

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

The Effect of Multimodal Cargo Transport System on the Efficiency of the Import Business in Ethiopia.

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Declaration

I, Tadele Assefa Likasa, announce that research paper entitled “The effect of Multimodal Cargo Transport System on the efficiency of the Import business in Ethiopia:” is my own and I would like to say that this research paper is original work. To this end, I acknowledged all sources of information that I used to produce the study appropriately.

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Letter of Certification

This is to certify that Tadele Assefa has carried out this thesis work on the topic entitled “The effect of Multimodal Cargo Transport System on the efficiency of the Import business in Ethiopia.” under my supervision. Accordingly, I here assure that his work is appropriate and standard enough to be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management.

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Acronyms

CEO- Chief Executive Officer

ESLSE- Ethiopian Shipping and Logistics Service Enterprise

MTO- Multimodal Transport Operator

SPSS- Statistical Packages for Social Science

UNCTAD- United Nation conference on Trade and Development

JIT- Just-In-Time

ICT- Information Communication Technology

SOEs- State-owned Enterprises

TEU- Twenty-Foot equivalent Unit

GIFTS- Global Intermodal Freight Transport System

Abstract

In general, transport sector has a significant effect on the international trade in terms of cost, and lead time. Especially, in the landlocked country like Ethiopia the effective and efficient management of multimodal transport operation has a positive and significant effect on the efficiency of foreign trade economy. This research conceptualizes and develops on four dimensions of multimodal cargo transport system (regulations, infrastructures, ICT applications and competence/skill) and tests the selected company employee's prospect on effect of multimodal cargo transport system on the efficiency of the import business in terms of cost and time. The data for the research was collected from 203 employees of 15 convenient companies. The relationships proposed in the framework were tested using Pearson correlation, and the causal relations were analyzed using regression analysis. From the result of the analysis it is concluded that there is strong relationship between multimodal transport system (the collective representative of the four dimensions) and import business efficiency (cost and time). Moreover, multimodal transport system (regulations, infrastructures, ICT applications and skill) has an influence on both total costs and lead time of the imported cargos. On the other hand, the total lead time has also an influence on the total cost of imported cargos. Therefore, in order to achieve effective and efficient multimodal operation and import business in both cost and time it is very important for the country to give due emphasis to the development of transport regulations, suitable infrastructures, appropriate & updated ICT applications and competent/skilled man power.

Keyword: *Multimodal Transport System, Import Business efficiency, cost, lead time*

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

The development of international trade is driven by international logistics management and the provision of the global supply chain. The ultimate objective of global supply chain management is to link the marketplace, distribution network, manufacturing/processing/assembly process and procurement activity in such a way that customers are serviced at a higher level, yet lower cost (Branch, Alan E. 2009). According to Alan E. Branch (2009), the modern global business demands a highly sophisticated and adaptable multi-modal transport structure/organization with a genuine worldwide door-to-door and just-in-time (JIT) logistics capability with an emphasis on partnership with the customer.

The transport sector is an important component of the economy, impacting on development and welfare of populations. When transport systems are efficient, they provide economic and social opportunities and benefit that impact throughout the economy. When transport systems are deficient, they can have an economic cost in terms of reduced or missed opportunities. Transport also carries an important social and environmental load, which cannot be neglected. (Jean-Paul Rodrigue, Claude Comtois and Brian Slack 2006).

According to the definition of UNCTAD (2001) multimodal transport means the carriage of goods by two or more different modes of transport under one contract, one document and one responsible party (MTO) for the entire carriage, who might subcontract the performance of some, or all modes of the carriage to other carriers.

Choosing multimodal transport over unimodal transport has some very practical advantages. Not only does it in some situations save time, as many as ten transportation days can be saved on a cargo shipment from the far east to New York by multimodal ship and transcontinental rail carriage, as opposed to an all water route- it may also save money and the environment. On the whole multimodal transport cost less, offers the opportunity to incorporate less polluting modes of transport in to the transport chain and may save time. Taylor claims that multimodal carriage, also known as Intermodal carriage in American legal literature, is the key to increasing the productivity

and competitiveness of the freight transport industry as a whole, while maintaining the environmental balance. (Hoeks, *et.al* 2009)

There are a number of determinant factors that can affect the efficiency of the import business in Ethiopia. This study will address the effect of multimodal cargo transport system on the efficiency of the import business in Ethiopia.

1.2.Statement of the Problem

According to the study of Jean-Paul. R, *et, al*, (2006) the transport sector is an important component of the economy, impacting on development and welfare of populations. When transport systems are efficient, they provide economic and social opportunities and benefit that impact throughout the economy. When transport systems are deficient, they can have an economic cost in terms of reduced or missed opportunities.

The report of UNCTAD states that, international freight costs have an impact on trade equivalent to customs tariffs or the exchange rate. “A reduction in the cost of transport directly simulates exports and imports...”. “... landlocked countries on average pay four times as much for the international transport leg of their imports than do developed marked economies”. On the other hand, the report states,” If the shipping of imports becomes more expensive, higher inflation ensues as a result of the increased cost of imported goods; in the case of intermediate and capital goods, this also increases the costs of local production. Access to logistics and multimodal transport services is an increasingly important prerequisite for competitiveness in a globalized economy... (UNCTAD, 2003).”

According to Lemmi. T , *et,al* (2016) from the assessment made about challenges in the operation of multimodal transport system, in their study they have stated that “the multimodal transport system is a concept aimed at improving trading efficiency and to transform the relationship between trading partners and international carries under a single liability system, leading to better command, control and coordinated transport system”.

Poor trade logistics penalize importing and exporting firms. To illustrate, poor trade logistics can add about ten percent to production cost in light manufacturing in East Africa (World Bank, 2013). Importing a container in Ethiopia rather than in Tanzania adds an additional cost of US \$1,095 for an Ethiopian importer. This difference can go up to US \$2,060 when comparing Ethiopia to Kenya. Moreover, the transit time taken to import and export is about twice as long for Ethiopia as it is

for China, Vietnam, and Kenya. Comparing Ethiopia with other landlocked countries such as Rwanda, Uganda, and Zambia, however shows that Ethiopia's relative performance is better (World Bank, 2013).

A number of empirical evidences argue that the transport sector has a significant effect on the international trade in terms of cost, and lead time. As we can understand from the above different empirical evidences in the landlocked country like Ethiopia with over 100 million populations the efficiency or deficiency of the transport performance can significantly affect the overall the efficiency of the import business in the country. Therefore, this study has specifically contributed to the assessment of the effect of multimodal cargo transport system based on four basic dimensions such as infrastructure, regulation, ICT applications and Competence/Skill on the efficiency of the import business in terms of cost and lead time in Ethiopia.

1.3. Research Question

This study needs to address the following questions based on four determinant factors of an effective multimodal cargo transport system; which can have a positive and significant effect on the efficiency of the import business.

- ✓ What are the contents and effects of existing Regulations in the performance of multimodal cargo transport system?
- ✓ Why is multimodal cargo transport system influenced by Infrastructures (Dry ports, highways and railways)?
- ✓ What are the effects of ICT (Information Communication Technology) on Multimodal Cargo Transport system?
- ✓ What is the effect of Competence/skill towards multimodal cargo transport system and how it can affect the efficiency of the import business?

1.4. Research objectives

1.4.1. General objective

This study aims to assess the effect of multimodal cargo transport system on the efficiency of the import business in Ethiopia.

1.4.2. Specific objectives

- ✓ To examine the roles and challenges of existing regulations regarding to multimodal cargo transport system in realizing efficient import business in Ethiopia.

- ✓ To analyze the interdependence between multimodal cargo transport system and infrastructures to achieve efficiency in the import business in Ethiopia.
- ✓ To assess the overall contribution of ICT application in multimodal cargo transport system to the efficiency of the import business in Ethiopia.
- ✓ To assess the level of competence of MTO (ESLSE) to manage and perform multimodal transport system in Ethiopia.

1.5. Significance of the study

The findings of this research will provide the general information that could help Ethiopian importers to know how their import business could be efficient by applying an appropriate transport system. In addition, specifically for such landlocked countries like Ethiopia it would also be expected to explore that the efficient management of multimodal cargo transport system can have a significant economic impact on the country. As a result, the importers and policy makers would be informed that the transport system and import business have a direct relationship i.e. one can affect the other.

1.6. Scope of the study

The scope of the study is including some selected importing and freight forwarding companies located at Addis Ababa. It has also included Ethiopian Shipping and Logistics Service enterprise, Ethiopian Maritime Authority, Ministry of Transport and Ethiopian chamber of commerce.

1.7. Limitation of the study

The fact that this study has exclusively focused on the efficiency of Ethiopian import business and the study will be conducted on the effect of multimodal cargo transport in the import business on the basis of some selected Ethiopian importers and freight forwarders, the result will not be generalized as a larger population because it will be limited to some selected import and freight forwarding companies located only in Addis Ababa city.

1.8. Definitions of terms

Modes of transport: - is a term used to distinguish substantially different means of conveyance. The different modes of transport are air, water and land transportation which includes rail, road and off-road transport.

Multimodal transport: - refers to as the transportation of goods under a single contract but performed with at least two different modes of transports.

Importer: - a person or organization that brings goods or services in to a country from abroad for sale.

Freight Forwarder: - a company that receives and ships goods on behalf of other companies.

Multimodal Transport Operators (MTO): - refers to any person who on his own behalf or through another person acting on his behalf concludes a multimodal transport contract and who assumes responsibility for the performance of the contract.

1.9. Organization of the Thesis

The thesis will be organized into Five Chapters. The First Chapter is an Introductory Part which contains the following Topics: Background of the Study, Statement of the Problem, Research Questions, Research Objectives, and Significance of the Study, Scope of the Study, Limitation of the Study, the Definition of Terms and Organization of the Study. Chapter two which deals with related literatures on the area of the study. Chapter Three deals with the Research Methodology. Chapter four deals with data Presentation, Data Analysis and interpretation. The final chapter has contained Summary, Conclusions and Recommendations of the study.

CHAPTER TWO

RELATED LITERATURE REVIEW

2.1. Introduction

Chapter two reviews literature that is very relevant in this research. This chapter also explores and gives more meaning to the theoretical foundations as well as empirical issues underpinning the phenomena being studied. Specifically, it is organized under three main sub-topics; Overview of Multimodal transport system, theoretical review and empirical review.

