



ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

LOGISTICS AND SUPPLY CHAIN MANAGEMENT PROGRAM UNIT

**FACTORS AFFECTING EFFICIENCY OF FREIGHT TRANSPORT: IN
THE CASE OF ADDIS ABABA-DJIBOUTI CORRIDOR**

THE THESIS SUBMITTED TO LOGISTICS AND SUPPL CHAIN
MANAGEMENT PROGRAM UNIT FOR THE AWARD OF MASTER'S
DEGREE IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

BY: LIBEN BESHIR TAHIR

ADVISOR: TARIKU JEBENA (PhD)

JUNE, 2022 G.C

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COLLEGE OF BUSINESS AND ECONOMICS
LOGISTICS &SUPPLY CHAIN MANAGEMENT PROGRAM UNIT
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DECLARATION

I, Liben Beshir, hereby declare that the thesis entitled “Factors affecting the efficiency of freight transport: the case of Addis Ababa- Djibouti corridor” submitted to the department of logistics & supply chain management Addis Ababa university, for the award of the degree of master of arts in logistics & supply chain management is original research work done by me, under the supervision and guidance of my advisor, Tariku Jebena (PHD).

Place: Addis Ababa

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Signature of the candidate Date:

Advisor approval Sheet

Certificate

This is to certify that the thesis, entitled “Factors Affecting The Efficiency Of Freight Transport: The Case Of Addis Ababa Djibouti Corridor” submitted to the Logistics and supply chain management program unit, for the award of the Degree of logistics and supply chain management is a record of original research work done by Liben Beshir under my supervision and guidance and the thesis has not formed the basis for the award of any Degree / Diploma / Associate-ship / Fellowship or another similar title of any candidate of any University and it complies with the regulation and accepted standards of the university.

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**Assessing Factors Affecting the Efficiency of Freight Transport: The Case
of Addis Ababa Djibouti Corridor**

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Contents

List of tables	VII
List of Figures	VIII
ABBREVIATIONS and ACRONYMS	IX
ABSTRACT	X
ACKNOWLEDGMENTS.....	XI
CHAPTER ONE	1
1. INTRODUCTION	1
1.1 Background of the study	1
1.3. Research Question.....	4
1.4. Research Objectives	4
1.4.1. General Objective.....	4
1.4.2. Specific Objectives.....	4
1.5. Significance of the Study.....	5
1.6. Scope of the Study	5
1.7. Operational Definition of Concepts and Terms.....	5
1.9. Organization of the Study.....	6
CHAPTER TWO	7
Literature Review	7
2.1 Theoretical Literature Reviews.....	7
2.1.1Introduction	7
2.1.2 Concept of Freight Transportation.....	7
2.1.3 The Origin of Development of Corridors.....	9
2.1.4 The Stages of Corridor Transformation	10
2.1.5 Logistics Performance Index.....	12
2.1.6 Freight Transport Performance along the Corridor	13
2.1.7 Freight Corridor Main Stakeholders	14
2.2 Empirical Literature Review	15
2.2.1 Road Freight Transport Challenges in Africa.....	15
2.2.2 Freight Transport Challenges in Ethiopia	18

2.2.3 Freight Transport Best Practice in Different Countries.....	19
2.3 Conceptual Framework	20
2.4 Research Gap	21
CHAPTER THREE.....	22
RESEARCH METHODOLOGY	22
3.1. Introduction	22
3.2. Research Approach	22
3.3. Data Type, Sources and Collection Techniques.....	23
3.4 Population and Sample	23
3.4.2 Sampling Unit.....	24
3.5 Methods of Data Analysis	25
3.6 Instrument Validity	25
3.7 Instrument Reliability	26
3.8 Ethical Consideration.....	27
CHAPTER FOUR	28
RESULTS AND DISCUSSIONS.....	28
4.1 Introduction	28
4.1. Demographic Profile of the respondents.....	29
4.2 The factors affecting Freight Transport Efficiency of the Ethio-Djibouti Corridors Operators.....	33
4.2.1 Technological factors affecting the Efficiency of the Condor's' Freight transportation	33
4.2.2 Custom factors affecting the Efficiency of the Condor's' Freight transportation	34
4.2.3 Institutional integration factors affecting the Efficiency of the Condor's' Freight transportation.....	36
<i>Table 4.8: Descriptive Statistics on institutional integration</i>	37
4.2.4 Infrastructure factors affecting the Efficiency of the Condor's' Freight transportation	38
4.3 Discussion of results	40
CHAPTER FIVE	42

CONCLUSION AND RECOMMENDATIONS	42
5.1. Summary of the study	42
5.2 Conclusion.....	42
5.3 Recommendations	43
Reference	44
APPENDIX I.....	50

List of tables

Table	Page number
Table 0-1: Cronbach's Alpha coefficient	27
Table 4.1: Response rate of Questionnaire.....	28
Table 4.2: Age, Sex and educational level of Respondents.....	29
Table 4 .3: How long Distance does you cover per month in KMs?.....	30
Table 4.4: What type of truck do you operate?	31
Table 4.5: How your average trip of frequency through the corridor per month.....	32
Table 0.6: Descriptive statistics on Technology.....	33
Table 0.7: Descriptive Statistics on Custom	35
Table 0.8: Descriptive Statistics integration on institutional	37
Table 4.9: Descriptive Statistics on Infrastructure	38
Table 4. 10: Comparison of Mean &STD of Independent variables.	40

List of Figures

Figure	page number
Figure: 2.1 Conceptual Frameworks.....	20
<i>Figure 4.1 Distance coverage.....</i>	<i>30</i>
Figure 4.2 Type of truck operated.....	31
Figure 4.3 Average trip of frequency through the corridor per month.....	32
Figure 4.4 Technological factors affecting Efficiency.....	34
Figure 4.5 Custom factors affecting the Efficiency.....	35
<i>Figure 4.6 Institutional integration factors affecting the Efficiency.....</i>	<i>37</i>
Figure 4.7 infrastructure factors affecting the Efficiency.....	39

ABBREVIATIONS and ACRONYMS

MoTL	Ministry of Transport and Logistics
ECC	Ethiopian Customs commission
EMAA	Ethiopian Maritime Affairs Authority
EDI	Electronic Data Interchange
IT	Information Technology
STD	Standard Deviation
SC	Supply Chain
LPI	Logistics Performance Index
EEP	Ethiopian Electric Power

ABSTRACT

The main purpose of this study was to assess factors affecting the efficiency of freight transport through the Ethio-Djibouti corridor. To achieve the objectives of the study, a descriptive research design was used while the research approach was both qualitative and quantitative. The information was obtained through a questionnaire from a sample of 384 drivers and 6 experts and officials through interviewing. The collected data were analyzed using the statistical package for social sciences (SPSS). This research includes both probability sampling and non-probability sampling techniques. The probability sampling technique used stratified sampling techniques to select samples from the list of trucks of every transport association and organization. Non-probability sampling techniques based on purposive sampling using the researcher's criteria interview was conducted with regulatory bodies of MoTL, ECC and EMAA experts. The main findings of the study are some of the major challenges of freight transport through the Ethio-Djibouti corridor; less work performance of the regulatory bodies in the corridor, low utilization of technology, infrastructure (road, electricity, and telecom) problems, and lack of integration among the stakeholders, lack of commitment to solve the problem, lack of skilled manpower. Finally based on the findings, the researcher recommended that government and relevant stakeholders have to work together to address the overall challenges of freight transport; to increase trip frequency; to improve low infrastructure, technology, complex procedures in the custom process to strengthen the stakeholders through the Ethio-Djibouti that corridor.

Keywords: Efficiency, freight transport, Technology, Infrastructure, custom, institutional integration

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CHAPTER ONE

1. INTRODUCTION

This chapter comprises the background of the study which clearly shows an overview of the research, statement of the problem that articulates the depth and coverage of the problem, objective of the study, research questions answered by the study, significance of the study, the scope of the study, limitation of the study, organization of the paper and conceptual definition of the study.

1.1 Background of the study

Road freight transport is indispensable to international economic cooperation and foreign trade. Across all continents, it is commonly used for short and medium distances and in long-distance haulage when minimizing time is important. In all instances, governments play a critical role in ensuring the competitive advantage of private sector operators. Countries often have many opportunities to minimize the physical or administrative barriers that increase costs, take measures to enhance the attractiveness and competitiveness of road transport, or generally nurture the integral role of international road freight transport in the global trade logistics industry(World Bank, 2017)

Road freight transport is particularly critical for economic development as it is often the dominant mode of transport connecting production areas with consumption centers within countries and within the region; in the case of intercontinental trade, road transport allows reaching maritime gateways or the final destinations after shipping(Bove , 2018).

An international transport corridor connects one or more adjoining countries. It may also connect countries that are separated by one or more transit countries or provide a landlocked country with access to the sea. A corridor includes one or more routes that connect centers of economic activity. These routes will have different alignments but with common transfer points and connected to the same endpoints (Ollivier , 2005).

Road freight transport is the main available mode for landlocked developing countries to access regional and global markets(World Bank, 2017). Landlocked developing countries are

completely dependent on their transit neighbors' infrastructure (road, telecommunication, warehouses and loading unloading space) and administrative procedures to transport their goods to port. In many cases, transit neighbors of landlocked developing countries are themselves developing countries, often of broadly similar economic structure and by similar scarcities of resources. Their weak infrastructure, customs and administrative systems result in higher costs on trade passing through a transit country and thus limiting the ability of landlocked developing countries to compete in global markets(World Bank, 2013).

Landlocked countries face countless challenges for connectivity and transportation. Not only is infrastructure but also an extremely high cost to their developing economies, and they also lack technology, policies, procedures, and even trust with trading partners to efficiently and effectively move goods and people through 3rd countries (transit countries) to and from the port, thus increasing risks and costs to their trade and economies. Inefficient border crossings, where goods can be held up for days or weeks, meaning that not only might goods be damaged, stolen, or spoiled, traders must keep more goods in inventory than perhaps necessary, thus directly driving up costs to consumers. That most landlocked countries move goods by relatively old trucks means that as the trucks move across the country, they use more fuel than more developed neighbors, and produce higher levels of air pollution, thus putting national populations at risk(UNCRD, 2018).

Ethiopia is one of the landlocked countries landlocked countries in East Africa. This has inherent disadvantages compared to countries with coastlines ad deep-sea ports. Landlocked countries must access most foreign markets through international transport corridors connecting them to ports in neighboring countries. This in turn makes landlocked countries foreign trade more difficult and costly. Most landlocked countries depend on one or two overland routes through “transit neighbors,” neighboring countries that have agreed to provide access to carry their international trade to and from the sea. The relationship raises many potentially divisive issues: infrastructure provision, maintenance, and compensation, as well as vehicle and driver entry rights, licensing, and insurance. Customs of both parties often fear that the merchandise will be disposed of en route without paying customs duties.

Djibouti Corridor, with its nearest seaport of Djibouti, is 925Kms far from Addis Ababa. It is Ethiopia's main outlet to overseas markets for import-export and serves as an important location for the transit of import and export trade of the vast Ethiopia.

Freight transport in Ethiopia is characterized by the poor logistics management system and lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling and transporting (Debela, 2013).

1.2 Statement of the Problem

According to (World Bank, 2016)the Logistics Performance Index (LPI) of Ethiopia ranked 126th out of 160 countries in the world and performed poorly compared to other countries. According to (Jean-François, 2018)Ethiopia is ranked 131 out of 167 countries. According to the Global Competitiveness Report from 2017-2018,Ethiopia's scores are extremely low on the goods market efficiency and the infrastructure pillars (124th out of 137 countries and 115th out of 137 respectively)compared to other world countries Ethiopia's performance is very poor (Schwab, 2018).

