistics*. New York: Ronald.
- Hoang, D., T., Igel, B., & Laosirihongthong, T. (2010). *Total quality management (TQM) strategy and organizational characteristics: Evidence from a recent WTO member*. Total Quality Management & Business Excellence, 21, 931–951.
<http://dx.doi.org/10.1080/14783363.2010.487680>
- Harrington, H. J. (1995). *GoodReads*. [Online] Available at: <https://www.goodreads.com/quotes/632992-measurement-is-the-first-step-that-leads-to-control-> and [Accessed 16 August 2018].
- Jayawardhena, Ch. (2010). *The impacts of service encounter quality in service evaluation: evidence from a business-to-business context*. Journal of Business & Industrial Marketing 25 (5), 338– 348. <http://dx.doi.org/10.1108/08858621011058106>
- kalkidan, W. (2017). *Assessing Freight Transport Performances in Relation to Delays in Ethiopia: the case of Addis Ababa-Djibouti Corridor*. Addis Ababa
- Kotler, P., and Keller, K.L. (2012). *Marketing Management (14E)*. New Jersey: Prentice Hall.
- Langley and Holcomb, (1992). *Creating logistics customer*. Journal of Business Logistics, 13(2),

pp. 1-27.

- Larson, P.D., Poist, R.F. and Halldorsson, A. (2007). *Perspectives on logistics vs. SCM. A survey of SCM professionals*. *Journal Business Logistics* 28(1):1-24.
- Lowe, D. (2002). *Dictionary of Transport and Logistics*. London: British Library Cataloguing in Publication Data.
- Lynch, D., Keller, S. and Ozment, J. (2000). *The effects of logistics capabilities and strategy on firm performance*. *Journal of Business Logistics*, 2000, 21 (2), 47 - 67.
- Mangan, L. (2008). *Global logistics and supply chain management*. London: Chichester, England ; Hoboken, NJ : John Wiley & Sons.
- Matiwos, E. (2015). *Logistics Management*. Addis Ababa, Ethiopia: Artistic P.E.
- Mentzer, J.T. (2004). *Fundamentals of Supply Chain Management*, Sage, Thousand Oaks, CA.
- Mentzer, J. T. & Konrad, B. P. (1991). *An Efficiency/Effectiveness Approach to Logistics Performance Analysis*. *Journal of Business Logistics*, 12(1), p. 33.
- Milan, M. Andrejić, (2012). *Measuring efficiency in logistics*. *Logistics, Operations Management*, 31 03, Vol 2(10.5937/vojtehg61-1756), p. 84.
- Nehemiah, W. (2017). *Supply Chain Management Practices and Operational Performance of SMEs in Nairobi County, Kenya*. Singapore: © Springer Nature Singapore Pte Ltd. 2017.
- OECD, (1992). *Technology and the economy: the key relationships*. Paris: OECD
- Preville, D. C. (2010). *Ethiopia's Trade and Investment: Policy Priorities for the New Government*. Addis Ababa, s.n.
- Rahman, S. U. (2008). *Quality management in logistics services: A comparison of practices between Manufacturing companies and logistics firms in Australia*. *Total Quality Management & Business Excellence*, 19 (5), 535–550.
<http://dx.doi.org/10.1080/14783360802018202>
- Rui, M. and Luís, A. G., Coelho. (2014). *Logistics Performance: a Theoretical Conceptual Model for Small and Medium Enterprises*. CEFAGE working paper, 1 1, p. 4.
- Santosh, K and Shirisha, P (2014). *Transportation the Key Player In Logistics Management*. *Journal of Business Management & Social Sciences Research (JBM&SSR)*, 3(ISSN No: 2319- 5614), p. 15.
- Shambachew, O. And Bkele, R. (2015). *Export Trade Logistics Determinant Factors: The Case of Ethiopian Major Export Products*. Addis Ababa university

- Sezen, (2005). *The role of logistics in linking operations and marketing and influences on business performance.*
- Sun, X. (2014). *Operations Management of Logistics and Supply Chain: Issues and Directions.* College of Economic and Social Development, Nankai University, Tianjin 300071, China, Volume 2014(10 June 2014), p. 1
- Tamrat.J, (2019).*Factors affecting logistics performance: The case of Ethiopian shipping and logistics service enterprise.* Addis Ababa University.
- Tessema, T. (2017). *Challenges and prospects of applying multimodal transport system in Ethiopian shipping and logistics service enterprise.* Journal Vol 7, No.6, Arsi University, Ethiopia.
- The World Bank , (2016). *The Logistics Performance Index and Its Indicators*, 1818 H Street NW, UNCTAD. (2015). UNCTAD Review of Maritime Transport.
- World Bank-United Nations (2014).*Improving Trade and Transport for Landlocked Developing Countries: A Ten-Year Review.* report in preparation for the 2nd United Nations Conference on Landlocked Developing Countries (LLDCs)
- Zhou, H. and Benton. Jr, W.C. (2007). *Supply Chain practice and information sharing.* Journal of Operations Management 25: 13481365.