2.2. Overview of Multimodal Transport System

The growth of unitization of cargo, together with technological developments improving the systems for transferring cargo between different modes has considerably affected modern transport patterns and practices. Global transport networks and increased use of transshipment via hub airports and sea ports have also led to a situation where practically all urban centers have some transport connection to global markets. These developments have given a new impetus to the growth of door-to-door movement of goods under the responsibility of a single transport operator known as a Multimodal Transport Operator (MTO) on one transport document. MTOs represent an integrating factor of international transportation and, thus, for the expansion of trade since they ensure the non-interrupted flow of goods from origin to destination (Economic Commission for Africa, 2003).

The containerization of general cargo is the main component that has led to the introduction of multimodal transport and logistics services in developed regions (UNCATD, 2003).

The introduction of containers had enabled global reach through an increase in trade volume with increase of operational efficiency, which ultimately enables Multimodal Transport to be applied in most international transport operations (Cullinane, et al, 2005). According to UNCATD the Multimodal transport concept can be defined as the combination of various types of transport modes used in national or international transport operation, which provides door-to-door services, under the responsibility of one single transport operator (UNCATD, 2001). Furthermore, the terminology of ‘Multimodal Transport’ was first generated by the United Nations Convention on Trade and Development (UNCTAD) on international Multimodal Transport of goods in 1981, which defines the term as:

“... the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the

multimodal transport operator to a place designated for delivery situated in a different country (UNCATD, 1981).”

The multimodal transport operator is any person who on his own behalf or through another person acting on his behalf concludes a multimodal transport contract and who acts as a principal, not as an agent or on behalf of the consignor or of the carriers participating in the multimodal transport operations, and who assumes responsibility for the performance of the contract (UNCATD, 2001). Ethiopia implemented multimodal transport system after setting the multimodal transport directive on July 2010 since January 2011. The directive set by the government of Ethiopia indicated that multimodal transport system in Ethiopia targets for seamless, low cost, and maximum customer convenient transporting of imported goods from Djibouti to dry ports in Ethiopia and the reverse flow in case of exported goods.

The Government of Ethiopia has identified the logistics system as a priority strategic issue to improve the competitiveness of the economy. A first major step was taken in November 2011 with the introduction of a multimodal transportation system. As a result, the Ethiopian Shipping and Logistics Enterprise (ESLSE) was established by combining operations of the three major State-Owned Enterprises (SOEs) of Ethiopian Shipping Lines, Ethiopian Maritime and Transit Services, and Ethiopian Dry Port Service Enterprise. The new system was enacted to enable importers to save time and cost giving the mandate to one agent to take charge of transiting and transporting shipments until delivery to the importer (World Bank, 2013).

Multimodal transport, which is planned and coordinated as a single operation, minimizes the loss of time and the risk of loss, pilferage and damage to cargo at trans-shipment points. The multimodal transport operator maintains his own communication links and coordinates interchange and onward carriage smoothly at trans-shipment points. This avoids documentation and verification time from one agency to other. Also, advance planning can be done by MTO because knowing status from initial stages (Badvar. D, 2015).

In Ethiopia, the term „multimodal transport“ is used to describe the movement of containerized goods from port of origin to port of destination (Dry ports in Ethiopia) by sea (international water) and road transport (and rail in the future) by one operator namely the Ethiopian Shipping Lines and Logistics Service Enterprise, known as the “Multimodal Transport Operator” (MTO), assumes liability for the carriage of goods under one contract (Ethiopian Multimodal Transport Directive, 2012).

According to the Ethiopian Ministry of Transport (MOT), the concept of multimodal transport is seeing greater use in supporting national development for integration, convenience and efficiency of transport services. Realizing the need to meet the challenge of reducing logistics cost, and foreign currency, the government seeks to promote the usage of water, road and rail transport in cost and currency saving (Belay. T, 2016).

2.3. Theoretical literatures

As we progress through twenty-first century, the modern global business demands a highly sophisticated and adaptable multi-modal transport structure/organization with a genuine worldwide door-to-door and just-in-time (JIT) logistics capability with an emphasis on partnership with the customer. Hence, the organization must be consumer-driven in the competition global market with a strong emphasis on synergy between carrier and shipper. The total multimodal transport product must be logistically driven and market-led to provide an acceptable service/schedule to the consumer, the shipper. The globalization of the world economy and the resulting increase in international trade, have had, and will continue to have, significant implications for transportation networks worldwide. It is an ever-changing scene (Branch, 2009). The growth of containerized transportation together with technological developments improving the systems for transferring cargo between different modes has considerably affected modern transport patterns and practices. In response to new modes of production, in the context of globalization, and with respect to a highly competitive market environment integrated supply chain management has developed. Thus, physical flows also involve a significant amount of information flows. Hence, major inventions in information and communication technologies were the requirement for making the new logistics systems operational particularly in the management of information flows, regarding load units transport vehicles, distribution center operations or the entire inventory management of a firm (Waters, D., (2010).

In first-world logistics, one sees highly developed infrastructures. Japan, the United States and Canada, and the European Union nations all have highly developed national highway systems, port facilities, state-of-the-art air freight handling, sophisticated information systems, advanced communications facilities, elaborate rail, and multimodal transportation. While all of the logistics infrastructures can be said to be highly evolved, certain differences remain due to historical development and geography. For example, highways through much of Europe are narrower than in the United States. This minor infrastructure variation dictates that goods transport equipment be

designed slightly differently. Advances in the use of multimodal transportation and containerization standards have largely rendered these minor roadway differences moot. Containers move easily from Japanese trailers to American container ships, and to European rail. The importance of serving this integrated market has forced standards which work in all of the evolved infrastructure environments (Donald. F, *et,at*, 2002).

2.4. Empirical Literature review

The empirical review highlights on previous studies on multimodal cargo transport system with regards to the efficiency of international trade (the import business).

2.4.1. The effect of Regulations in Multimodal Transport System

As per the Ethiopian multimodal transport of goods proclamation, cost related to transit transport of import and export goods shore handling, storage, procedure in port and customs clearance and other related time-consuming documentation processes are costly for our country. Recognizing that international multimodal transport is one means of facilitating efficient and cost-effective transit logistics service of our country's international trade (proclamation no. 584, 2007).

The Proclamation envisages that international transport of goods in Ethiopia is now to be carried out on a door-to-door basis under one contract and with one party bearing contractual responsibility. Accordingly, the proclamation introduces what is called "Multimodal Transport Document" which is a document that evidences a multimodal transport contract, the taking in charge of the goods by the multimodal transport operator, and an undertaking by him to deliver the goods in accordance with the terms of that contract. In doing so, the scope of application of the proclamation is overarched to all multimodal transport contract after the conclusion of which a multimodal transport document is issued according to the relevant provisions of the Proclamation. (Tilahun.E, 2014)

While much of international trade is now carried out on a door-to-door basis, under one contract and with one party bearing contractual responsibility, the current legal framework governing multimodal transport fails to appropriately reflect these developments. No international uniform regime is in force to regulate liability for loss, damage or delay arising from multimodal transport. Instead, the present legal framework governing multimodal transport consists of a complex array of international conventions designed to regulate unimodal carriage, diverse regional/sub regional agreements, national laws and standard term contracts. As a consequence, both the applicable

liability rules and the degree and extent of a carrier's liability vary greatly from case to case and are unpredictable. (UNCTAD, 2003)

The multimodal scheme is operated solely by the Ethiopian Shipping and Logistics Services Enterprise (ESLSE), which is facing substantial implementation challenges. Despite its potential to streamline the logistics chain, the multimodal scheme has not led to better logistics management in Ethiopia (World Bank, 2013).

In many African countries freight rates are relatively high, due to anti-competitive cargo reservation policies, and Ethiopia is no exception (Teravanithorn, *et.al*, 2008).

ESLSE enjoys monopolistic privileges, which are reflected in its pricing behaviors. Effectively importers have become price takers and ESLSE, as a multimodal operator, has been assigned responsibility for bringing cargo from most ports of origin, via Djibouti, to the dry ports and temporary storage facilities. There are currently no competitors for this single contract service offered by ESLSE and mandated for use through the Ministry's Directive.

Despite the lag in introducing a Multimodal Transport Regulation from the Maritime Affairs Authority, the Ministry of Transport (MOT), which has been encouraging the usage of a multimodal transportation system since 2007, and has issued a Multimodal Transport Implementation Directive, effective January 2012. The new directive mandated that goods being shipped through the Ethiopian Shipping and Logistics Services Enterprise (ESLSE) use a multimodal (land, sea, or road) transportation service operated solely by state-owned ESLSE. The first directive, effective as of January, does not require private importers to use the multimodal scheme even if they use ESLSE's service. The circular issued on February 13, 2012 required not only state banks but also private banks to undertake their activity under the new directive right away. The letter from the National Bank of Ethiopia also indicated that all banks have to report logistical data of their customers to the Maritime Affairs Authority and the National Bank of Ethiopia within the first five days of the month. (Tilahun. E, 2014)

According to the study of Tilahun. E, (2014) as the Directive did not see other options until the directive allows private companies to be involved in the multimodal transport scheme, various interested groups are now arguing that the government must provide options for the private firms to compete in the sector. Those engaged in private forwarding business for instance argue that the government should undertake reform in this regard, *inter alia*, allowing freight forwarders and

shipping agents to use other ships for cargo that transport from ports or countries that ESLSE's vessels do not call.

Before ESLSE was established upon the amalgamation of three enterprises including Ethiopian Shipping Lines, the National Bank of Ethiopia has already issued, in 2008, a directive requiring importers to use Ethiopian Shipping Lines as a requirement for Letters of Credit (L/C). In cases where ESLSE vessels do not call on ports from which goods are shipped and ESLSE does not have a slot charter relationship with carriers calling on these ports, it provides waivers to importers to use other carriers. Since almost all commercial imports in Ethiopia require L/C to obtain foreign currency, ESLSE enjoyed an effective monopoly on most imports into Ethiopia excluding non-commercial imports (Tilahun. E, 2014).