Thus, this study is designed to assess the problem related to logistics performance index, import/export, and investment areas in the country which is highly affected by multiple factors such as poor management along the main corridors, security problems, long custom clearance and checkpoint, poor road conditions, poor warehouse management, poor integration system among stakeholders, poor availability of types of machinery(crane, loading and unloading equipment, etc.), insufficient technological utilization (fleet management, electronic cargo truck system, etc.), corruption, and common problems such as shortage of skilled labor force, financial problems, political instability, harsh condition of the environment, accidents along the corridors, illegal brokers, old age of trucks, etc. are among the major challenges which affect freight transport and overall logistics performance in our country Ethiopia.

Therefore, this study intends to identify those factors through the Addis Ababa-Djibouti corridors and show solutions and suggest possible recommendations to the concerned governmental and non-governmental organizations to address those problems and improve logistics performance, to increase customer satisfaction, promote foreign direct investments, to

improve import/export conditions, etc. as well as solve the three main logistics issues such as time, cost and quantity efficiency which are the headache to the sector.

Even though, multiple studies have been conducted before there are still problems related to freight transport through the corridors. Since the freight transport problems are dynamic, it requires continuous studies. So, the researcher believes that with help of advisor and the researcher's experience on the sector, this study will contribute to the solution by assessing additional current challenges of freight transport within the corridors and providing valuable solutions and suggestions to concerned governmental and non-governmental organizations.

1.3. Research Question

In corresponding with the general and specific objectives given above, the research answered the following research questions.

1. What are the existing conditions and performance of freight transport in the Addis Ababa-Djibouti corridor?
2. What are the major challenges of freight transport through the Addis Ababa-Djibouti corridor?
3. What solutions and recommendations are for the efficiency of freight transport?

1.4. Research Objectives

1.4.1. General Objective

The general objective of the study is to assess the factors affecting the efficiency of freight transport in Addis Ababa- Djibouti corridor.

1.4.2. Specific Objectives

Specific objectives of the study are:

1. To assess the existing condition of freight transport in the Addis Ababa Djibouti Corridor
2. To assess the major challenges of freight transport through the Addis Ababa-Djibouti corridor.

3. To recommend suggested solutions to improve the efficiency of Freight transport in the study corridor

1.5. Significance of the Study

The significance of the study helped to get more knowledge for the researcher about the major challenges and factors of freight transport in the Addis Ababa-Djibouti corridor and enables various policymakers including the Government, transport planners, and other stakeholders to find possible interventions into the problems affecting transports in the main Addis Ababa-Djibouti Corridor.

1.6. Scope of the Study

This research work focused strictly on the major factors and challenges of freight transport inefficiency from Addis Ababa to Galafi which is from Addis Ababa-Awash-Millie-Galafi (the last point of Ethio-Djibouti border). The research embraced 384 sample size cross-border truck drivers who are working from Addis Ababa to Djibouti through Galafi. These are from the total of 15667 cross border trucks calculated by finite population correction factor formula.

1.7. Operational Definition of Concepts and Terms

Freight Transport; refers to the movement or transporting traded goods from place of origination to the place of consumer or buyer, using any mode of transport available or preferred.

Logistics; involves a wide set of activities dedicated to the transformation and distribution of goods, from raw material sourcing to final market distribution as well as the related information flow (Rodrigue et al. 2019)

Transport corridors; represent an accumulation of flows and infrastructures of various modes and their development is linked with economic, infrastructural and technological processes (Rodrigue , 2019).

Driver; is a central component of road transport services, being the ambassador of his company towards the clients, the road users, the control authorities, and the competitors (World Bank, 2017)

Demurrage; means a payment to compensate for detaining a truck beyond the time limit allowed: a) for loading or unloading by a sender, consignee, or warehouse; or b) for the inspection conducted by a government regulatory body.

1.9. Organization of the Study

The paper is organized into five chapters. Chapter One Introduction, Chapter Two Review of Related Literature, Chapter Three Research Methods and Methodology, Chapter Four Data analysis and Interpretations, Chapter Five Conclusion and Recommendations.

CHAPTER TWO

Literature Review

2.1 Theoretical Literature Reviews

2.1.1 Introduction

This section deals with the theoretical concept, freight transport corridor, empirical knowledge as well as challenges of freight transport and logistics performance management. It starts with definitions of freight logistics, freight corridor, and logistics performance index and goes on elaborating challenges of freight transport and research gaps end with the conceptual framework.

2.1.2 Concept of Freight Transportation

Transportation is an all inclusive and extremely vital function in all industrialized economies, and its systems provide the necessary links between producers and consumers both domestically and globally (Coyle, 2015).

Logistics is the management of the flow of goods, information, and other resources, between the point of origin and the point of consumption to meet the requirements of consumers, and it includes transportation, inventory, warehousing, material handling, and packaging, insurances, and customs, etc. The most important component of logistics is transportation (Özceylan, 2018).

Freight transport makes a vital contribution to the economy and society and is at the heart of globalization (Özceylan, 2018). Freight transportation is interrelated and concerns a mobility scale that spans nations and often continents, and the Processes are related to economic integration, the fragmentation of production systems due to outsourcing and off shoring are interdependent and have favored to setting of global commodity chains, from the extraction of raw materials, manufacturing, and up to consumption. Hence, it requires an understanding of logistics and the growing level of integration between production, distribution, and consumption (Rodrigue, 2019).

Road freight transport is a key contributor to economic development and integration, and its flexibility and capabilities make it indispensable to development strategies and integration processes (World Bank, 2017). Freight logistics is a key component of supply chain management centers on the flow of goods (transport and storage) throughout the value chain. In addition, players in the economy organize logistics based on their inventory, production, and distribution strategies, generally achieved through a balance of factors. Whereas, transporting production inputs or finished products in large shipments, for example, can reduce freight costs but increase inventory costs (Barbero, 2010).

On the other hand (Chopra and Meindl, 2013) Transportation moves products between different stages in a supply chain and impacts both responsiveness and efficiency. Transportation refers to the movement of product from one location to another as it makes its way from the beginning of a supply chain to the customer. And it is also an important element of the supply chain driver because products are rarely produced and consumed in the same location and it's the significant component of the costs incurred by most supply chains. Besides, the pattern of trade that helps to drive transportation requirements is changing more quickly and becoming more complex because of the dynamic global environment and the changing economic base (Coyle, 2015).

Due to the trend of globalization, the importance of transport in logistics management has increased in various fields due to resource efficiency in recent decades. The ability to move goods rapidly, securely, and economically (logistics) is viewed as important to the success of enterprises and the stability and competitiveness of a country in a globalized economy (Debela, 2013). Additionally, the transport system makes goods and products transportable and provides timely and regional worth to promote value-added under the least cost principle. The transport system in logistics activities could deliver better logistics efficiency, reduce operation costs, and promote service quality. The improvement of transportation systems needs effort from both the public and private sectors. A well-operated logistics system could increase both the competitiveness of the government and enterprises (Clark, 2014).

Freight movement has been observed between one-third and two-thirds of the total logistics costs. Thus, the logistician needs a good understanding of transportation matters (Özceylan, 2018). The role of freight transportation plays in the logistics system is more comprehensive

than loud goods for the proprietors. And its complexity can take effect only through high-quality management. Using a well-handled transport system, goods could be sent to the right place at right time to satisfy customers' demands. It brings efficiency, and also it builds a bridge between producers and consumers (Clark, 2014).

The freight transport industry is an essential element of modern supply chains. It connects production, distribution, and consumption due to the flexibility and capability to provide door-to-door services. It can connect all supply chain actors at the local, national, regional, and global levels (World Bank, 2017). Freight transportation offers a total range of services catering to cost, time and reliability priorities and has consequently taken an increasingly important role within commodity chains (Rodrigue, Comtois and Slack, 2019).

Freight transportation is also very important for businesses in creating time, place, and quantity utility, in addition to enabling larger-scale production, geographic specialization, and increased competition (Roberts, 2012). The growth of the amount of freight being traded as well as a great variety of origins and destinations promotes the importance of international transportation as a fundamental element supporting the global economy (Rodrigue, 2019).

2.1.3 The Origin of Development of Corridors

According to (Hope, 2015) Transport corridors have been around for a long time. Trans-Saharan trade routes across the Wadi Hammamat can be traced back to at least 4000BC from the Nile to the Red Sea. Around 200BC, Hammamat became an important part of the Silk Route (Silk Road). The Silk Route was a network of trade and cultural transmission routes that were central to cultural interaction through regions of the Asian continent connecting the West to the East by linking traders, merchants, nomads, and urban dwellers from China and India to the Mediterranean Maritime. Extending some four thousand miles, the Silk Road derived its name from the profitable trade in Chinese silk. Trade on the Silk Road was significant in the development of the civilizations of China, the Indian sub-continent, Persia, Europe, and Arabia, opening up long-distance political, economic, and social interaction between civilizations. Although silk was the main trade item from China, many other goods were traded in both directions along the route, religions were expanded and technologies transferred and developed. The transport route evolved into a development corridor. According to (Yildirim, 2015) International transport corridors connect one or more than one neighboring

country, landlocked countries are provided coast connection using one or more transit countries. Transport corridors are planned primarily for the realization of regional development by providing transportation and logistics services to the cities and countries on the path. Transport corridors include both physical infrastructure (i.e., roads, railways, warehouses, border posts, seaports, and intermodal facilities) and institutional frameworks built on agreements between governments (Peterson, 2015)

According to (Mulenga, 2013), the study results show that transport corridors being the first stage, establish a physical connection between certain regions only. Multi-modal transport corridors being the second stage, and unlike the first stage, the corridors allowing multi-modal transport in certain regions. Logistics corridors being the third stage are the corridors that provide a connection between the logistics centers (hub) in certain regions. And logistics centers are the hubs where all kinds of transport modes are enabled and logistics services such as storage, handling, and customs clearance are provided. Since the logistics corridors are established between these centers, and they have more effectiveness. By its nature, logistics corridors, different from the others, require institutional structures simplifying the processes, and this institutional structure helps to eliminate bottlenecks in customs that apply to all corridors.

2.1.4 The Stages of Corridor Transformation

According to (Mulenga, 2013) the stage of corridor transformation is the following;

I. Physical Development

This stage comprises the transport corridor and the multimodal corridor stages of development. It involves strengthening the physical services needed for efficient and effective transportation and trade by establishing and restoring transport links; improving the quality of infrastructure, increasing carrying capacity, and dealing with related safety issues; improvement in infrastructure linked with priorities such as rural agriculture, agro industry, and tourism; encouraging multimodal structures, and upgrading border areas.

II. Logistics Development

The right logistics can harmonize corridor rules, regulations, and institutions, moving people and goods more efficiently and facilitating storage, trucking, insurance, and freight management, and related services. Good logistics also involve applying cross-border trade agreements; simplifying, standardizing, and harmonizing immigration and quarantine procedures; encouraging information and communication technologies; and establishing a logistics center.