Appendix I



SCHOOL OF GRADUATE STUDIES INSTITUTE OF AGRICULTURE & DEVELOPMENT STUDIES DEPARTMENT OF DEVELOPMENT ECONOMICS

QUESTIONNAIRE TO BE FILLED BY EMPLOYEE

Dear Respondent: This research survey is designed to fulfill an academic requirement for M.Sc. degree program in Development economics at S.t Marry University with the title of “Assessing the factors that are affecting the performance of Ethiopian Shipping and Logistics Service enterprise (ESLSE)”. I would like to assure you that the research data will only be used for academic purposes. Therefore, I would kindly request you to carefully read the questions and give your valuable answer to each question. Your genuine and frank response to the questionnaire is highly important for the achievement of the objectives of this research.

For any clarification on this questionnaire, please contact me on 0922822546 or damtewstat@gmail.com (Damtew Solomon). Thank you in advance, for your invaluable cooperation.

Part one: General information/ Personnel data

The following questions are about your personal information. Please give your response for the questions here under by putting a Tick “√” mark at your appropriate choice.

1. Your Sex A. Male Female
2. Your Age.....
3. Your Educational level
 A. Certificate B. Diploma C. degree D. masters and above
 E. Other

4. How long have you been working with the enterprise.....?
5. Your current position in the enterprise.
 - A. Junior Level
 - B. Medium Level
 - C. Senior Level
 - D. Management Level
 - E. Other

Part two Factors affecting the logistics service performance of ESLSE

1. How do you evaluate the logistics service performance of ESLSE?
 - A) Low B) Medium C) High
2. Which factors do you think highly affect the *logistics service performance* of Ethiopian shipping and logistics service enterprise?
 - A. Transportation infrastructure
 - B. ICT
 - C. Delaying
 - D. Logistics Service
 - E. Other specify.....
3. Do you think that the availability of poor transportation infrastructure is affects logistics service performance of ESLSE? A. Yes B. No
4. Poor dry port infrastructure affects the logistics service performance of ESLSE. A. Yes B. No
5. Poor road infrastructure of Ethio-Djibouti corridor affects the *logistics service performance of ESLSE*.
 - A. Yes B. No
6. Un availability of well-designed Information communication technology affects logistics service performance of ESLSE.
 - A. Yes B. No
7. There is an *efficient* information flow in ESLSE. A. Yes B. No
8. Delaying on the clearing and transportation process affects the logistics service performance of the enterprise service. A) Yes B) No
9. Do you agree that the poor logistics service affects the *logistics service performance of ESLSE*?
 - A. Yes B. No
10. ESLSE's shipment status information dissemination facilities have been *efficient*?
 - A. If yes, how.....
 - B. If no, why?

11. There is *effective* procedure to allow door-to-door movement of containerized cargo service?

A. Yes

B. If no, why?.....

12. Did you think that the happening of COVID-19 affects the logistics service performance of ESLSE?

A) Yes (if yes how it affects).....

B) No

13. Did you think that the current Ethiopian condition affects the logistics service performance of ESLSE?

A) Yes (if yes how it affects)

B) No

Part three

This section questionnaire relates to your level of awareness and knowledge regarding to the physical conditions for the logistics service performance of ESLSE. Put your answers in the space provided.

1. What are your recommendations regarding improvements of the logistics service performance of ESLSE?

QUESTIONNAIRE TO BE FILLED BY CUSTOMERS

Dear Respondent: This research survey is designed to fulfill an academic requirement for M.Sc. degree program in Development economics at S.t Marry University with the title of “Assessing the factors that are affecting the performance of Ethiopian Shipping and Logistics Service enterprise (ESLSE)”. I would like to assure you that the research data will only be used for academic purposes. Therefore, I would kindly request you to carefully read the questions and give your valuable answer to each question. Your genuine and frank response to the questionnaire is highly important for the achievement of the objectives of this research.

For any clarification on this questionnaire, please contact me on 0922822546 or damtewstat@gmail.com (Damtew Solomon). Thank you in advance, for your invaluable cooperation.

Part one: General information/ Personnel data

The following questions are about your personal information. Completion of this information is voluntary & confidentially is assured. No individual data will be reported. Please give your response for the questions here under by putting a Tick “√” mark at your appropriate choice.

- 1. Your Sex A. Male B. Female
- 2. Your Age.....
- 3. Your Educational level
 - A. Certificate
 - B. Diploma
 - C. degree
 - D. masters and above
 - E. Other
- 4. How long have you been working with the enterprise.....?
- 5. Your organization A. Importer B. Exporter C. Transporter
 - D. Transistors
 - E. other

Part two Factors affecting the logistics service performance of ESLSE

- 1. How do you evaluate the logistics service performance of ESLSE?
 - A) Low B) Medium C) High
- 2. Which factors do you think highly affect the *logistics service performance* of Ethiopian shipping and logistics service enterprise?
 - A. Transportation infrastructure
 - B. ICT

14. Did you think that the current Ethiopian condition affects the logistics service performance of ESLSE?

A) Yes (if yes how it affects)

B) No

Part three

This section questionnaire relates to your level of awareness and knowledge regarding to the physical conditions for the logistics service performance of ESLSE. Put your answers in the space provided.

1. What are your recommendations regarding improvements of the logistics service performance of ESLSE?