It is thus the collective effect of the above directives that has granted *de facto* monopoly to ESLSE. This measure has turned what used to be a struggling enterprise in the country to one of the most profitable state companies. However, this has now resulted into corporate inefficiency and increase in prices for services rendered by ESLSE. Recent reports disclose that, for instance, importers that used to import minibuses from Europe, in particular the Netherlands, have claimed to have paid 1,492 dollars to ship one vehicle which is 75% more than they used to pay before the *de facto* monopoly was established by the introduction of the recent directives.⁹⁶ Importers claimed that the directive has taken away the opportunity of negotiations on shipment prices, since it is monopolized by the ESLSE. Importers have disclosed that they used to pay on average price not more than 900 dollars for each minibus after negotiations with many shippers. (Tilahun. E, 2014) Furthermore, according to the findings of Tilahun. E (2014) ESLSE rates in 2008 were about 70 per cent higher than the Far Eastern rates. Sea freight cost covers about 60 percent of the total import supply chain costs to Addis Ababa. Considering the economic impact of the above finding, the impact on processing and manufacturing industries is easily noticeable. Apparently, many components and intermediates in the production of exported goods in Ethiopia need to be imported from abroad. Most of these components are subject to a five to ten percent tariff that adds to production costs. Packaging materials like glass bottles imported for food processing are examples in this regard. They are not produced domestically and those that could be imported *via* road transport from neighboring countries are of poor quality. The available suspension schemes and drawback mechanisms are unable to reduce such costs for exporters and should be reformed. Accordingly, shipping costs will be brought to the forefront in increasing the costs for the nascent

manufacturing sector in the country. Consequently, studies have indicated that the preference for ESLSE under the foreign exchange directives may increase shipping costs by an estimated 30% - 50%. Currently ESLSE has also received very low mark for its punctuality.

Containerization is the use of standardized intermodal containers for freight transport and is the single most important development in the evolution of multimodal logistics. In India, the Container Corporation of India Limited (CONCOR) was initially the sole operator of ICDs as well as Container train operator, and currently operating about 59 terminals in the country, and includes, international, domestic, rail linked as well as road fed ICDs/ CFS. Currently the market share of CONCOR is about 85%. Ministry of Commerce is the nodal agency and Addl. Secy/Infrastructure is the chairman of the Inter-Ministerial Committee (IMC). Containerized tonnage aggregated about 105.11 million MT and constituted 14.32 per cent of the total traffic handled (732.76 million MT) in 2008–09 by the Indian ports. For the major ports, this ratio is higher at around 13 per cent (Badvar. D, 2015).

Multi-modal transport in India was a monopoly of the Container Corporation of India till 2005. With licenses being given to 13 new private players, rail trade should improve considerably. In order to encourage trade by small scale industries, Indian Railways has started a “road-railer” system where container vehicles are capable of running both on highways hauled by trucks and on rail. In 1998-99, the Konkan Railway (one of the railway zones in South-Western India) pioneered the 'roll-on, roll-off' ('RORO') concept between Mumbai (Kolad) and Goa (Verna). Privately owned trucks are loaded with their goods which are driven on to a rake of flat cars and are carried (trucks and their cargo) to the destination (Badvar. D, 2015).

According to the study conducted by Aklile.M, (2017) the adoption of multimodal transport system needs various structural changes in the economy. All way round infrastructural developments and liberalization of trade policies, rules and regulations to make it compatible with the international standards would be the vital improvements needed. That is the main reason that many authors in field advise the development of infrastructure and liberalization of trading policies and regulations in addition to increment of trade volume. Since the cost of multimodal infrastructural development is very expensive.

2.4.2. The effect of Infrastructure in Multimodal Transport System

Effective implementation of multimodal transport requires an efficient, safe and reliable transport infrastructure network as well as modern facilities at ports. Obsolete and inappropriate equipment at ports constitute a major obstacle to the development of multimodal transport in Africa. Lack of investment, in even modest container handling facilities at most ports, is a major constraint in the retention of freight traffic, which is progressively being containerized by shippers. There is, therefore, an urgent need to invest in modern container handling facilities at most ports. There is also a need for the development of more dry ports to serve both landlocked countries as well as interior areas of coastal countries, particularly rural areas. (Economic Commission for Africa, 2003)

International transportation of goods in developing countries generally and Africa in particular is characterized by high costs, excessive delays, insecurity and a disjointed application of different transport modes. Inadequate infrastructure conditions, inefficient transport organization and facilities, poor utilization of assets and weak managerial, procedural, regulatory and institutional systems also contribute to high transport costs in Africa. With regard to poor infrastructure conditions, Limao and Venables (2000) have shown that this accounts for 40% of predicted transport costs in coastal countries and 60% for landlocked countries. (Economic Commission for Africa, 2003)

The transport and logistics sector are fundamental to the development of a country. In India, since the 1990s, the transportation infrastructure has undergone a significant change. While in the 90s, the demand for transport grew at an annual rate of 10%, in the last decade the demand in the transport and logistics industry grew along with the accelerating Indian GDP. This growth increased the demand for practically all transport services. Various estimates put the size of the Indian logistics market at between USD 90 to 225 Billion. In addition, the Indian logistics industry is estimated to generate employment for 45 million people (Badvar, D, 2015).

The development of inter-modalism requires the consideration of three of its attributes: transport links, transport nodes, and the provision of efficient services. While there have been efforts in Asia to develop regional highways, railways and seaports, inland dry ports remain at an early stage of development. Since Asia is home to twelve of the world's landlocked countries, the development of dry ports could play a major role in promoting intermodal transport. It could also contribute to

the improved transshipment and distribution of goods in wider inland areas by improving operational efficiency. (Shinya. H, *et,al*, 2011)

The World Economic Forum and Confederation of Indian Industry (CII) host the India Economic Summit in New Delhi from 4 to 6 November 2014. The government is committed to achieving a target of building 30 kilometers of roads and highways a day within two years, taking the rate up from three kilometers a day currently. The government is working to solve problems associated with land acquisition, creating a multi-modal transport policy and reducing the cost of capital to make investment in infrastructure viable internationally, confidence in India is high; country needs to ensure predictability in policy, process and growth (Badvar. D, 2015).

Ports are well known as playing an important role in multimodal transport systems and international supply chains, apart from their traditional role as clusters of economic activities. Ports engage in various activities: loading/discharging cargo onto/from vessels; providing value added services such as labeling, packaging, cross-docking, and others; and acting as warehouse and distribution centers (World Bank, 2007).

According to the study of Shinya. H, *et,al* (2011) in order to promote intermodal transport, it is essential to develop transport links and nodes, which include ports, airports, river ports, and inland dry ports, as well as to improve the efficiency of transport services. Transport nodes such as airports, logistics intermodal terminals, and dry ports need to be developed in order to promote intermodal transport. Inland dry ports are also important transport nodes, particularly for landlocked countries. The development of these dry ports in hinterland areas can promote intermodal transport and provide transfer and transshipment functions along with customs clearance facilities. Dry ports play an important role in stimulating economic development and facilitating international trade and transport in china's central and western inland areas.

In Asia there has been good development of transport networks such as Asian Highway and the Trans-Asian Railways. Railways are the first invented to carry freight and they now run on clean forms of energy¹⁰. The energy intensity and long-life cycle of rail cars, along with new innovations that offer increased speed, have put railways in competitive position to fulfill a major share of the growing transport demands in terms of both freight and passengers. (Shinya. H, *et,al*, 2011)

As one of the landlocked developing countries Ethiopia continuously face the challenge of physical isolation, supply chain related barriers from the sea and the high costs of trading with the rest of the world (United Nations Economic Commission for Africa, 2011). In order to counter these challenges associated with landlocked-ness, Ethiopia established several dry ports to take the advantage of dry port. The Economic Commission for Africa has undertaken a feasibility study that could see the construction of more dry ports in Ethiopia. Ethiopia started developing dry ports following a 2007 study by the Ministry of Transport & Communication, which suggested that the country could save foreign currency from seaport expenses at Djibouti, by building an inland port within 25 the country. Such ports handle the customs inspections, documentation of cargo and packaging for import and export. The saving, according to the study, could be seven to eight dollars for every container that's transported through Djibouti. Consequently, the Modjo Dry Port, 73Km east of the capital, was built at a cost of 20 million birr on a 63 hectar plot and started operations back in 2009. (Yodit.R, 2016)

According to UNCTAD (1991), a dry port is “a common user facility with public authority status, equipped with fixed installations and offering services for handling and temporary storage of any kind of goods(including containers) carried under customs transit by any applicable mode of transport ,placed under customs control and with customs and other agencies competent to clear goods for home use, warehousing, temporary admissions, re-export, temporary storage for onward transit and outright export.” (Yodit.R, 2016)

Inland ports, also known as dry ports or inland container depots, have developed rapidly in Africa, and particularly in Southern and Eastern Africa, as inland terminals in coastal countries or landlocked countries in the hinterland of one or more seaports. (Economic Commission for Africa, 2003)

In order to improve rail freight efficiency, china has been running double-stack container train services to and from the main coastal ports on selected routes, using new specialized wagons and powerful locomotives. In 2007, Chinese railways operated 680 double-stack trains that carried 53,161 TEU, compared to 2005, when it operated 454 trains that carried 39,437 TEU. Development of dry ports, improvement of railway links and efficiency of double-stack trains mentioned above would improve overall efficiency of the intermodal transport (Shinya. H, *et.al*, 2011).

According to European Union (2014), Effective multimodal transport requires linking infrastructure for transfer and operation of vehicles on different modes. Whereas infrastructure creates multimodal connections bridging the gap between different modes in ports and terminals, multimodal vehicle equipment warrants compatible, transferable loading units between modes.

As per the study implemented in Asia a home of twelve of the world's landlocked countries; to realize efficient and effective intermodal transport system it is essential to emphasize on the development of infrastructures like highways, railways, and inland dry ports. For instance, the study shows that, when China improve its rail freight efficiency by specializing the wagons and powerful locomotives in 2007 the trains carried 53,161 TEU compared to 2005 in which the train carried 39,437 TEU with the difference of 13,724 TEU within two years. This and many other researchers argue that, in multimodal transport system the developments of infrastructure (highways, railways, and inland dry ports) especially for landlocked country like Ethiopia has a significant and positive effect on the efficiency of the import business.