III. Economic and Social Development

This stage promotes investments in areas such as agro industry and manufacturing, natural resource-based enterprises, small-scale industries and trade (including planned roadside shops), tourism (rest houses and hotels), schooling, and health facilities are located near the corridor. Other mediations might include the promotion of innovative trade techniques such as fair trade products and investment forums, again close to the corridor. The economic and social development stage might also market business opportunities in key industries which establish special zones that were appropriate; publicize investment policies, rules, and regulations; offer micro-financing; implant special measures for approving business licenses efficiently and effectively, and address other infrastructure deficiencies such as inadequate water and power supply.

IV. Integration of Cross-Cutting issues

This stage addresses environmental and institutional capacity concerns and other social issues.

Environmental concerns can be addressed with a commitment to sustainable development and the use of mechanisms to protect the environment. The institutional capacity building draws on human skills development; changes in organizations and networks, and changes in governance/institutional context to remedy human resource constraints and enhanced service/product delivery in public and private sector organizations. □ Other social issues that affect corridor development are public awareness, trans boundary diseases, social programs, and traffic safety, and it has the potential of transforming into an economic corridor, and it should however be mentioned that some corridors naturally present more opportunities than others.

2.1.5 Logistics Performance Index

The World Bank recognizes the effectiveness and efficiency of national logistics performance. Identifies gaps in world trade and logistics performance between countries (Su and Ke, 2015). A multi-dimensional assessment of logistics performance, the LPI of the World Bank, is an international benchmarking tool focusing specifically on measuring the trade and transport facilitation friendliness of a particular country, and in so doing, helping them to identify key barriers to, and opportunities for improvement. The LPI summarizes the performance of countries through six dimensions.

Customs: the efficiency of the customs clearance procedure.

Infrastructure: the quality of trade and transport-related infrastructure.

International Shipments: the ease of arranging competitively priced shipments.

Logistics Quality: the competence and quality of logistics services.

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

Timeliness: the frequency with which shipments reach the consignee within the scheduled or expected time (Arvis, 2014).

According to (Arvis, 2014) proposed the relationship between the six logistics performance indicators: Customs, infrastructure, and service quality are indicators related to policy regulations and categorized as the inputs for supply chain service delivery. Timeliness, international shipments, and tracking and tracing are indicators related to service delivery performance and considered outcomes of supply chain service distribution.

The Logistics Performance Index provides not only an inclusive assessment of logistics performance worldwide but also an examination of performance trends which makes it possible to understand trends over time. Performance is evaluated using a 5-point scale and the overall LPI is aggregated as a weighted average of the six areas of logistics performance. The LPI also includes a set of national performance indicators which is not included in the overall country score. It is also completed with quantitative information on particular aspects of international supply chains in respondents' countries of work, including import and export,

lead time, supply chain costs, customs clearance, and the percentage of shipments subjected to physical inspection (Arvis, 2012).

2.1.6 Freight Transport Performance along the Corridor

The world of logistics and supply chain (SC) operations has developed increasingly complex over the decades and it's drastically altered the dynamics of global freight transport systems. The major changes in global trade that have occurred in the last two decades are in part reflections of the innovations in logistics and changes in policies in countries around the world that have led to a reduction in transit costs across borders. The performance of logistics services is normally measured based on cost, time, and service reliability. Freight logistics performance is a strong factor of country-level competitive advantage. Improved logistics efficiency is associated with trade expansion, export diversification, investment in productive capacity, economic growth, and poverty reduction (Havenga, & De Bod, 2016)

The performance of road freight transport service in the corridor is assessed on efficiency and effectiveness of services such as the capacity of infrastructure, service quality, and shipment of goods. The most performance measurement of transportation focuses on capacity and conduction of the transport system as well as issues such as travel time, cost, and safety to achieving the ultimate goal or criteria that is to increase mobility (McMullen, 2010).

According to (Dion, 2010) Corridor, performance measurement is focused on the coordinated management of transportation and associated systems within a corridor. The objectives generally relate to a desire to increase efficiency, accessibility, and mobility; improve transportation safety; accelerate information dissemination to corridor users; advance coordination amongst institutional partners; and improve network management. Corridor performance centers on competitiveness or encompassing cost, time, and predictability associated with the seamless movement of freight along corridors (Havenga, & De Bod, 2016).

According to (McMullen, 2010) Freight system performance measures are important to support decisions about investments, operations, and policies for both the public and private sectors, and for the system as a whole and its critical components—corridors, links, and nodes (terminals). Performance measures for the freight system that are appropriate and equal at

various geographic levels will also help educate planners, decision-makers, and the public about the importance of freight transportation to our economy and quality of life. Freight performance measures can be used as a tool to better understand the relationship between efficient freight movement and the economy, environment, safety, and sustainability (Easley, 2017). According to (Havenga, & De Bod, 2016) the key corridor performance indicators remain the core traffic descriptors and their variance Price: (the cost to the shipper). Time: (work and idle time; physical and documentation time) and reliability. Volumes in tons and ton-km: (by corridor components and trade types). Infrastructure and service resilience: (current and long-term capacity adequacy, utilization, and efficiency).

According to (Easley, 2017), public agencies do not all use the same freight performance measures. But some common performance measures have continually emerged. These include truck travel times, travel time reliability, safety, infrastructure conditions, and congestion. According to (Rodrigue, Comtois and Slack, 2019), Freight Performance is improvements of cost and time attributes freight movements. Corridor performance is measured by different measurement indicators such as cost, travel time, reliability, frequency, safety, speed, turnaround time, traffic volume, port dwell time, border transit time, average loading and unloading time, departure and arrival time load factor, customer probability of damaging or losing the commodities, flexibility, shipment restriction in terms of weight us or volumes and opportunity to send partial loads and various within the corridor. But the commons are transport cost, travel time and reliability, services frequency, turnaround time, custom are border transit time, loading and unloading time, and safety is used usually. Freight transportation offers a total spectrum of services catering to cost, time and consistency priorities and has consequently taken an increasingly important role within commodity chains.

2.1.7 Freight Corridor Main Stakeholders

According to (Hunke, 2013) Network theory, the stakeholders can be divided into smaller nodes and actors which function as hubs along the corridor. What makes a transport corridor also specific and more complex than a logistics network is its geographical and political scope? The transport corridor covers several countries, regions, and terrestrial and maritime areas as well as national, regional, and transnational political bodies. One could assume that the highest political institution is automatically considered as the institution with the highest

degree respectively highest decision making power in the system. However, by looking deeper at the actual performance of a transport corridor and the role the individual stakeholders play it becomes obvious that the hubs are rather represented by other institutions.

Transport movements are often agglomerated in supposed transport corridors connecting urban and/or commercially important areas. It is desirable for transport to be efficient and sustainable, thus there are several ongoing initiatives to develop major, often transnational, transport corridors. Different stakeholders are affected by and/or involved in the development of these corridors, including travelers, transport buyers, transport service providers, and transport authorities (local, regional, national and transnational). Governance of the corridors can be regarded as the interactive involvement of these stakeholders in their development and subsequent management (Öberg, 2014)

According to (Bunker, 2001), The parties involved in the freight corridor mode selection system include the freight customer the shipper (consignor), who wishes to have their freight transported to a receiver (consignee). The service provider, operator and serves the freight customer by transporting freight from an origin to a destination. This trip includes group, line-haul, and distribution components. The service provider naturally has a modal orientation, such as road, rail, sea, or air. The freight corridor access provider generally does not serve the freight move freight. Infrastructure has a modal location and may contain the following elements: a road (highway), a railway and station facilities, a seaport and shipping lane; an airport and flight path. Government regulators bodies regulate the provision of freight transport and freight corridor access services. It is recognized that all levels of government are involved in the regulation process, and external influences exist, which affect decision-making by all of the parties in the system and consequently the process of freight mode selection and use.

2.2 Empirical Literature Review

2.2.1 Road Freight Transport Challenges in Africa

According to the study (Faye, 2004), the challenges facing the freight transport industry in land locked African countries are largely due to several factors that constrain the performance index of their operations. Trade logistics in the global economy is critical for the success of

any economy in the conveyance of its merchandise across borders quickly, reliably, and cheaply. There is a need to address constraints that impede trade facilitation that contributes to high transport cost such as transit border delays, port inefficiencies, customs documentation procedures to improve the competitiveness of the products from sub-Saharan Africa on the global market. Poor conditions in the Sub-Saharan Africa land transport and maritime transport, sectors increase both the direct and indirect costs of producing and exporting goods and services, thereby reducing the export competitiveness of a wide range of Sub-Saharan Africa industries.

Inadequate land transport infrastructure has several effects on Sub-Saharan Africa trade, including increased costs and uncertainty, reduced investment in exporting industries, and lower levels of export volume and diversity (Herfindahl and Treat, 2009). According to the study (Arvis, 2010), Sub-Saharan Africa have a bearing on transport logistics challenges in terms of high transport cost deriving from shortages in road and rail infrastructure, long transit delays, and port inefficiencies in the conveyance of international trade to overseas markets. Transport costs are typically used as indicators in road projects because the impact of road construction or rehabilitation leads to savings in vehicle operating costs, low quality of road customer directly. Rather, it delivers infrastructure and some services that the service provider accesses to infrastructure straight increases variable costs since bad roads mean more fuel consumption and increased maintenance. According to (Hartzenberg, 2011), the most problematic factors for challenges of freight in the region include inefficient government bureaucracy, an inadequately educated workforce, and a poor work ethic in the national labor force. Poor infrastructure and lack of access to finance also feature of key hindrances, raised the issue of transit delays in transiting through maritime neighbors' documentation processes, inefficient port processes resulting in high demurrage and storage costs on their traffic as has been stated. According to (UNESC, 2009) investigation, transit times on African transport corridors are unduly long due to factors such as unclear and sometimes conflicting rules and regulations, inefficient service providers, roadblocks, as well as cumbersome administrative and customs procedures. These have shaped a serious challenge to transport facilitation and trade on the continent. It leads to excessive traffic delays, resulting in a substantial increase in transport costs. According to (Rabiya, 2016), major challenges of freight transport are that high transport costs, deficiencies in road and rail infrastructure, inefficient port revenue

processes, and corruption at border and transit border delays pose serious challenges to transport logistics in Malawi. Much as Malawi is landlocked in sub-Saharan Africa, her main challenges emanate from a weak export base because the market is very small to be able to compete on its own from a global perspective.

According to (Diewert WE, 1992) Economic performance is usually analyzed in terms of productivity and defined as the ratio between output (the volume of goods or services produced) and input (the volume of production factors used in the production process of these goods and services). According to (Salini P, 2003), the output of freight transport is generally measured in terms of physical units (tons or units forwarded, ton-kilometers etc.) or in terms of value (turnover). Production factors are measured in terms of personnel and vehicles.

(Remy A, 2001), discussed In the field of freight transport, a major problem is the measurement of the output of transport services, which is generally the ton-km. Transport specialist generally agree that the ton-km is not a satisfactory measure for the output of freight transport services, given the variety of modes and services. Nevertheless, the statistical apparatus in ministries of transport usually relies solely on these measures. According to (Djellal F, 2001) discussion, the distinction between services dealing with information and “non-informational” services and demonstrates, in particular for road haulage services, the co-existence of material configurations with a growing integration of information, methodological and relational aspects.

According to (Morana J.Pache, 2000), the analysis of freight transport performance should be related to the industrial production system in which the transport service takes place. In the management literature, logistic performance is more and more often measured in terms of customer satisfaction not simply from the point of view of the shipper, but with regard to the global supply chain. Freight transport performance indicators should encompass the global efficiency of flows of goods and information inside a production system. In such a framework, the main levers to improve performance are the qualitative and quantitative adaptation to production systems instead of mere cost reduction and investments in vehicle technology or infrastructures.