For high volume goods rail transport can be low cost and more effective than land transport, and could be given similar priority as road construction projects, especially to improve transport from Djibouti to Addis Ababa (World Bank, 2013).

Lack of sufficient road connectivity across the border is a particular concern for cross-border transportation. As specific concern is the situation of the road from Addis Ababa to Djibouti. There are two roads to Djibouti: Addis Ababa-Awash-Djibouti and Addis Ababa-Dredawa-Dewole-Djibouti. The first route is fully paved. However, on the second one, the part that connects Dredawa to Djibouti via Dewole is unpaved and in need of upgrading. This result in hazardous conditions on this major route, especially for the bulky project imports that are transported (World Bank, 2013).

As per the study of Mariam Kotachi, *et.al*, (2013) ports are considered the main intermodal point where different types of transportation modes (ships, trucks and rail) meet to exchange cargos. The United States alone has 361 seaports which are the gateways for more than 80% of foreign trade; the United States is the world's largest importer and exporter.

The formality of the Ethiopia multimodal transport directive has been to impose significant effect on how multimodal transport business is done, aiming to reduce the huge warehousing fee in foreign currency, increase efficiency and reduce overall logistics cost for the country. At present, according to Ethiopian Freight Forwarders Association (EFFA), currently there is only one MTO

is providing multimodal transport logistics service in Ethiopia. Domestically, Ethiopia is very much dependent on road transport in term of physical movement of goods with future potential use of railway (Belay. T, 2016).

In multimodal transport, the transport chain is usually containerized. Containerized cargo also requires less but better qualified personnel in ports, where reforms are still pending in many developing countries. It further requires port, rail and road infrastructure, as well as the corresponding regulations and labor regimes. In many developing countries, particularly least developed countries, these inland links are often incomplete and poorly maintained. This is one of the main practical obstacles to transport providers offering multimodal transport. (Aklile.M, 2017)

2.4.3. The effect of ICT application in multimodal Transport system

2.4.3.1. Overview of ICT in Ethiopia

Coverage of ICT services in Ethiopia is the lowest in Africa. GSM signals cover barely 10 percent of the population, compared with 48 percent for the low-income country benchmark; and the GSM subscription rate is only 1.6 percent of the population in Ethiopia, compared with 15.1 for the low-income country benchmark. Furthermore, whereas the typical African country adds 1.7 percent of the population to the GSM subscriber base per year, the figure for Ethiopia is only 0.1 percent. Internet bandwidth in Ethiopia is only 0.3 megabits per second per capita, compared with 5.8 megabits per second per capita for the low-income country benchmark. Only on fixed-line density does Ethiopia perform on par with its peers. However, Ethiopia's weak penetration of telecommunications cannot be attributed to lack of demand for these services. Simulations suggest that more than 90 percent of the country's population could be profitably provided with a GSM signal. This performance shortfall can be attributed to the absence of a liberalized regulatory framework and competitive market structure. As of today, all ICT services in Ethiopia are provided monopolistically by the state-owned telecom incumbent. (Vivien.F, *et.al*, 2010)

Prices of ICT services in Ethiopia are also very low—except for international calls—and much lower than in the rest of Africa. For example, a standardized monthly basket of mobile telephone services costs \$3.37 in Ethiopia compared with the African benchmark of \$11.12. Such low tariffs for domestic mobile (and fixed) services seem to be supported by cross subsidies from international call charges, which are substantially higher than the African benchmark. This is

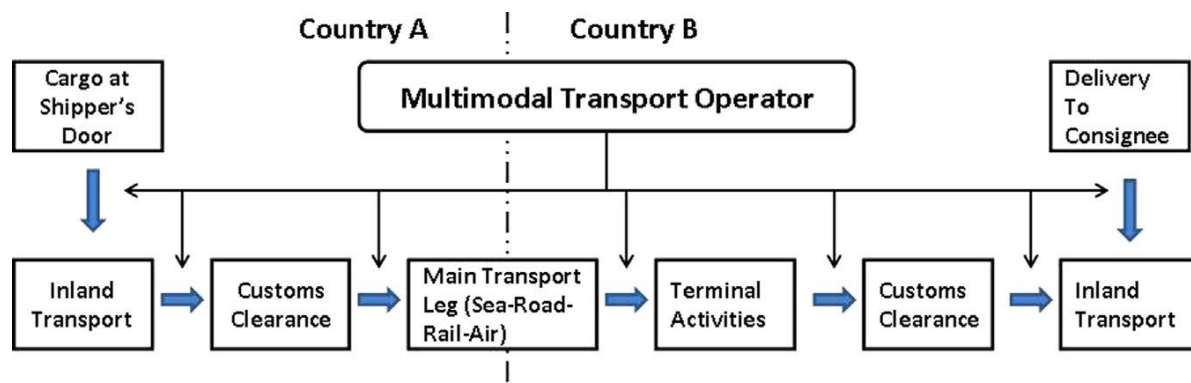
because ICT tariffs in Ethiopia have not yet been rebalanced to bring them closer into line with cost structures, a move that most African countries have undertaken to prepare the market for competition. Surprisingly, the low cost of services does not seem to have promoted wider access to these services in Ethiopia. Ethiopia's central challenge is to introduce competition to the ICT sector. The Ethiopian market could potentially experience the same explosive growth of GSM coverage as has taken place across Africa. To make the transition, the country needs to modernize the sector's institutional and regulatory framework, which is among the least developed in Africa. Ethiopia scores only 28 percent on an AICD index of institutional reform that captures the extent to which countries have modernized in terms of sector reform, regulatory framework and governance of state-owned ICT incumbents, compared with around 50 percent for the median African country. The key step would be to license a second mobile operator in the market, and eventually additional ones. In addition to accelerating the expansion of GSM coverage, such a move has the potential to raise significant fiscal resources for the government—based on the experience of the 2000s in Africa, the license could potentially raise at least \$0.5 billion. (Vivien.F, *et.al*, 2010)

2.4.3.2. ICT and Multimodal transport

Information technology is one of the key means for reaching the efficiency in intermodal transport terminals, especially at large ones, as IT systems enable easier and advanced coordination and management of the complex transport operations. IT systems located in a piece of software are supporting the operations of intermodal terminal. This support generally is related to the road-side inbound and outbound clearance of intermodal shipments, the rail-side inbound and outbound clearance of trains, and the road/rail transshipments of loading units. The main aim of the installed terminal management system is to improve the quality and efficiency of terminal operators. Additionally, the real examples have revealed that it can help to increase the capacity by 5-10%. For example, a computer program is being used in the dry port of Madrid. This program enables the use of the wireless network in order to manage the traffic without documentation. Mentioned facts witness that IT-based management systems would be undoubtedly valuable in a dry port implementation and could bring significant improvements in the whole transport chain, therefore it should be an incorporated element of fundamental equipment in a dry port. (Hiwot T. 2016)

Multimodal transport refers to the transportation of goods by two or more different modes of transport (such as road, rail, air or inland water way, and short-or deep-sea shipping) as part of the contract where often a multimodal transport operator (MTO) is responsible for the performance of the entire haulage contract from shipping to destination. The movement of goods could be within one country or international with additional procedures such as goods clearance at customs. Fig. 1 illustrates the whole international transport process where goods are moved from a country A to final destination in country B and the involvement of MTO during their journey. Its aim is to transfer goods in a continuous flow through the entire transport chain to make a transportation journey more efficient from a financial, environmental and time perspective. With the massive growth in containerization and the great shift in thinking from a conventional unimodal to a system concept multimodal transport approach, multimodal is currently the main method used in the international transportation process as it enables the optimization and organization of all transport modes into an integrated continuous system in order to achieve operationally efficient and cost effective delivery of goods in the supply chain. (Irina. H, *et,al*, 2014)

Figure 2.1. Goods flow in a typical international multimodal transport chain



Source: (Irina, 2014)

Historically, the use of ICT in transport and logistics started in the 1960s. Typical examples are inventory management systems, transport routing, scheduling, also known as Distribution Requirement Planning, and billing systems. These systems are usually function-based and thus are independent of each other. Since the 1970s, Material Requirements Planning (MRP) and Manufacturing Resource Planning (MRPII) emerged in an attempt to integrate materials, labour and financial requirements into the system. This then led to the development of Enterprise Resource Planning (ERP) system in the 1990s. Parallel to the development of such enterprise-wide systems, the development of inter-organizational systems did not flourish until after the Internet

being commercialized in 1995. Prior to this, Electronic data interchange (EDI), had been dominating inter-organizational connections since 1960s. Internet-based IOSs have grown significantly since the late 1990s, facilitated by rapid ICT developments. Rather than the costly and complex point-to-point integration of separate systems, Web-based systems are designed for participants to share a single system. Such technological advances accelerated and boosted the development of new e-business models such as electronic marketplace. (Irina. H, *et,al*, 2014)

According to Irina, *et,al*, (2014), ICT has a huge potential for efficient, effective and reliable real-time management and operations of multimodal freight transport.

Terminal and Port information and communication systems and applications support intermodal terminal and port operations where transportation movement is temporarily interrupted and freight is changing transportation mode as well as responsibility for certain transshipment times and related costs. Road haulers, railway operators, port authorities, cargo handling companies and customs are among the existing participants of intermodal terminals which could be sea ports, river ports, dry ports and inland container depots. Single window system, often initiated by government bodies, is a popular concept in this regard, which allows traders to submit all import, export, and transit information required by regulatory agencies via a single electronic gateway, instead of submitting and processing the same information many times to different government entities (Irina Harris, *et,al*, 2014). For example, uTradehub in Korea and Trade Net in Singapore represent such initiatives. At individual terminal or port level, FP projects such as the CHINOS (Container handling in intermodal nodes) project (CHINOS, 2009), address challenges faced by container terminal and transport operators due to security issues and cargo volumes through innovative IT technology such as RFID. The Metro Cargo Intermodal Transport (MIT, 2011) project aims to scale up to a full industrial installation of a fully automated system for the distributed intermodal transport over a territory and for processing full trains in port/dry-port shuttling. (Irina. H, *et,al*, 2014)

Freight and Fleet tracking and management systems and applications aim to reduce uncertainty in every link of the multimodal transport chain and improve operational efficiency between modes of connection. ICT management systems enable the tracking, monitoring and controlling of cargo and vehicles: they are under- pinned by the appropriate reporting tools and based on real-time related information through the integration of various technologies such as on-board computers, web-based tools and short-range identification technologies. For example, the focus of the D2D

project (D2D,2005) is on an integrated and global management system for door-to door intermodal transport operations through the development of a transport chain management system, a freight transport monitoring system and the application of “smart technologies” to improve the efficiency of multimodal transport operations. The main objective of the M-TRADE project (M-TRADE,2007) is an integrated end-to-end system providing services related to tracking and tracing goods, the identification of freight and efficient transshipment at terminals and nodes and monitoring transportation of hazardous and perishable goods. A container door-to-door transport chain is conducted through the use of advanced technology in the SMART-CM project (SMART-CM,2011). Integrated operational/information exchange Platform. (Irina Harris, *et,al*, 2014)

Integrated operational/information exchange Platform/Portal/ Marketplace intend to improve overall performance of multimodal transport to create a seamless and secure information system by inter connecting developments in mobile and wireless communications, tracking and tracing, fleet and freight management and Internet-based technologies. Integrated platforms aim to link all actors together to allow cooperation, collaboration and information sharing from the point of dispatch to the point of arrival. Global Intermodal Freight Transport System (GIFTS)framework aims to improve and integrate existing and emerging intermodal freight transport technologies into one internet platform (the GIFTS Integrated Operational Platform – GIP) focusing on small and medium players (GIFTS, 2004). Applications support activities related to administrative services, freight transport and operational monitoring and control functions and E-Commerce services. Within the KOMODA project, the architecture for a visionary Europe-wide e-Logistics system has been proposed in order to optimize the logistics chain through ICT and co-modality. The e-FREIGHT project aims to achieve optimal and sustainable deployment of European freight transport resources through e-Freight Platform that provides a repository of e-Freight solutions and services and a “run-time” environment to support interaction with solutions (e-FREIGHT,2011). (Irina. H, *et,al*, 2014)

Trade and transport facilitation require governments, administrations and businesses to improve efficiency and effectiveness, to simplify, standardize and harmonize processes, documents and formalities, to foster partnership and cooperation, and to increase transparency. Information and Communications Technology (ICT) can support many trade and transport facilitation concepts and objectives. The value of ICT for trade and transport facilitation goes beyond concepts such as Single Windows. Automated business processes, digitalization of procedures, simpler interaction

and transmission of data, and faster decision-making abilities deliver advantages in many trade and transport facilitation areas (UN ESCAP, 2012).

The international regulatory framework for trade and transport facilitation changed in recent years. Modern trade facilitation solutions and measures bring in innovative approaches to simplifying administering procedures and operational practices. These approaches are based on cross-government integration, paperless trade, partnership with traders, an effective risk management, and a client, efficiency and integrity oriented public administration. Many of these practices call for the use of “modern technology” and rely on data exchange across organizational and geographical boundaries, and fast processing and data analysis capabilities. ICT is an enabler of trade and transport facilitation solutions and it can support efficiency, effectiveness client orientation and security objectives in many areas. (UN ESCAP, 2012)

There are several intuitively plausible mechanisms through which ICT may affect the flows of international trade. First, the use of ICT may reduce the fixed entry cost into a market and thus stimulates exports. As Freund and Weinhold (2004) discuss, these fixed costs include the costs of finding out information about the market (search cost), advertising, and establishing a distribution network. Second, international transactions often require advance planning that involves handling uncertainty. Some of these uncertainties are associated with the delay in acquiring and transmitting relevant information. The use of ICT reduces such delays and makes planning more efficient and accurate. Consequently, the volume of trade between countries is expected to go up. Finally, ICT may directly facilitate international trade in services, particularly information-intensive services. These services involve creating, processing, and communicating information (Lirong Liu, *et, al*, 2013).

2.4.4. The effect of Competency/Skill in Multimodal Cargo Transport System

Competency is termed for the human capability to utilize a set of relevant knowledge, skills, and abilities to perform in critical tasks and deliver the desirable outcome in a defined job profiling. Competence is defined as the quality of performing functionally adequate in the specified tasks and position with the requisite knowledge (cognitive attributes), skill (psychomotor attributes) and attitudes (affective attributes), including other attributes associate with job performance. Company must support for competency development to ensure their employee adequate knowledge, skill and attitude appropriated to job performance. Competency is observable and behavioral capabilities that are required to perform job responsibilities and deliver standard outcome. Clearly industry, organization, government and education institute investigate and create for competency modeling to develop human resource for successful business (Anothai N, 2017).

As per the review of Ngamvichaikit, (2017) Multimodal transportation requires high skill of managing the carriage according to combining risks of route places a negative effect toward the quality of transportation, in terms of cost and timeliness of delivery or damaged freight. Additionally, the guideline for managing multimodal transportation still not be clear, some scholars recommend to use quantitative model whereas some scholars' advice to minimize risk. Regardless to higher risk of transportation, the mandatory of multimodal transportation still be agenda for service providers to handle the freight with unique competency. Additionally, Asian countries including Thailand, Malaysia, Singapore, Philippines, Burma, Cambodia, Vietnam and Laos have integrated toward Asian Economic Cooperation since 2015. Effective multimodal transportation significantly response with regional trade coordination and reduce the overall logistics cost. The human capability remains key factor toward multimodal transportation management according to higher risk as well as higher time and cost saving from combined modes of transportation. Developing logistics professional for multimodal transportation management become privacy to cope with rising trend of global sourcing and production. Multimodal transportation management requires high skill of planning. Logistics professionals who handle multimodal delivery can approach to integrate in operation, management and control of transportation, so that delivery from origin to destination is possibly shorter (Anothai N, 2017).

Competency is a combination of practical and theoretical knowledge, cognitive skills, behavior and values used to improve performance of employee role and responsibilities. There are 3 compositions for competency.

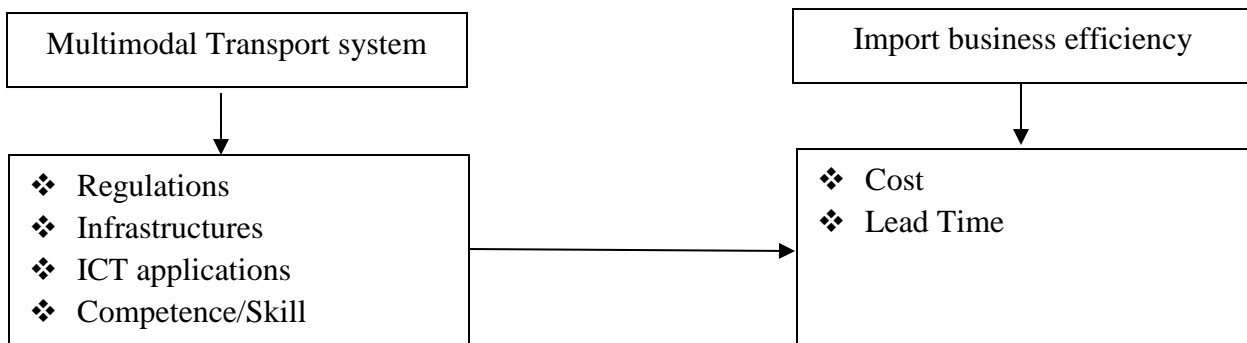
- ✓ **Knowledge:** Theoretical or practical understanding of a related subject with international freight forwarding such as international regulation, criteria to consider for international freight forwarding etc.
- ✓ **Skill:** the learned ability to carry out a task with pre-determined expectation often within a given amount of time, energy, or both such as communication skill, computer skill etc.
- ✓ **Behavior attributes:** the range of actions, values and beliefs demonstrated by individuals and impact positively to job performance such as positive attitude, learning motivation, team working, leadership etc. (Anothai N, 2017).

2.5. Conceptual Framework

The major concept of this study is focused on an assessment of the effect of multimodal cargo transport system on the efficiency of the import business in Ethiopia; based on four basic dimensions (Regulation, Infrastructure, ICT application and Competence/Skill) which have an important role in the effectiveness of the transport system.

In figure 2.2 shows the framework of the study as the development of multimodal transports system is depending on the government regulations, infrastructures, ICT applications, and competence/skills, the effective development of these dimensions has a positive and significant effect on the efficiency of the import business in terms of cost and lead time.

Figure 2.2. Conceptual Framework



Source: own source

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Description of the study Area

A large number of Ethiopian businesses are engaged in the import business. Even though, Ethiopian economic policy has been discouraging import and emphasizing on the substitution of the import by in-house produced products; but still the import is the major activity of the country's business. The recent statistics shows that in only 2017 G.C goods worth around 16.29 billion US dollar were imported to Ethiopia. The transport sector is an important component of the economy, impacting on development and welfare of populations. When transport systems are efficient, they provide economic and social opportunities and benefit that impact throughout the economy. Therefore, the area of the study is to assess the effect of multimodal transport system on the efficiency of the import business in general in Ethiopia specifically in some selected import company located in Addis Ababa. Thus, the study focuses on import business, Ethiopian shipping and logistics service enterprise, transporter operators, freight forwarders; companies which would be considered as more experienced in the import and transport business in Ethiopia specifically in Addis Ababa city.

3.2. Research Approach

This study has employed mixed method research approach. This is because mixed research approach involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study. Thus, it is more than simply collecting and analyzing both kinds of data; it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research (Creswell & Plano Clark 2007). Additionally, using mixed research approaches for this study will be used to generate rich data from multiple sources.

Using both Qualitative and Quantitative data from import and transport recorded Document, Target groups respondents and turnover data for 10(ten) years trend, using interviews and survey questionnaires to evaluate the effect of multimodal transport system on the efficiency of import business in Ethiopia.

3.3. Research Design

This study has followed an explanatory research design, because explanatory study identifies the theme, pattern or organization of an issue to understand the background information. Thus, it attempts to clarify the existing problems a situation or phenomenon.