According to Lefebvre L (2006), we can easily observe that freight transport operations have become more and more complex and differentiated over the past 30 years. Beyond shipping and handling goods, they more and more often include operations such as the treatment of information flows, the differentiation of goods for the final customer etc. The conceptual representation of freight transport exclusively in terms of flows of goods thus becomes less and less relevant to the realities of the freight transport sector and its performance issues. A more relevant conceptual representation of the ‘product’ of freight transport must include these different operations.

2.2.2 Freight Transport Challenges in Ethiopia

According to the study of (Yirga, 2018), Ethiopia is under developing country and looking for different manufacturing materials and related techniques from developed countries. Port is the other issue for fast logistics activity. As a landlocked country, Ethiopia mainly uses the port of Djibouti as a gateway for the vast majority of its internationally traded goods with most of the goods essentially transported to and from the port by trucks. This condition has made Ethiopia’s trade logistics very expensive and uncompetitive. The other logistics challenges are faced due to the geographical and demographical condition of the country. The topographic barriers throughout the country make road transportation activity very slow and ineffective.

According to the study of (Fekadu Debela, 2013), the Ethiopian logistics system is characterized by the poor logistics management system and lack of coordination of goods transport, low level of development of logistics infrastructure, and inadequate fleets of freight vehicles in number and age, damage, and quality deterioration of goods while handling, transporting and in storage. This coupled with a lack of seaport resulted in the poor linkage of producers to the consumers and non competitiveness of Ethiopian goods on the global market, which compromised the livelihood of the people and economy of the country. There is a very high rate of traffic accidents (first in the world) and congestion in cities and at city inlets and outlets to which freight vehicles contribute significantly. An efficient and effective logistics system needs to be put in place to solve these socio-economic problems. According to the study of (Kalkidan, 2017), as she says the causes of a delay from Djibouti to Addis Ababa are; port management problems, Poor condition of the road, bureaucracy, long clearance time at dry ports and checkpoints, poor information flow, and lack of integration between

stakeholders. At last, the study identifies the impact of freight delay on different bodies and realizes that delay can affect driving behavior, motivation, and performance of truck drivers. Likewise, it can reduce truck transaction, the performance of freight transporters, and customer service and it can even cause waste of time and extravagancy to the driver, can increase storage cost, market price, can reduce goods quality and even perishable goods can be out of date due to delay. Lastly, the study recommends the improvement of Djibouti port management and shipping service of the port, Djibouti-Addis road, the capacity and integration of logistics service providers such as; transport companies, transit service providers, truckers, brokers, and shipping agents, the level of service of warehouses, dry ports, customs authority, and it should be simplified & computerized for the benefit of the country and proper implementation of the truck demurrage proclamation.

2.2.3 Freight Transport Best Practice in Different Countries

2.2.3.1 China Logistics Practices

Even the industry in China grows year to year, some major logistics challenges interrupt the development like rising cost, financing bottlenecks, in-house mindsets to handle logistics localized services, lack of unified top-level institutional coordination, and imbalance transport infrastructure development (Hensher,2015) According to (Hensher,2015) the growth in the supporting role of transport and logistics in the distribution of goods and services has not kept pace with the rapid growth of the Chinese economy. China's extraordinary economic growth, especially in the emerging e-commerce market, has exposed several critical weaknesses that the logistics industry is not currently very well prepared to handle. Despite remarkable progress, there is still a long way to go for the transport and logistics sector in China to improve its efficiency to the level of most developed economies. While the burgeoning growth of the sector has many challenges, it opens up many positive opportunities in the next 10–15 years in translating much of the downside experienced to date into ways to gain competitive ground globally. Specific initiatives that can align the sector with global best practice include cloud-based integrated GPS tracking systems to optimize the distribution task, especially making it available to SMEs who do not have the in-house capability to implement such a system; low-cost training programs offered throughout the country, including industry based accreditation to improve the business and practice skills of the sector; improvements in the

locations of inter-modal distribution terminals to minimize the amount of handling of freight; and a growing focus on urban freight distribution where some of the greatest challenges are in terms of traffic congestion and its impact on productivity.

2.2.3.2 South Africa's Logistics Practices

According to (Rodrigues, 2013), their study on manufacturing sector logistics practices of South Africa found that there is a high transportation cost, unexpected road congestions, and loading and unloading delays. Related to this there is a much stronger focus on responsiveness at the customer side and the road freight transport network made transport costs less important in the whole supply chain. For the case of customer service occasionally there are vital customer orders and demand forecast inaccuracies. Regarding delivery tight and inflexible delivery windows are observed. Lack of communication between customer and carrier and lack of understanding between sales and logistics within carriers are also sometimes observed.

2.3 Conceptual Framework

The conceptual Framework mainly discuss about the major problematic factors of freight transport through Addis Ababa-Djibouti corridor.

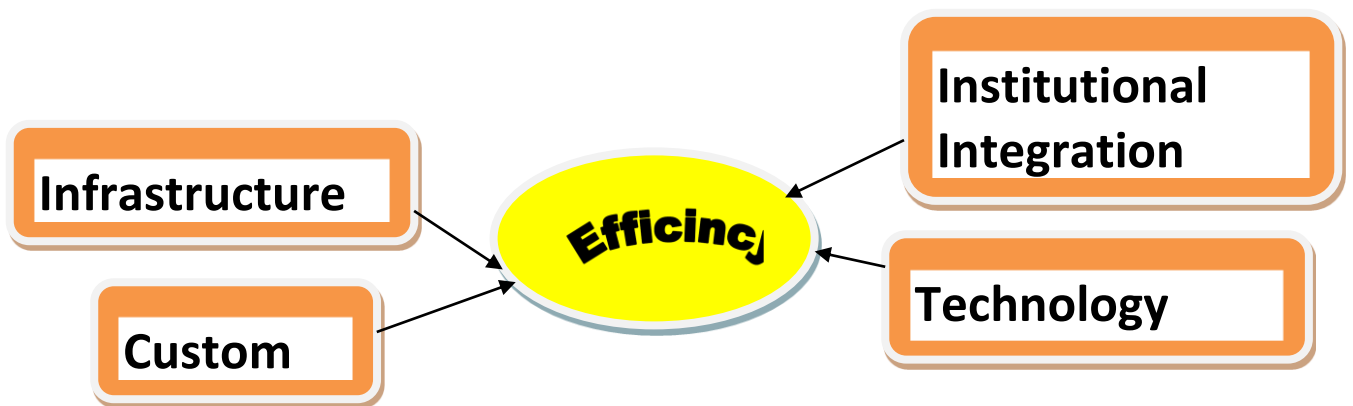


Figure: 2.1 Conceptual Frameworks

2.4 Research Gap

Even though numerous studies have been conducted before at the international and national level on the challenges of freight transport, there is a gap and conflict of ideas among different researchers and research findings. Among these, the following are some of the findings of the previously conducted researches. The research conducted by (Kalkidan, 2017) also finds that the Ethiopian Freight transport through research entitled “Freight Transport Performances in Relation to Delays in Ethiopia: the case of Addis Ababa-Djibouti Corridor”. As she has findings causes of delay on Djibouti-Addis Ababa are factors related to Djibouti port management problems, Poor condition of Djibouti-Addis Ababa road, bureaucracy, long clearance time at dry ports and checkpoints, poor information flow, and lack of integration between stakeholders.

Fekadu Debela (2013) also indicated the Ethiopian Freight transport through his research entitled with Logistics Practices in Ethiopia. The research identified challenges are, the density and quality of transport infrastructure are very low, the freight vehicles are not adequate in number and age to meet the transport demand of the country, the efficiency of customs authority is very low and this causes a lot of delays at checkpoints. His research was focused on the overall logistics performance of Ethiopia. Since the challenges and problems related to freight transport are dynamic and complex and none of them didn't see some factors like Technology and infrastructure issues relating the efficiency of freight transport in the corridor. This study will help to find out additional and relevant problems of freight transport like the above factors within the corridor of Addis Ababa-Djibouti.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter focused on the research methodology that reflects the research process undertaken which includes Research Approach, Research Methods, Research Techniques, Sample Design, Source of Data, Data Analysis, Presentation, interpretation.

3.2. Research Approach

This study applied quantitative and qualitative approach. The main target of the study was to assess the factors affecting the efficiency of freight transport in Ethiopia through the Addis Ababa-Djibouti corridor. The existing problems of the freight transport through the corridor narration of facts are analyzed using descriptive research methods through data collection instruments questionnaires, observations, and interviews from the respondents and organized, interpreted, and presented using tables, graphs and percentages. Besides this, the qualitative data was collected through interviews and documentary sources, which was described in narrative analysis. The qualitative approach is used to assess the perception and opinion of the regulatory bodies and transporters on the challenges of freight transport through the Addis Ababa-Djibouti corridor.

3.3. Data Type, Sources and Collection Techniques

The necessary data and information has been collected from the sample of population/respondents through data collection instruments by using questionnaires, interviews, field surveys, documentary sources, and the researcher's overall personal observations.

Questionnaire: Both closed and open-ended questions were designed and given to the sample respondents. The questionnaires were prepared because they helped the researcher to collect the data from a wide range of sample respondents in the allotted time.

Interviews: Data collection through interviews was helpful to provide information from the respondents of experts, and officials from stakeholders' organizations to get valuable information on the challenges of freight transport through the Addis Ababa- Djibouti corridor.

Documentary sources: any published and unpublished materials such as books, magazines, journal articles, annual reports, etc. from which qualitative type of research questions are employed to qualitative data for the study.

Observation: observation also as another data collection tool is used in the study to observe everything necessary for the study in the field and to help the researcher to particularly see the challenges in reality and the questions that arose during the discussion and interviews.

3.4 Population and Sample

The researcher considered all around **15667** trucks currently registered and have the get-pass license by the Federal Transport Authority and now (Transport and Logistics Ministry) to operate through the Ethio-Djibouti corridor as the universe of this research work. Among these trucks, the researcher selected a sample size of **(384)** trucks using the sample size determination formula

3.4.1 Sampling Frame

The sampling frame includes all trucks which have licensed get-pass to Ports of Djibouti, from all associations and companies.

3.4.2 Sampling Unit

The sampling unit of this research work is truck drivers from all associations and companies. In addition to the above sampling units, (3) experts and (3) officials which is a total of (6) sampling units 2 from each stake holder's organizations (Transport and Logistics ministry, Custom Commission, and Maritime Affairs Authority).

3.4.3 Sampling Technique

This research employed both probability sampling and non-probability sampling techniques. The researcher used stratified sampling techniques to select samples from the list of trucks of every transport operator/association/organization. From the total number of trucks (15667), the researcher selected (384) trucks. To select the sample trucks from all associations and companies, the researcher used proportional sample size based on their number of trucks from each level (level 1-A = 158, level 2-A = 50, level 2-B = 46, level 3-A = 15, level 3-B = 38 which is 307 from associations and level 1 = 65 and level 2 = 12 which 77 from companies). The assignment of samples from each level is based on their percentage of the total number of cross-border trucks 15667 or the population of the research.

In addition to this, the researcher used non-probability sampling techniques based on purposive sampling to select (3) experts and (3) officials which are a total of (6) and 2 sampling units from each stakeholder's organizations (Ministry of Transport and Logistics, Custom Commission, and Maritime Affairs Authority. The researcher used written documents and archivals as sources of data, conducted interviews, and personal observation.