This study has followed an explanatory cross-sectional survey design and document analysis that would help to design and to generate basic knowledge, clarify relevant issues uncover variables associated with problems uncover information needs, and/or define alternatives for addressing research objectives. It is a very flexible, open-ended process and has been undertaken in the import business and multimodal transport system relationship in Ethiopia.

3.4. Population and sample

The population for this study comprises all selected importers, freight forwarders and customs clearing agents, Ethiopian Maritime Authority, and Multimodal transport operator (ESLSE). The target population for this thesis has included employees of those selected business sectors from lower level to top level management of the companies in Addis Ababa city.

3.4.1. Sampling Technique

For the purpose of qualitative methods of data collection this study has applied purposive sampling techniques; this is because purposive sampling is a method used to determine the sample for qualitative objectives. In the process of conducting this study, both probability and non-probability sampling are used to select the study respondents. The study respondents had selected from the selected company's employee based on the job Position categories and for qualitative data they have been selected on purposive bases (non-probability sampling) because managers or experts who are directly working on the issues are expected to have rich knowledge data than other persons. And for the quantitative data collection purposes using survey questionnaires simple random sampling would be appropriate. Simple Random sampling refers to that method of sample selection which gives each possible sample combination an equal probability of being picked up and each item in the entire population to have an equal chance of being included in the sample. However, since there is no a well-organized sample frame consisting of the list of every element of the population, probability sampling method cannot be practical. Therefore, the student researcher is forced to use convenience sampling with all its limitations.

3.5. Data Sources and Types

Both qualitative and quantitative type of data has employed to collect data from both primary and secondary sources.

Primary Data Source: Important sources of primary data for this study has been collected through; key informant interviews and survey questionnaires. This is used to verify the validation of the findings. Key informant interview is important to generate rich data from experts and management staff who directly or indirectly are working on the issue in the selected companies.

Secondary Data Source: Collection of secondary data has been used by looking at in to the various documents that the selected companies had been using as records of import business and transportation system. Related documents had analyzed and reviewed to get required secondary data like from official reports and recoded documents. For the purpose of the study both the primary and secondary data types had been used. Using the primary data collection methods such as survey questionnaires and interview questions has been used and secondary data type has obtained from different sources like organizational documents, annual reports of the selected companies, import and transport policies and Procedures.

3.6. Data Collection Procedure

Both quantitative and Qualitative techniques have been used for data collection and analysis. Quantitative data collection using key informant interview, document analysis & Quantitative data collection using survey questionnaire; Quantitative Research is a study whose findings are mainly the product of statistical summary and analysis. A structured questionnaire has used to collect data from representative sample, this is adopting for the respondents to rate the extent to which they are agree or disagree on a five –point Likert scale with the following rating; 5 strongly agree ,4 agree, 3 Neutral, 2 disagree and 1 strongly disagree. On this scale score of 5 or 4 indicates that the item / the variable is perceived to be essential while a score of 3 or 2 indicated that the variables (item) is perceived to be fairly important, but not essential, while a score of 1 indicate that the item could be disregarded for being unimportant /not well performed.

3.7. Ethical considerations

There were also be ethical measures that have to be follow in the data analysis. To ensure the integrity of data, the study would check the accuracy of encoding of the survey responses. There are certain ethical protocols that would have to follow in this study. The first is soliciting explicit consent from the respondents. This ensures that their participation to the study is not out of their

own volition. This study has also ensured that the respondents are aware of the objectives of the study and their contribution to its completion.

3.8. Data Analysis

The data collected through questionnaire presented in table form and descriptive statistics is employed. After making the necessary coding, to analyze the usable data collected from respondents Statistical Package for Social Sciences (SPSS, version 20) has been used. Both descriptive and inferential are applied in order to come up with a better result. Descriptive statistics is used to describe a set of data in terms of its frequency of occurrence, its central tendency, and its dispersion. Through inferential statistics regression analysis, correlation analysis and reliability test would be employed.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1. Introduction

As discussed in the previous chapter, this study attempted to assess the Relationship between multimodal cargo transport system and import business. Therefore, the findings of the study are presented and discussed in this chapter. The questionnaires were developed in five scales ranging from five to one; where 5 represents Strongly agree, 4 agree, 3 Neutral, 2 disagree, and 1 strongly disagrees. In order to assess the relationship between multimodal cargo transport system and import business efficiency, Correlation and regression analysis were conducted for scale typed questionnaire. A total of 242 questionnaires were distributed to employees of the selected companies and 203 (84%) questionnaires were obtained and used for analysis. The collected data were presented and analyzed using SPSS (version 20.0) statistical software. The study used correlation analysis, specifically Pearson correlation to measure the degree of association between different variables under consideration. Regression Analysis was also used to test the effect of independent variable on dependent variable.

4.2. Response Rate

A total of 242 questionnaires were distributed to employees and 203 (84%) questionnaires were obtained. The remaining 39(16%) questionnaires were not collected due to unwillingness to provide information and some respondents were in absence of leave. Based on these, the response rate is 84%.

Table 4.1. Response rate

No.	Name Company	No. Questionnaire Distributed	No. Questionnaire Collected	No. Questionnaire Uncollected
1	Kaki Motors	35	24	11
2	Green International Logistics	15	12	3
3	Ries Engineering	15	13	2
4	Lifan Motors	15	12	3
5	Belayab Motors	15	13	2
6	Ambassel Trading House	17	15	2
7	ESLSE	40	37	3
8	Maritime Affairs Authority	15	13	2

10	Dolphin Shipping and Transit	15	14	1
11	Maccfa Logistics	15	12	3
12	Packtra Logistics	15	13	2
13	Panafric Global	15	12	3
15	Honest plc	15	13	2
	Total	242	203	39

Source: Survey Data, 2019

4.3. Respondent Profile

Table 4.2 – Profiles of the respondents

Educational Background	Frequency	Percent
College Diploma	27	13.3
First Degree	137	67.5
2nd Degree and above	39	19.2
Total	203	100.0
Job Position	Frequency	Percent
CEO/manager	3	1.5
DGM	6	3.0
Dep't Manager	27	13.3
Division Head	50	24.6
Senior Officer	56	27.6
Officer	37	18.2
Junior Officer	24	11.8
Total	203	100.0
Years stayed at Organization	Frequency	Percent
under 2 years	27	13.3
2-5 Years	80	39.4
6-10 years	86	42.4
Over 10 years	10	4.9
Total	203	100.0

Source: (SPSS Output, 2019)

The analysis of the respondent's profile in terms of their Educational background, Job title, and years stayed at the organization in line with Table 4.2 is presented as follows.

Educational Background: According to the data collected 137 respondents (67.5%) have 1st degrees (BA/BSc Degree), 39 respondents (19.2 %) have 2nd Degree and above (MSc/MA Degree) and the remaining 27 respondents (13.3%) are College Diploma holders. From the educational background of respondents, 176 respondents (86.7%) are 1st and 2nd degree & above holders. According to educational level of the respondents, the data collected from these respondents is relevant and reliable information needed for the study and they are fit in line with the response of the questionnaire.

Job Position: According to the data collected, 3 respondents (1.5%) of them are CEO/General Manager of their company, 6 respondents (3 %) are Deputy General Managers of the company, 77 respondents (37.9 %) are Department managers and Division Heads, and the rest 117 respondents (57.6%) are Senior Officers, Officers and Junior Officers. According to the response, all the respondents are directly and indirectly involved in the multimodal transport and import business operations and hence, their information can be considered as reliable and relevant for the study.

Work Experience: From the total respondents, 27 respondents (13.3%) stay at the organization less than 2 years, 80 respondents (39.4 %) stay at the organization 2-5 years, 86 respondents (42.4 %) are stay at the organization 5-10 years and the rest 10 respondents (4.9 %) are stay at the organization more than 10 years. From this it can be concluded that the majority of respondents, 96 respondents (47.3 %) fall at above five years' work experience. This implies the fact that most of the respondents have sufficient knowledge and experience about the subject matter of the study.

4.4. Responses on four dimensions of Multimodal Cargo Transport and import efficiency measuring factors.

According to the responses of the respondents the 5-point Likert scale indicate the extent they agree with the statements that is: 5-Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree and 1-Strongly Disagree. A mean (M) score of 0-1.5 means that the respondents strongly disagreed, between 1.50 to 2.50 means they disagreed, 2.50 to 3.50 means the respondents were neutral, 3.50-4.50 means they agreed, and a mean above 4.50 means the respondents strongly agreed.

Table 4.3 - Mean and St. Deviation of Responses on Multimodal Cargo Transport

	N	Mean	Std. Deviation
Regulations			
Inland transport operators are too restricted by government regulations and this prevents effective competition in multimodal transport system.	203	3.67	1.056
The present multimodal transport regulation is barrier to the efficiency of the import business.	203	3.60	1.092
A privatized multimodal transport service is better than a state owned one for import efficiency.	203	3.88	.998
Customs procedures do not restrict the operation of multimodal transport.	203	3.53	1.235
Customs laws and formalities are greater barriers to multimodal transport system than a long inland transport time.	203	3.67	1.087
Freight forwarders should not be multimodal transport operators if they do not own vessel.	203	3.57	1.371
There is insufficient port competition to make port service efficient.	203	3.96	1.098
The port system can be considered as an obstacle for the effectiveness of multimodal transport system.	203	3.85	1.098
Infrastructure			
In Ethiopia there are sufficient inland clearance terminals for efficient multimodal transport system.	203	2.41	1.351
Inland dry ports are sufficiently developed to act as container terminals.	203	2.49	1.427
Ethiopian Government should not invest any more for the development of inland terminals or inland clearance depots.	203	2.47	1.408
The overall inland transport infrastructure is suitable for multimodal cargo transport movement.	203	2.32	1.358
There are sufficient transport networks such as highway and railways for the effectiveness of multimodal transport system in Ethiopia.	203	2.41	1.362
In Ethiopia there are sufficient inland dry ports with customs clearance facilities.	203	2.30	1.355
ICT Applications			
Consignees are unable to get sufficient information about their cargos because of inadequate modern communication technology.	203	2.38	1.386
Sufficient information about multimodal transport rate or transit time is available online for the consignees.	203	2.07	1.400
There is integrated information system to enable ESLSE, customs, and freight forwarders for easier information exchange.	203	2.40	1.446
The absence of using ICT applications in multimodal transport system has no significant effect on the efficiency of the import business in Ethiopia.	203	2.50	1.539