3.4.4 Sample Size Determination

There are 15667 trucks operating through the Addis Ababa-Djibouti corridor. These trucks are managed by numerous transport associations or companies. Among these transport operators and operating trucks, the researcher used the following formula to determine the sample size.

For $N > 10,000$ then the simple size formula is: $n = \frac{Z^2 * p * q}{d^2} \dots \dots \dots 1$

Where:

N = population size (the number of trucks = 15667)

n= described sample size

z = standard normal variable at 95 percent confidence level which is 1.96

p = estimated characteristics of target population

q= 1- p

d= level of statistical significance set (5 percent margin of errors)

Therefore assuming that the proportion of the trucks are 0.5, the Z – statistics as 1.96 and the desired accuracy at the 0.05 level, then the sample size for the population greater than

10,000 would be: $n = \frac{Z^2 * p * q}{d^2}$

Where Z = 1.96, P = 0.5, q= 1- 05 and d = 0.05

$$n = \frac{(1.96)^2 * 0.5 * 0.5}{(0.05)^2}$$

Therefore the desired sample size (n) is= (384)

From the above sample size determination, this study employed a confidence interval of 95%..

Therefore, the determined sample size of (384) sample trucks selected from all associations and companies.

3.5 Methods of Data Analysis

The collected data was analyzed and interpreted by using descriptive research analysis method with the help of Statistical Package for Social Science (SPSS) software version 26.0. The descriptive statistical results were presented using tables. Frequency, percentage, standard deviation and mean scores were used to describe the variables.

3.6 Instrument Validity

Validity is the degree to which a test measures what it purports to measure (Creswell, 2009). Validity defined as the accuracy and meaningfulness of the inferences which are based on the research results. It is the degree to which results obtained from the analysis of the data represents the phenomena under study.

Pilot testing was also used to check the appropriateness of the data gathering instruments. Issues raised by respondents were corrected and questionnaires were refined. Besides, proper

detection by an advisor has also taken to ensure the validity of the instruments before distributing it to the respondents. After improving the questionnaire based on the feedback from the pilot testing conducted, and from the advisor, the questionnaires distributed by the assistance of the researcher, and respondents filled the questionnaires.

3.7 Instrument Reliability

Reliability refers to the degree to which the data collection tools or analysis procedures offer consistent findings. Reliability analysis measures the internal consistency of a group of items that are used in questionnaire construction (Abraraw C. 2019). The coefficient of Cronbach's alpha is the most frequently used index of reliability. A Cronbach's alpha coefficient value above 0.70 is generally regarded as acceptable. Specifically, if the value is 0.9 it is taken as excellent as, greater than 0.8 is good, greater than 0.6 is acceptable, greater than 0.5 is poor, and that less than 0.5 is unacceptable (Saunders, Lewis & Thornhill, 2009). The alpha value for each question is identified and summarized in Table 3.1 as shown below.

Table 0-1: Cronbach's Alpha coefficient

No	Reliability Statistics		
	Variables	Number of Items	Cronbach's Alpha
1	Technology	5	.604
2	Custom	6	.761
3	Institutional Integration	4	.742
4	Infrastructure	5	.702
	All Measurement items	20	.702

Source: SPSS output of the survey, 2020

Accordingly, Saunders, Lewis & Thornhill (2009) the Cronbach's alpha value for the whole variables used in this study was 0.702, which is put on acceptable range implying an acceptable in the internal consistency.

3.8 Ethical Consideration

To carry out the research, the necessary approval and permission letter was being written and obtained from Addis Ababa University College of Business and Economics and Department of Logistics and Supply Chain Management and submitted to the study area of regulatory bodies along the corridor. Through the whole process of questionnaire distribution time, all samples of the target population is being treated ethically with mutual understanding. Further, brief orientation about the title, purposes, and objectives of the study was made to drivers, regulatory bodies, and stockholders along the corridor.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

In this chapter, the data collected using questioner and interview was analyzed and presented based on the objectives of the study set above. The data was found to be important to explain the factors affecting the efficiency of freight transport in Addis Ababa to Djibouti corridor. Descriptive statistics was used to analyze and interpret the results of the study.

Table 4.1: Response rate of Questionnaire

SN	Respondents	F	%	SN	Validity	F	%
1	Returned	368	95.8	1	Valid	368	100
2	Not Returned	16	4.2	2	Invalid	0	0
Total		384	100	Total		368	100

Source: SPSS output of the survey, 2022

As shown above table 4-1, the researcher targeted a sample of 384 respondents of which 368 of them were responded. This represents a 95.8%, from the total 368 returned questionnaire all of them were valid. Therefore, from the total of 384 distributed questionnaires the valid ones, 368(95.8 %) were included in this study.

4.1. Demographic Profile of the respondents

Table 4.2: Age, Sex and educational level of Respondents

SN		Frequency	Percent
Sex	Female	-	
	Male	384	100
Total		384	100.0
Age	21-30	82	22.3
	31-40	98	26.6
	41-50	163	44.3
	Above 50	25	6.8
Total		368	100.0
Educational Level	Grade 4-8	68	18.5
	Grade 9- 12	164	44.6
	TVET/diploma	127	34.5
	Degree and above	9	2.4
Total		368	100.0

Source: SPSS output of the survey, 2022

Out of the 384 respondents, 100% were male. This clearly shows that in freight transportation activities are carried out by male operators. Regarding the age distributions of respondents, Based on the table, large number of respondents 163(44.3%) were included in age category of 41-50, 98(26.6%) were age category 31 to 40, 82(22.3%) were included in the age category of 21 to 30, and the least involvement were above 50 years. The analysis of educational background of the respondents are shown in table 4.3 above, which revealed that 164(44.6%) were from grade nine to grade 12 completed. 127 (34.5%) have obtained TVET/diploma, and 9(2.4%) were degree and above educational level.

Table 4.3: How long Distance does you cover per month in KMs?

SN	Distance covered in km	Frequency	Percent
1	2000-4000	119	32.3
2	4001-6000	118	32.06
3	6001-8000	77	23.09
4	Above 80000	54	14.7
	Total	368	100.0

Source: SPSS output of the survey, 2022

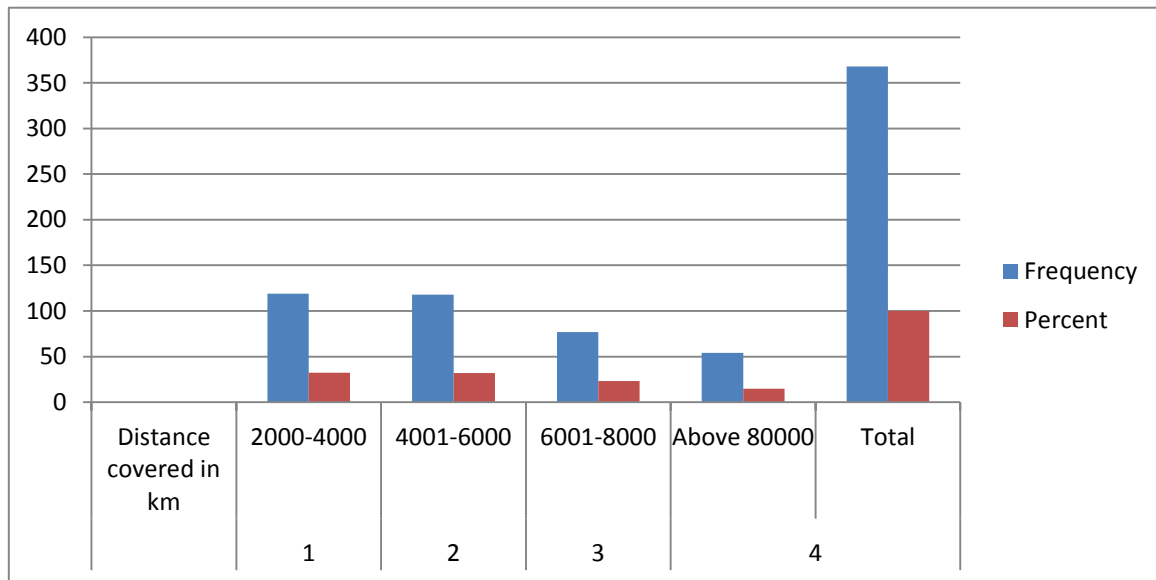


Figure 4.1Distance coverage

Table 4.3 shows how long distance covers by a driver per month. Regarding the frequency distribution 119(32.3%) derived 2000- 4000 km, 118(32.06%) , 4001- 6000 km, 77 (23.09%) and, above 8000 km 54(14.7%) per month.

From this, we can understand that more than 60% of respondents drove from 2000 km to 6000 km per month.

Table 4.4: What type of truck do you operate?

SN	Sector	Frequency	Percent
1	Level 1 A	108	29.3
2	Level 2 A	61	16.6
3	Level 3A	86	23.4
4	Level 3 B	95	25.8
5	Level 4	18	4.9
	Total	368	100.0

Source: SPSS output of the survey, 2022

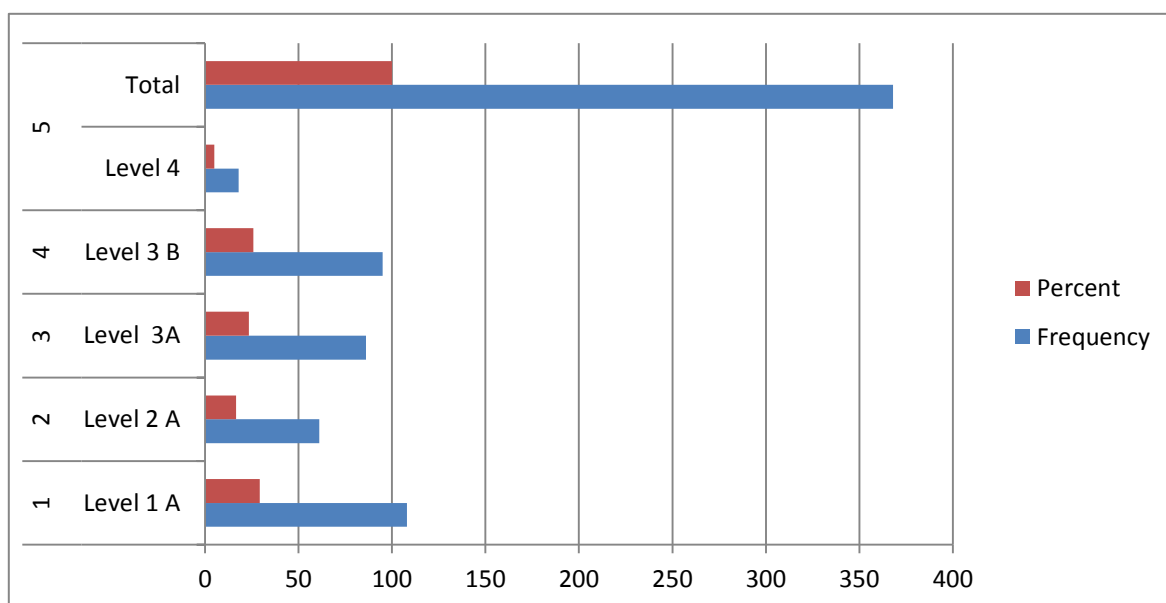


Figure 4.2 Type of truck operated

As indicated in the above table, 108(29.3%) drivers operate Level 1 A type of truck, 95(25.8%) of drivers operate level 3B type of truck, 86(23.4%) of drivers operate level 3 A type of truck, and least number of drivers operate level 4 type of truck, which is 18(4.9%) from the total number of respondents in the study.

Table 4.5: How your average trip of frequency through the corridor per month?

	Variables	F	%
1	Less than two times	105	28.5
2	Three times	172	46.7
3	Four times	74	20.1
4	Five times	16	4.3
	Above five times	1	0.3
	Total	368	100

Source: SPSS output of the survey, 2022

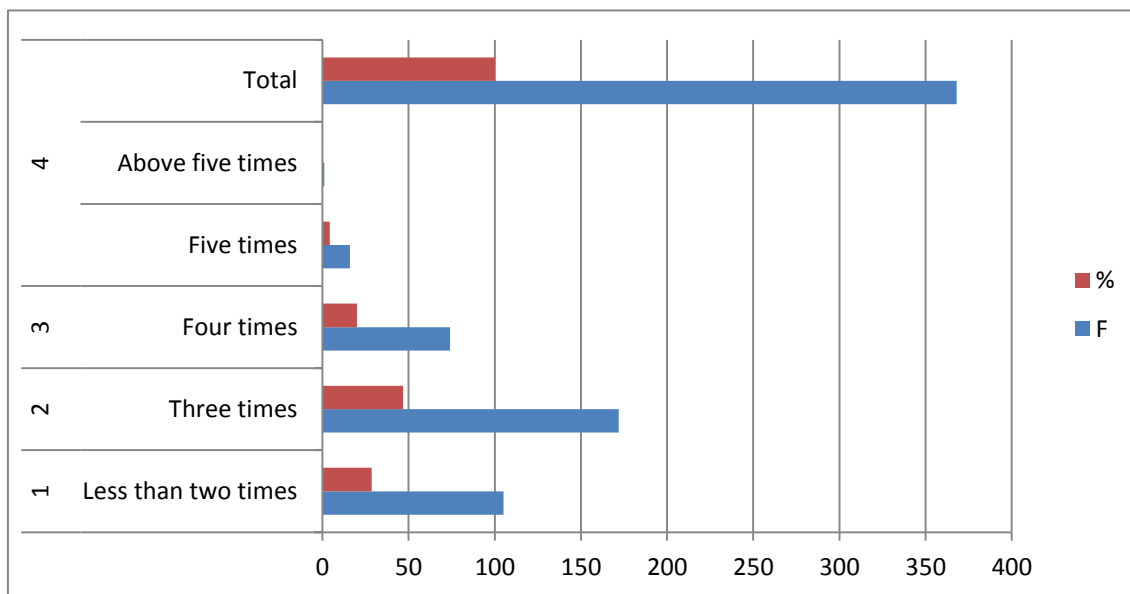


Figure 4.3 Average trip of frequency through the corridor per month

Regarding the frequency of through the corridor per month 172(46.7%) respondents frequency was three times, 105(28.5%) respondents responded that their frequency per month was less than two times. About 24 percent of respondents responded that their frequency of travel from and to Addis to Djibouti was about four to five times.

4.2 The factors affecting Freight Transport Efficiency of the Ethio-Djibouti Corridors Operators

According to (Abraraw C.2019) work on business research methods: “Researchers assign scores or weights to the alternative responses. Weights of 5 for strongly agree, 4 to agree, 3 to neutral, 2 to disagree, and 1 for strongly disagree. Strongly agree represents the most favorable attitude on the statement and strongly disagree represents the most unfavorable attitude to the statement.”

Regarding the degree of challenges of result of descriptive statistics, Wickramasinghe study (as cited in Wendemagenge, 2011) stated that, $(5-1)/5=0.80$. According to this researcher, the mean score of ranging within 0.80 differences used to classify the mean scores from not challenging up to very highly challenging; Ranges between 1.00-1.79= Not challenging; Ranges between 1.80-2.59= Little challenging; Ranges between 2.6-3.39= Moderately challenging; Ranges between 3.4- 4.19= Highly challenging and Ranges between 4.2- 5.00= Very highly challenging. Therefore, based on Wickramasinghe study (as cited in Wendemagenge, 2011), on the following tables and narratives, the descriptive statistic result degrees of challenges were presented.

4.2.1 Technological factors affecting the Efficiency of the Condor’s’ Freight transportation

Table 0.6: Descriptive statistics on Technology

SN	Variables	MN	SD
1	Poor web enhanced electronic Data Interchange (EDI)	3.85	1.55
2	Computerized billing tracing services	3.70	1.21
3	Controllability /traceability for Trucks	3.65	1.07
4	Poor information flow	3.79	1.17
5	Insufficient scanning machines at check points	3.54	1.40
	Total	3.71	.75

Source: SPSS out put of the survey, 2022

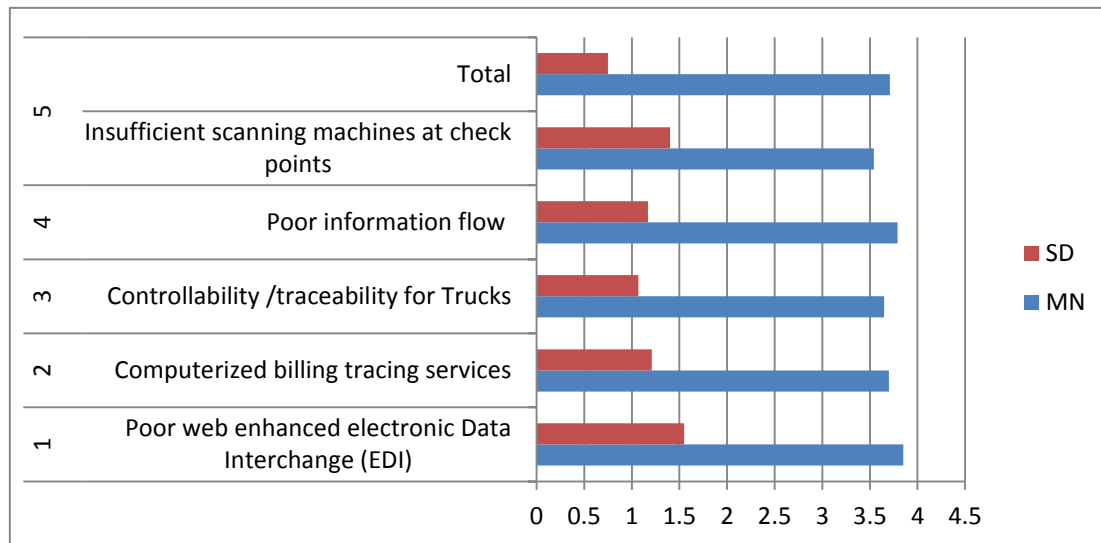


Figure 4.4 Technological factors affecting Efficiency

The descriptive statistics result of data obtained from questionnaire regarding the insufficient technology for the efficiency of freight transport. All the measurements of technology variables were highly challenging for the efficiency of freight transport (all MN of variables are between 3.4 and 4.19, which is highly challenging). And the total cumulative effect was also highly challenging for freight transport (MN of 3.71), which is highly challenging factor based on Wickramasinghe study (as cited in Wendemagenge, 2011) research work.

During the interview with custom commission team leaders they raised about technological problems: lack of skilled manpower especially scanning machine operators, unfulfilled documents (problems related with sill numbers, misnamed cargo, unknowing destination of cargo on bill of lading, etc.)

4.2.2 Custom factors affecting the Efficiency of the Condor's' Freight transportation

Custom is one of the main factors that influence the efficiency of freight transport in the whole of the country especially through the corridor where the study conducted.

Table 0.7: Descriptive Statistics on Custom

SN	Variables	MN	SD
1	Measure the effectiveness of custom clearance services at different check points on the corridor	2.98	1.29
2	The speed of custom procedure of Addis Ababa-Djibouti corridor	2.55	0.89
3	Improvement of facilities at customs (in gates and out gates)	2.28	1.06
4	Provision of adequacy of on time information in terms of custom issues in the corridor	2.46	1.05
5	Continuous operation of custom service without interruption in the check points of the corridor	2.21	1.12
6	Accepting complains and comments of customers	2.24	0.99
	TOTAL	2.45	.72

Source: SPSS output of the survey, 2022

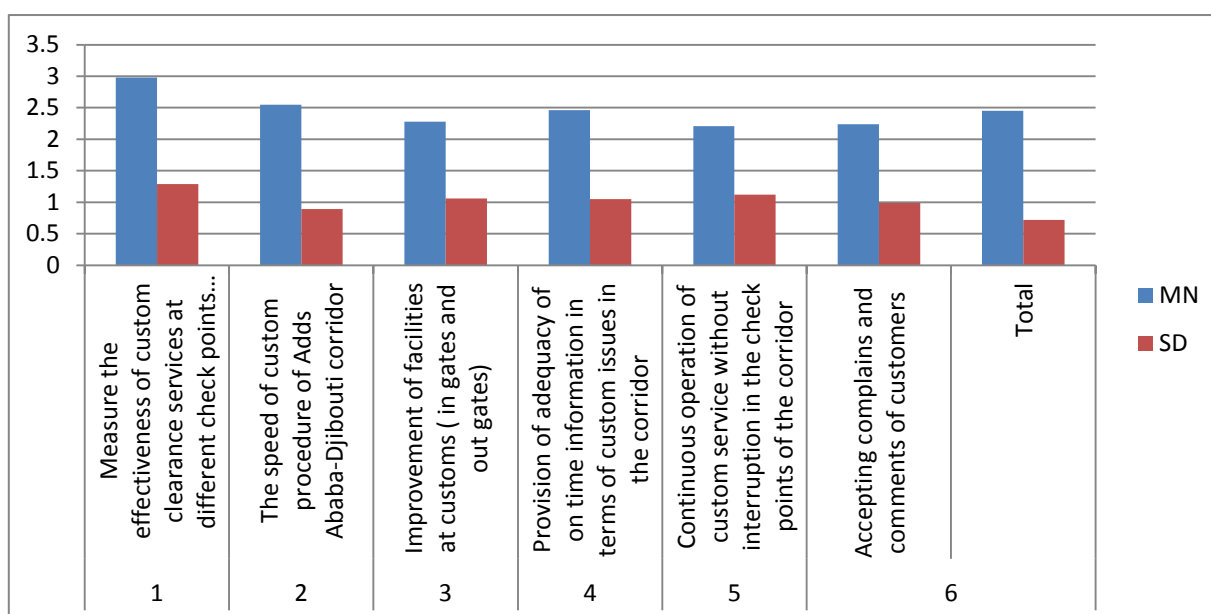


Figure 4.5 Custom factors affecting the Efficiency

The above table shows the degree of customs factor affecting the efficiency of freight transport. As we can see from the above table 4.7, the mean and STD of the of the given variables indicated that Measure the effectiveness of custom clearance services at different check points on the corridor can be considered as little challenges (Mean of between 1.80 and 2.59), except the first item (custom clearance service at different check points on the corridor, which have Mean of 2.98 and STD of 1.29 that has moderate challenge. More over the

cumulative effect of all the custom variables, which is mean of 2.45, indicated that the custom factor has little challenge on the efficiency of freight transport on the corridor under study.