Competence/Skill			
The Structure of government transport ministries (or department) is already suitable for multimodal transport system.	203	2.91	1.341
There are insufficient skilled or competent employees in ESLSE to operate multimodal transport system.	203	3.13	1.336
Import and freight forwarding companies have sufficient skilled and competent employees to exercise their right and responsibilities towards import business and multimodal transport system in Ethiopia	203	3.16	1.297
Lack of competency in multimodal transport operator (ESLSE) could not be a reason for the inefficiency of the import business in Ethiopia.	203	2.77	1.438
Lack of competence towards multimodal transport system has no significant effect on the efficiency of the import business in Ethiopia.	203	2.67	1.471

Source: (SPSS Output, 2019)

Table 4.4 - Mean and St. Deviation of Responses on import efficiency measuring factors

Cost	N	Mean	Std. Deviation
Privatizing multimodal transport service is better than a state-owned one to minimize the cost of the imported goods.	202	4.16	1.101
As a result of a high restriction of multimodal transport regulation there is no competitors in the sector and this can penalize importing firms additional cost.	202	4.27	.909
Ethiopia lacks sufficient dry ports with customs facilitations and it could result in the increment of importing cost.	202	4.30	.904
Using appropriate ICT applications in the implementation of multimodal transport system can minimize the cost of the imported goods.	202	4.47	.734
Lead Time			
Lack of competency in multimodal transport operator (ESLSE) could not be a reason for the dalliance of the import goods.	203	2.83	1.586
The absence of sufficient information about multimodal transport rate or transit time has no significant effect on the lead time of the imported goods.	203	2.95	1.628
Lack of sufficient highway and railways can be a major reason for the dalliance of the imported goods.	203	3.93	1.301
Privatizing multimodal transport service is better than a state-owned one to minimize the lead time of the imported goods.	203	3.85	1.338

Source: (SPSS Outputs, 2019)

Table 4.5 – The cumulative Mean and St. Deviation of Responses on multimodal transport dimension and import efficiency measuring factors.

	N	Mean	Std. Deviation
Regulations	203	3.88	.942
Infrastructures	203	3.54	1.354
ICT Application	203	3.99	1.416
Competence/Skill	203	2.97	1.414
Cost	203	4.41	.755
Lead Time	203	3.56	1.519

Source: (SPSS Outputs, 2019)

Based on the findings on Table 4.3 and Table 4.5, the cumulative mean and St. Deviation imply that majority of respondents agreed to the fact that regulations, infrastructure, ICT application and Competence towards the multimodal transport system has a significant and positive effect on the efficiency of the import business in terms of cost and lead time.

4.5. Inferential Statistics for Multimodal Transport System and Import Efficiency

4.5.1. Correlation Analysis

Correlations are the measure of the linear relationship between two variables. A correlation coefficient has a value ranging from -1 to 1. Values that are closer to the absolute value of 1 indicate that there is a strong relationship between the variables being correlated whereas values closer to 0 indicates that there is little or no linear relationship. As described by (Pallant 2005), the correlation is a commonly used measure of the size of an effect: values of ± 0.1 represent a small effect, ± 0.3 is a medium effect and ± 0.5 is a large effect.

In this section, correlation analysis conducted in the light of each research objectives and hypotheses developed. The relationship between multimodal cargo transport system and import business was investigated using correlation analysis. This provided correlation Coefficients which indicated the strength and direction of relationship. The p-value also indicated the probability of this relationship's significance.

4.5.1.1. Correlation Analysis between four dimensions of multimodal transport system.

Table 4.6- Correlation matrix between multimodal transport system dimensions and import efficiency measuring factors

		Regulations	Infrastructures	ICT	Skill	Cost	Time
Regulations	Pearson Correlation	1	.039	.110	.217**	.354**	.195**
	Sig. (2-tailed)		.582	.118	.002	.000	.005
	N	203	203	203	203	203	203
Infrastructures	Pearson Correlation	.039	1	.443**	.401**	.153	.157
	Sig. (2-tailed)	.582		.000	.000	.451	.417
	N	203	203	203	203	203	203
ICT Applications	Pearson Correlation	.110	.443**	1	.588**	.236	.322
	Sig. (2-tailed)	.118	.000		.000	.610	.752
	N	203	203	203	203	203	203
Competence/Skill	Pearson Correlation	.217**	.401**	.588**	1	.090	.047
	Sig. (2-tailed)	.002	.000	.000		.200	.506
	N	203	203	203	203	203	203
Cost	Pearson Correlation	.354**	-.053	-.036	.090	1	.213**
	Sig. (2-tailed)	.000	.451	.610	.200		.002
	N	203	203	203	203	203	203
Lead Time	Pearson Correlation	.195**	-.057	.022	.047	.213**	1
	Sig. (2-tailed)	.005	.417	.752	.506	.002	
	N	203	203	203	203	203	203

** . Correlation is significant at the 0.01 level (2-tailed).

Source: (SPSS Outputs, 2019)

Relation of the four multimodal cargo transport system (Regulations, Infrastructures, ICT applications, and Competence/Skill) with import efficiency measuring factors (Cost and Lead time) was computed in the above table. The result of correlation matrix between each dimension and import efficiency are analyzed as follow:

As it is indicated in the table, there is significant positive correlation between multimodal regulations and the lead time of imported goods with a correlation coefficient of 0.195 and significance is 0.005. Therefore, multimodal cargo transport regulation and the lead time of the imported cargos have small correlation. And also, there is positive correlation between multimodal regulations and the cost of imported goods with a correlation coefficient of 0.354 and significance

is 0.000. since this significant is less than 0.001 it tells that there is genuine relationship multimodal transport regulation and the cost the import business. Therefore, multimodal cargo transport regulation and the cost of the imported cargos have moderate correlation. Table 4.6 also depict that as there is significant positive correlation between multimodal infrastructure (dry ports, railways, and highways) and the lead time of imported goods with a correlation coefficient of 0.157 and significance is 0.417. Therefore, infrastructure and the lead time of the imported cargos have small correlation. in addition, there is significant positive correlation between multimodal infrastructure (dry ports, railways, and highways) and the cost of imported goods with a correlation coefficient of 0.153 and significance is 0.451. Therefore, infrastructure and the costs of the imported cargos have small correlation

Additionally, there is significant positive correlation between ICT and the lead time of imported goods with a correlation coefficient of 0.322 and significance is 0.712. Therefore, ICT application in multimodal cargo transport system and the lead time of the imported cargos have correlation. On the other hand, there is significant positive correlation between ICT and the cost of imported goods with a correlation coefficient of 0.236 and significance is 0.610. Therefore, ICT application in multimodal cargo transport system and the cost of the imported cargos have correlation.

In addition, the correlation test conducted on competence/skill towards multimodal transport system and the cost & lead time of imported cargos depicted on the table 4.6 indicate that, there is small or no relation between skill and the lead time & cost of the imported goods with correlation coefficient of 0.047 & 0.090 respectively.

Table 4.7- Correlation matrix between import efficiency measuring factors (Cost and Time)

		Cost of Import	Import Lead Time
Cost of Import	Pearson Correlation	1	.213**
	Sig. (2-tailed)		.002
	N	203	203
Import Lead Time	Pearson Correlation	.213**	1
	Sig. (2-tailed)	.002	
	N	203	203

** . Correlation is significant at the 0.01 level (2-tailed).

Source: (SPSS Outputs, 2019)

According to Table 4.7 it can be concluded that the lead time and the cost of import business has a moderate and positive relation based on Pearson correlation coefficient of 0.213 with significance value of 0.002.

4.5.2. Regression Analysis

This regression analysis is conducted to know by how much the independent variable explains the dependent variable. The regression was conducted between Multimodal cargo transport system dimensions (independent variable) and import business efficiency (dependent variable).

4.4.2.1- Multicollinearity Test

Table 4.8- Multicollinearity test of independent variables

Model	Collinearity Statistics	
	Tolerance	VIF
Regulations	.597	1.675
Infrastructures	.649	1.540
ICT	.824	1.213
Skill	.685	1.459

a. Dependent Variable: Import efficiency

Source: (SPSS Outputs, 2019)

The result in table 4.8 and table 4.9 show that the collinearity between independent variables has no series problem Since the value of tolerance for all independent variable is greater than 0.1 and all VIF is less than ten ($VIF < 10$) (Pallant 2005). From the above table hence, we can conclude that there is no collinearity within the data of the study.

4.5.2.2. Regression Analysis between Multimodal Cargo Transport dimensions and Import business efficiency

Table 4.9- Regression Model between multimodal transport dimensions and Import business efficiency in terms of cost and time

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.627 ^a	.393	.384	.786

a. Predictors: (Constant), Skill, ICT, Regulations, Infrastructures

Source: (SPSS Outputs, 2019)

As shown in the table 4.10, there is causal relationship between Multimodal cargo transport system dimension and import business efficiency in terms of cost and time. The adjusted R Square is .384, which implies that multimodal cargo transport system dimensions can account for 38.4% of the variation in import business efficiency in terms of cost and lead time. Although there might be many factors that can explain the variable on import business cost and lead time, nearly 38.4% of it is explained by multimodal cargo transport system dimensions (i.e. regulations, infrastructures, ICT applications, and competence/Skill). This means that the remaining 61.6% of the variation in import business cost and lead time cannot be explained by those dimensions of multimodal transport system. The R^2 value of .393(39.3%) implies relative contribution of multimodal transport system in interpreting the import business cost and lead time, the remaining 60.7% of the changes in the change can be attributed to other factors.