Interviews had been conducted with one team leader and one expert of the custom commission team leader and experts regarding the issues related to the factors affecting the efficiency of freight transport through the Ethio-Djibouti corridor and the responsibilities of their organizations to facilitate import/export of the country. For the questions related to existing challenges and problems of freight transport from the point view of Customs: frequent interruption of system-related with Ethiopian Telecommunication and Ethiopian Electric Power (EEP), insufficient infrastructure facilities (un conducive working environment), lack of skilled manpower especially scanning machine operators, unfulfilled documents (problems related with sill numbers, misnamed cargo, unknowing destination of cargo on bill of lading, etc.), not integrating with Djibouti Custom through the system, and contraband material mixed with legal cargos are among the major existing problems faced by the customs along the corridor related with freight transport.

4.2.3 Institutional integration factors affecting the Efficiency of the Condor's' Freight transportation

Corridor performance measurement is focused on the coordinated management of transportation and associated systems within a corridor. This is mainly strong integration between stakeholders. The objectives generally relate to a desire to increase efficiency, accessibility, and mobility; improve transportation safety; accelerate information dissemination to corridor users; advance coordination amongst institutional partners; and improve network management (Dion, 2010)

Table 0.8: Descriptive Statistics on institutional integration

SN	Variables	MN	SD
1	Shortage of qualified labor force	3.03	1.10
2	Different working times of stakeholders (custom, Dry ports, Ministry of transport and Logistics, Authority of standardization, etc.)	3.49	1.15
3	Information exchange between stakeholders	3.80	1.05
4	Willingness of cooperation between stakeholders (custom, dry port, ministry of transport, Ministry of trade etc.)	3.53	1.21
	Total	3.46	0.852

Source: SPSS output of the survey, 2022

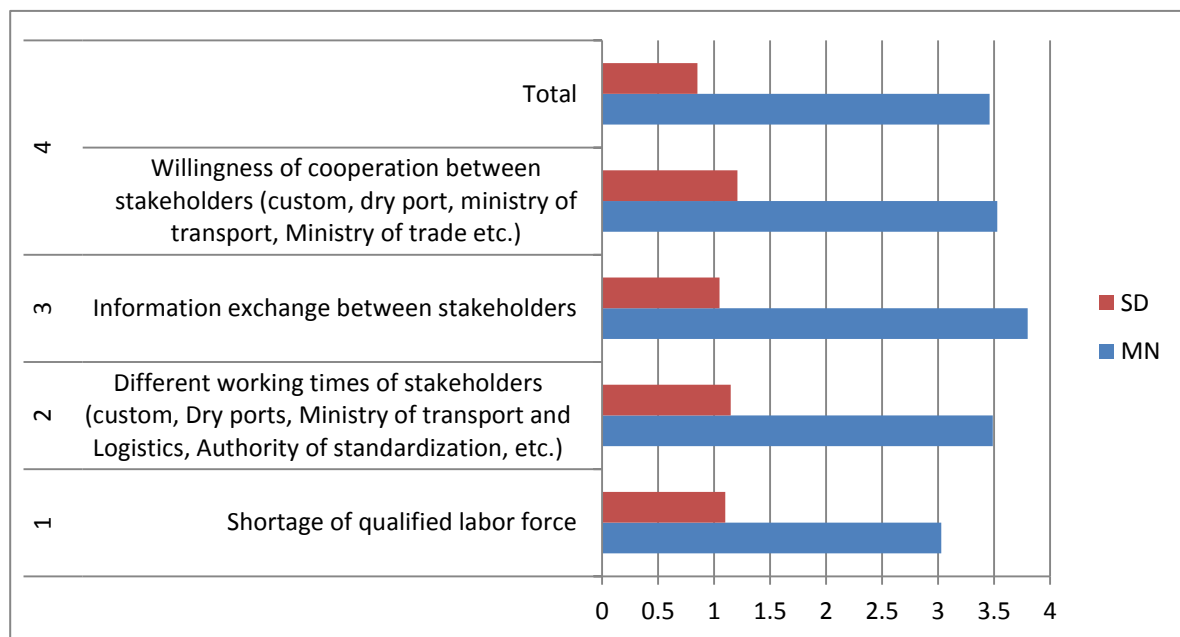


Figure 4.6 Institutional integration factors affecting the Efficiency

The result presented in table 4.8 shows all the measurements of institutional integration variables have high challenge for the efficiency of freight transport (mean between 3.4 and 4.19) except Shortage of qualified labor force having mean of 3.03, which indicated that it has moderate challenge on freight transportation. When to consider the cumulative effect of the variables on freight transport under study, it has highly challenge on the efficiency of freight

transport, on the basis of Wickramasinghe study (as cited in Wendemagenge,2011) research work.

Interviews with ministry of Transport and Logistics team leaders was made and raised lack of integration among the different stakeholders, problems related with different service provider sectors like Dry Port, Warehouse, Customs, and Weight Bridge not properly overtaking the responsibility given to them to facilitate freight transport would affect the performance of freight transport in the country

4.2.4Infrastructure factors affecting the Efficiency of the Condor’s’ Freight transportation

As (Fekadu Debelas, 2013) research identified from the main challenges of efficiency is the density and quality of transport infrastructure are very low. This tried to show poor quality of road through Ethio-Djibouti corridor create delay ace of import export trade and the Table tried to show these issues.

Table 4.9: Descriptive Statistics on Infrastructure

SN	Variables	MN	SD
1	Poor quality of road in the corridor	3.41	1.20
2	Inaccessible and poor quality warehouses	3.62	1.13
3	Accessibility of Telecommunication services	3.66	1.23
4	Availability of loading and unloading Machines in the Addis Ababa-Djibouti corridor	3.78	1.04
5	Insufficient space for storage due to unbalanced cargo Flow	3.63	1.25
	Total	3.68	0.80

Source: SPSS output of the survey, 2022

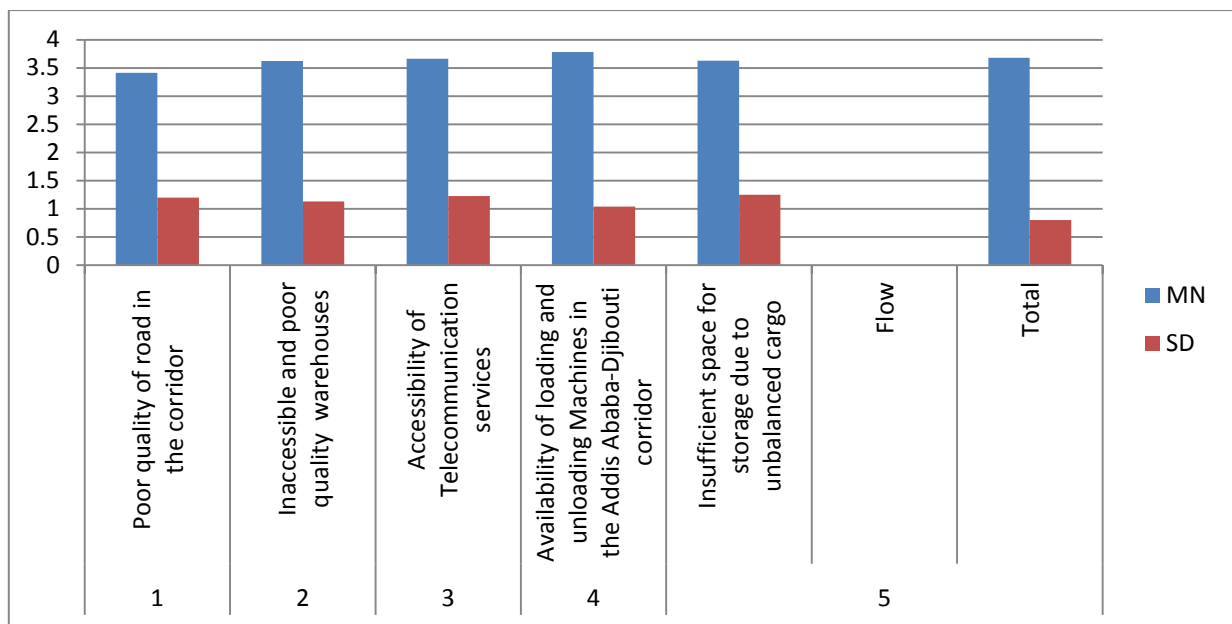


Figure 4.7 Infrastructure factors affecting the Efficiency

Table 4.9 shows the descriptive statistics result of data obtained from questionnaire regarding the insufficient infrastructure for the efficiency of freight transport. All the measurements of infrastructure variable were highly challenging for the efficiency of freight transport (all MN of variables are between 3.4 and 4.19, which is highly challenging). And the total cumulative effect was also highly challenging for freight transport (mean of 3.68), which is highly challenging factor based on Wickramasinghe study (as cited in Wendemagenge, 2011) research work.

During the interview with custom commission team leaders they raised about infrastructure related problems for the inefficiency are: frequent interruption of system-related with Ethiopian Telecommunication and Ethiopian Electric Power (EEP), insufficient infrastructure facilities (un conducive working environment) and Maritime experts raised, low standard of main road from Addis Ababa - Djibouti corridor during the interview.

Table 4.10 Comparison of Mean &STD of variables.

SN	Variables	MN	SD	Rank of Mean
1	Technology	3.71	0.75	1st
2	Custom	2.45	0.72	4th
3	Institutional Integration	3.46	0.85	3rd
4	Infrastructure	3.68	0.80	2nd

Source: SPSS output of the survey, 2022

Table 4.10 of the above shows the comparison of Mean of all the factors affecting the efficiency of freight transport located under study. Based on the result of the mean of the independent variables, technology is the first, infrastructure is the second, institutional integration is the third, and custom is the fourth rank.

Regarding the degree of challenges, all variables except custom have high challenge, (Ranges between 3.4-4.19), on the efficiency of freight transport and custom has moderately affect, (Ranges between 2.6-3.39), the efficiency of freight transport.

4.3 Discussion of results

The analysis of educational background of the respondents are shown in table 4.3 above, which revealed that 164(44.6%) were from grade nine to grade 12 completed. 127 (34.5%) have obtained TVET/diploma, and 9(2.4%) were degree and above educational level. Regarding the degree of challenges, all variables except custom have high challenge, (Ranges between 3.4-4.19), on the efficiency of freight transport and custom has moderately affect, (Ranges between 2.6-3.39), the efficiency of freight transport.

Based on the result of the mean score of the variables, technology is the first, infrastructure is the second, institutional integration is the third, and custom is the fourth rank. Regarding the degree of challenges, all variables except custom have high challenge, (Ranges between 3.4-4.19), on the efficiency of freight transport and custom has moderately affect, (Ranges between 2.6-3.39), the efficiency of freight transport.

During the interview with custom commission team leaders the issues raised as main problems of infrastructure related or the inefficiency are: frequent interruption of system-related with Ethiopian Telecommunication and Ethiopian Electric Power (EEP), insufficient infrastructure facilities (un conducive working environment) and Maritime experts raised, low standard of main road from Addis Ababa - Djibouti corridor during the interview. While interviews with ministry of Transport and Logistics team leaders was made and raised lack of integration among the different stakeholders, problems related with different service provider sectors like Dry Port, Warehouse, Customs, and Weight Bridge not properly overtaking the responsibility given to them to facilitate freight transport would affect the performance of freight transport in the country.

Interviews had been conducted with one team leader and one expert of the custom commission team leader and experts regarding the issues related to the factors affecting the efficiency of freight transport through the Ethio-Djibouti corridor and the responsibilities of their organizations to facilitate import/export of the country. For the questions related to existing challenges and problems of freight transport from the point view of Customs: frequent interruption of system-related with Ethiopian Telecommunication and Ethiopian Electric Power (EEP), insufficient infrastructure facilities (un conducive working environment), lack of skilled manpower especially scanning machine operators, unfulfilled documents (problems related with sill numbers, misnamed cargo, unknowing destination of cargo on bill of lading, etc.), not integrating with Djibouti Custom through the system, and contraband material mixed with legal cargos are among the major existing problems faced by the customs along the corridor related with freight transport.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

The conclusion is a summary of the major findings that answer the research question presented in Chapter One. The summary of the main findings in this chapter is the major factors of freight transport that affects the efficiency through the Ethio-Djibouti corridor. In addition, suggestions on how to solve the problem of freight transport are being provided.

5.1. Summary of the study

- The analysis of educational background of the respondents are shown in table 4.3 above, which revealed that 164(44.6%) were from grade nine to grade 12 completed. 127 (34.5%) have obtained TVET/diploma, and 9(2.4%) were degree and above educational level.
- The result of regression coefficients had also further revealed that beta coefficients of these factors indicate an increase in the execution variable will increase the efficiency of freight transport.
- Technology takes the higher share in contributing for efficiency of freight transport since it has the highest standardized coefficient beta value of $B=0.386$ followed by infrastructure $B=0.302$, and custom $B= .259$.
- Regarding the degree of challenges, all variables except custom have high challenge, (Ranges between 3.4-4.19), on the efficiency of freight transport and custom has moderately affect, (Ranges between 2.6-3.39), the efficiency of freight transport.

5.2 Conclusion

Based on the collected data and the results obtained from analyses, interpretations, and discussions of the findings;

Of the study participants, 368 (100%) majority of the respondents were reacted to the major factors that affect the performance of freight transport through the corridor at the dry port, warehouse and customs such as loading/unloading of containers which shows low infrastructure and lack of integration among stakeholders, many formalities at the warehouse

and insufficient space for storage due to unbalanced cargo flow and insufficient use of technologies and long documentations clearance were the major factors that affect the efficiency of freight transport.

5.3 Recommendations

Based on the above findings and conclusions, the researcher suggested alternative solutions to the challenges of freight transport along the Ethio-Djibouti corridor that needs to be solved by the concerned regulatory bodies such as Federal and Regional governments, MoTL, EMAA, ECC, and Transport Associations and Companies.

- ✚ The Sectors through the corridor gives service to freight transports' poor service system is the main problem that hinders the trip frequency of the vehicles. So the government and the other regulatory bodies of those sectors are better to give attention to solve the problem mainly (MoTL, EMAA, ECC).
- ✚ To sustain and maintain the infrastructures through the Ethio-Djibouti corridor and the freight transport of the country the government is better to search and utilize effectively and efficiently the available potential ports shared with neighboring countries.
- ✚ The government is better to give priority and plan strategies to solve the numerous problems of freight transport through the Ethio-Djibouti corridor which were discussed and presented in detail in the interpretations and findings based on the results obtained from the study participants. (Federal and Regional governments, MoTL, EMAA, and ECC).
- ✚ The Ministry of Transport and Logistics is its job in the corridor and the regional transport inspectors have been subjected to improper control and harassment of cross-border vehicles.
- ✚ The Federal Security Forces and the Regional Security Forces must work together to address the issue of peace and security through the corridor as obtained from the interview.

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APPENDIX I

Trucks Selected from all Associations/ Companies.

S/N	Level of trucks	No of trucks	Truck capacity by quintals				Sample trucks	%
			200-299	300-349	350-379	Above 380		
1	Level 1-A	4944	351	313	960	3520	68	41
2	Level 2-A	1556	182	131	311	932	22	13
3	Level 2-B	1434	1129	123	39	143	20	12
4	Level 3-A	516	127	172	77	140	7	4
5	Level 3-B	1195	1113	54	15	13	17	10
Ass.	Sub-total	9645	2902	593	1402	4748	144	78
1	Level 1	2047	17	24	105	1901	28	17
2	Level 4	463	31	33	59	340	5	5
Comp.	Sub-total	2510	48	57	164	2241	33	22
	Grand total	12,155	2950	650	1566	6989	167	100

Source: Federal Transport Authority/ Ministry of Transport and Logistics 2022

Addis Ababa University

College of Business and Economics

Logistics and Supply Chain Management Program Unit

Questioner for Drivers

Introduction:

This research survey is designed to fulfill an academic requirement for Masters Degree program in Logistics and Supply Chain Management at Addis Ababa University. The objective of the study is to assess factors affecting the efficiency of Freight Transport along the Addis Ababa-Djibouti corridor. Your response is very crucial for the success of this study. Hence you are requested kindly to give a response by putting "√" mark in the given box that you are selected as answer accurately and honestly among the given alternative. Your comment and suggestions are keeping confidential.

This questionnaire will be filled by Cross Border Freight Transport Drivers. Thank you for your cooperation!!!

Part One: - General Information

1. Sex: A. Male B. Female
2. Age: A. 21-30 years B. 31-40 years C. 41-50 years D. above 50 years
3. Educational level
A. Grade 4-8 B. Grade 9-12 C. TVET D. Diploma E. Degree & above
4. Marital status
A. single B. married C. divorce D. widowed
5. How long have you been a driver in the Addis Ababa-Djibouti corridor?
A. 1-5 years B. 6-11 years C. 12-16 years D. above 17 years

6. What type of truck or level do you operate?

A. level 1-A B. level 2-A C. level 2-B D. level 3-A E. level 3-B F. level 4

7. For how long do you drive on average per day? In hours

A. 4-8 B. 8 -12 C. 12-16 D. above 16 hours

8. How your average trip frequency along the corridor per month?

A. <2 times B. 3 times C. 4times D. 5times E. above 6 times

9. How long distances do you cover per month? In Km

A. 2000-4000 B. 4001-6000 C. 6001-8000 D. above 8000 KM

Part Two

Questions related to factors that affect the performance of freight transport along the Addis Ababa-Djibouti corridor. Factors affecting the efficiency of freight transport on custom, Infrastructure, Technology and Institutional Integration.

Please put “√” for your choice in the place provided.

S/N	Variables	Strongly agree (5)	Agree (4)	Undecided (3)	disagree (2)	Strongly Disagree (1)
	Technology					
1	Poor web enhanced electronic Data Interchange (EDI)					
2	Computerized billing tracing services					
3	Controllability /traceability for Trucks					

4	Poor information flow (Not knowing cargos that are already in the store, number of trucks coming,					
5	Insufficient scanning machines at check points					
	Infrastructures					
1	Poor quality of road in the corridor					
2	Inaccessible and poor quality warehouses					
3	Accessibility of Telecommunication services					
4	Availability of loading and unloading Machines in the Addis Ababa-Djibouti corridor					
5	Insufficient space for storage due to unbalanced cargo flow					
	Customs	Very effective	Effective	Average	Ineffective	Very ineffective
1	measure the effectiveness of custom clearance services at different check points on the corridor					
2	the speed of custom procedure of Addis Ababa-Djibouti corridor					
3	Improvement of facilities at customs (in gates and out gates)					
4	provision of adequacy of on time information in terms of custom issues in the corridor					
5	continuous operation of custom service without interruption in the check points of the corridor					
6	Accepting complains and comments of customers					
	Institutional Integration	Strongly agree (5)	Agree (4)	Undecided (3)	disagree (2)	Strongly Disagree (1)
1	Shortage of qualified labour force					

2	Different working times of stakeholders (custom, Dry ports, Ministry of transport and Logistics, Authority of standardization etc.)					
3	Information exchange between stakeholders					
4	Willingness of cooperation between stakeholders (custom, dry port, ministry of transport, Ministry of trade etc.)					

Addis Ababa University

College of Business and Economics

Logistics and Supply Chain Management program unit

Interview Questions for the Ministry of Transport and Logistics

Dear

Respondents!!!

This interview is partial fulfillment for a master's degree in Logistics and Supply Chain Management in Addis Ababa University, it is designed to conduct research on the factors affecting the efficiency of freight transport along the Addis Ababa-Djibouti corridor, this is for academic purpose only and we respectfully request that you give each and every one of your answers honestly and confidentially.

Thanks for giving me your time!!!

Interview Questions for Ministry of Transport and Logistics

Position of the Respondent in the Ministry_____

Educational Background of Respondent _____

1. What is the authority and responsibility of your organization in the Addis Ababa-Djibouti corridor?
2. What is your observation about the existing situation related to freight transport along the corridor?
3. Do you have evaluation method standards and performance of freight transport along the Addis Ababa-Djibouti corridor?
4. What are the main problems and challenges of freight transport along the corridor?
5. Do you have observed your organization is taking measures to improve those challenges?

6. Would be your organization do with the concerned stakeholder's integration to solve the challenges facing freight transport along the corridors?
7. Ethiopia has a low ranking according to the International Logistics Performance Index. What is your organization doing to improve this?
8. Would you have suggested the possible solutions that would enable to improve the performance freight transport service in the corridor?

Addis Ababa University

College of Business and Economics

Department of Logistics and Supply Chain Management

Interview Questions for Ethiopian Custom Commission (ECC)

Dear Respondents!!!

This interview is partial fulfillment for a master's degree in Logistics and Supply Chain Management in Addis Ababa University, it is designed to conduct research on the factors affecting the efficiency of freight transport along the Addis Ababa-Djibouti corridor, this is for academic purpose only and we respectfully request that you give each and every one of your answers honestly and confidentially.

Thanks for giving me your time!!!

Interview Questions for Ethiopian Custom Commission (ECC)

Position of the respondent in the Commission _____

Educational Background of Respondent _____

1. What is the authority and responsibility of your organization in the Addis Ababa-Djibouti corridor?
2. What is your observation about the existing situation related to freight transport along the corridor?
3. Do you have the standards to check the performance of freight transport along the Addis Ababa- Djibouti corridor?
- 4. What is the major challenges freight transport-related with custom clearance along the corridor?
5. Have you observed your organization is taking measures to improve those challenges?

6. What would your organization do with the concerned stakeholders to solve the challenges facing freight transport along the corridors?
7. Ethiopia has a low ranking according to the International Logistics Performance Index. What is your organization doing to improve this?
8. Would you have suggested the possible solutions that would enable to improve the performance freight transport service in the corridor?

Addis Ababa University

College of Business and Economics

Department of Logistics and Supply Chain Management

Interview Questions for Ethiopian Maritime Affairs Authority

Dear Respondents!!!

This interview is partial fulfillment for a master's degree in Logistics and Supply Chain Management in Addis Ababa University, it is designed to conduct research on the factors affecting the efficiency of freight transport along the Addis Ababa-Djibouti corridor, this is for academic purpose only and we respectfully request that you give each and every one of your answers honestly and confidentially.

Thanks for giving me your time!!!

Interview Questions for Ethiopian Maritime Affairs Authority

Position of the respondent in the Authority _____

Educational background of respondent _____

1. What is the authority and responsibility of your organization in the Addis Ababa-Djibouti corridor?
2. What is your observation about the existing situation related to freight transport along the corridor?
3. Do you measure the performance of freight transport on dry ports along the Addis Ababa-Djibouti corridor?
4. What are the main problems and challenges in the dry port service and freight transport through the corridor?
5. Have you observed your organization is taking measures to improve those challenges?
6. What would your organization do with the concerned stakeholders to solve the challenges facing freight transport along the corridors?
7. Ethiopia has a low ranking according to the International Logistics Performance Index. What is your organization doing to improve this?
8. Would you have suggested the possible solutions that would enable to improve the performance of freight transport service in the corridor?