Table 4.10 ANOVA Result between Multimodal transport system Dimensions and Import Business efficiency in terms of cost and time

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	79.629	3	26.543	42.962	.000 ^b
	Residual	122.948	199	.618		
	Total	202.577	202			

a. Dependent Variable: Import efficiency

b. Predictors: (Constant), Skill, ICT, Regulations, Infrastructures

Source: (SPSS Outputs, 2019)

Table 4.11 Regression Coefficients between Multimodal transport system dimensions and Import Business efficiency

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.379	.317		1.196	.233
Regulations	.457	.083	.361	5.494	.000
Infrastructures	.349	.076	.317	4.592	.000
ICT	.189	.056	.196	3.374	.001
Skill	.241	.061	.256	3.968	.000

a. Dependent Variable: Import efficiency

Source: (SPSS Outputs, 2019)

Table 4.11 shows that the ANOVA results of the multiple regression analysis. The significance value of 0.000 indicates that the regression relationship is significant in predicting the effects of the four dimensions of the independent variables i.e. (Regulations, Infrastructures, ICT applications, and Competence/Skill) on the import business efficiency in terms of cost and lead time. The F-ratio in the ANOVA table tests whether the overall regression model is a good fit for the data. The F value shows 42.962 which is greater than the F critical it shows the model is significant. Table 4.12 describes that the independent variables are regulations with significance value of 0.000, infrastructure with significance of 0.000, ICT with significance of .0001 which is less than 0.05, and Skill with significance of .000 and have a positive effect on the dependent variable the import business efficiency in terms of cost and lead time. The B-value for regulations is .457 at tolerance level 5.494 above tolerance level of 0.1, for infrastructure the B-value 0.349 at tolerance level 4.592 above tolerance level of 0.1, the B-value for ICT is .189 at tolerance level of 3.374 above tolerance level of 0.1, and the B-value for Competence/Skill is .241 at tolerance level of 3.968 which is above of 0.1.

Table 4.12- Regression Model between Costs and Lead time of Import business

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.206 ^a	.43	.38	.684

a. Predictors: (Constant), Import Lead Time

Source: (SPSS Outputs, 2019)

As shown in the table 4.16, there is causal relationship between the total cost and lead time of import business. The adjusted R Square is .38, which implies that the lead time can account for 38% of the variation in the total cost of the import business. Although there might be many factors that can explain the variable on import business costs, nearly 38% of it is explained by the lead time. This means that the remaining 62% of the variation in import business costs cannot be explained by the lead time. The R^2 value of .43(43%) implies relative contribution of the lead time in interpreting the total costs of import business, the remaining 57% of the changes in the change can be attributed to other factors.

Table 4.13-ANOVA Result between Costs and Lead time of Import business

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.187	1	4.187	8.946	.003 ^b
	Residual	94.075	201	.468		
	Total	98.262	202			

a. Dependent Variable: Cost of Import

b. Predictors: (Constant), Import Lead Time

Source: (SPSS Outputs, 2019)

Table 4.14-Regression Coefficients between Costs and Lead time of Import business

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.089	.126		32.511	.000
	Import Lead Time	.096	.032	.206	2.991	.003

a. Dependent Variable: Cost of Import

Source: (SPSS Outputs, 2019)

Table 4.17 shows that the ANOVA results of the multiple regression analysis. The significance value of 0.003 indicates that the regression relationship is significant in predicting the effects of the independent variables i.e. Lead time on the total cost of import business. The F-ratio in the ANOVA table tests whether the overall regression model is a good fit for the data. The F value shows 8.946 which is greater than the F critical it shows the model is significant.

Table 4.18 describes the independent variables lead time with significance of 0.003 which is less than 0.05 which has a positive effect on the dependent variable the cost of import business. The B-value for lead time is .096 at tolerance level 2.991 above tolerance level of 0.1.

4.6. Discussion

Finally, the above correlation and regression analysis shows that the independent variable multimodal transport system (regulations, infrastructure, ICT applications, and Skill) has a positive and significant effect on the dependent variable import business (Cost and lead time). To illustrate the findings of this study, as it is indicated in the literature review part, the study implemented in Asia a home of twelve of the world's landlocked countries; to realize efficient and effective intermodal transport system it is essential to emphasize on the development of infrastructures like highways, railways, and inland dry ports. For instance, the study shows that, when China improve its rail freight efficiency by specializing the wagons and powerful locomotives in 2007 the trains carried 53,161 TEU compared to 2005 in which the train carried 39,437 TEU with the difference of 13,724 TEU within two years. This and many other researchers argue that, in multimodal transport system the developments of infrastructure (highways, railways, and inland dry ports) especially for landlocked country like Ethiopia has a significant and positive effect on the efficiency of the import business in terms of cost and time. Besides, sufficient development of rail transport has a positive and significant effect on the cost and lead time of the imported goods. To illustrate this conclusion, World Bank, (2013) report conclude that, for high volume goods rail transport can be low cost and more effective than land transport, and could be given similar priority as road construction projects, especially to improve transport from Djibouti to Addis Ababa.

In addition to the results of this study, different empirical evidences concluded that due to inappropriate transport regulations or policies the import business cost will become high. In the related literature, in many African countries freight rates are relatively high, due to anti-competitive cargo reservation policies, and Ethiopia is no exception. (Teravanithorn, *et.al*, 2008) Furthermore, the Ethiopian multimodal transport goods proclamation aims to use the multimodal transport system as a means of reducing the cost related to transit transport of import and export, as well as minimizing time consuming processes like procedures in the port, documentation process, and customs clearance. However, according to the study of Tilahun. E, (2014) as the

Directive did not see other options until the directive allows private companies to be involved in the multimodal transport scheme, various interested groups are now arguing that the government must provide options for the private firms to compete in the sector. ESLSE enjoys monopolistic privileges, which are reflected in its pricing behaviors. Effectively importers have become price takers and ESLSE, as a multimodal operator, has been assigned responsibility for bringing cargo from most ports of origin, via Djibouti, to the dry ports and temporary storage facilities. There are currently no competitors for this single contract service offered by ESLSE and mandated for use through the Ministry's Directive.

As the analysis of this study shows above, the ICT applications used in multimodal transport has a positive and significant effect on the efficiency of the import business both in cost and time. According to the study conducted by Lirong Liu, *et al*, (2013), there are several intuitively plausible mechanisms through which ICT may affect the flows of international trade. First, the use of ICT may reduce the fixed entry cost into a market and thus stimulates exports. As Freund and Weinhold (2004) discuss, these fixed costs include the costs of finding out information about the market (search cost), advertising, and establishing a distribution network. Second, international transactions often require advance planning that involves handling uncertainty. Some of these uncertainties are associated with the delay in acquiring and transmitting relevant information. The use of ICT reduces such delays and makes planning more efficient and accurate. Consequently, the volume of trade between countries is expected to go up. Finally, ICT may directly facilitate international trade in services, particularly information-intensive services. These services involve creating, processing, and communicating information.

Therefore, using appropriate and updated ICT application in multimodal cargo transport can significantly minimize the cost of the import business and reduce the delays in the import business.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSION, RECOMMENDATION AND SUGGESTION FOR FUTURE STUDY

5.1. Summary of Major Findings

Based on the data analysis in the previous chapter, summary of the findings presented as follows.

- ✓ The majority of the responses on the one dimension of the multimodal cargo transport system (regulations) and on the measuring factors of import efficiency (cost and time) mean scores above 3.5 which implies that the respondents agreed on the regulations towards multimodal transport system is a barrier to the efficiency of the import business.
- ✓ What the respondents reply on infrastructure imply that majority of respondents agreed to the fact that there is insufficient infrastructure (dry ports, railways and highways) with the customs facilities for efficient multimodal transport operation.
- ✓ Since mean scores below 2.5, the respondents reply on ICT applications imply that majority of respondents disagreed to the fact that there is sufficient and integrated ICT application for efficient multimodal transport operation.
- ✓ Since the mean scores between 2.5 & 3.5 on the one dimension of multimodal cargo transport system (Competence/skill) it shows that the respondent neutral with the skill in multimodal cargo transport operation.
- ✓ The result from the study shows that there is significantly moderate correlation between measuring factors of import business efficiency Cost and Lead time, with correlation coefficient of 0.213 with significance value 0.002 which is less than 0.005.

5.2. Conclusions

On the basis of the responses majority of respondents agreed to the fact that the three multimodal cargo transport system dimensions (regulations, infrastructures, and ICT applications) has a positive and significant effect on the efficiency of the import business in terms of cost and the lead time of the imported cargos.

According to the result of the study analysis, the following conclusions can be made about multimodal transport (regulations, infrastructures, ICT applications, and skill) and the efficiency of the import business (cost, and lead time).

In terms of multimodal regulations

There was a high mean score of multimodal transport regulations, so that it can be concluded as the present multimodal transport related regulation has been giving the monopoly right to only ESLSE to operate the service. As a result of this monopolistic practice, there is no room to the importers to compare the transport cost, and to use other means of cargo transport.

In terms of infrastructure

There was a low mean score for infrastructure in which the majority of the respondents disagreed on the statements, there are suitable and sufficient infrastructure like railway, highway, and dry ports with the customs facilities in Ethiopia.

In terms of ICT applications

There was a low mean score for ICT applications, this implies that the majority of the respondents disagreed on the statements, there are integrated appropriate, and advanced ICT applications in multimodal operations.

In terms of Skill

There was a moderate mean score for Competence/Skill, this implies that the majority of respondent neutral on the statements, there are insufficient skilled man power in multimodal operations.

In addition to these important results, a pairwise correlation of the four dimensions of multimodal transport that there is a positive and statistically significant correlation among them implying that improving one dimension will result in improvement of the other four.

In terms of import Cost

There was a high mean score for the cost, this indicate that the majorities of the respondent agreed on the fact that the regulations, infrastructures, ICT applications, and skill in the multimodal cargo transport operation can affect the cost of the imported goods.

In terms of import lead time

There was a moderate mean score for the lead time, this indicate that the majorities of the respondent agreed on the fact that the regulations, infrastructures, ICT applications, and skill in the multimodal cargo transport operation can affect the lead time of the imported goods

5.3. Recommendations

Based on the study findings and conclusions drawn in the above section some recommendations are proposed as a means of alleviating the problem found.

- ✓ To bring significant change and make it more competent multimodal transport service for the efficiency of the import business, it is very important to privatize the service at least partially.
- ✓ As long as the effective multimodal transport and efficient import business in terms of cost and time were needed, it may be critical issue to revise the current multimodal regulations.
- ✓ Different literatures argue that, the development of infrastructure like dry ports with customs facilities, highways and railways has a vital role for effective and efficient multimodal transport operation. Therefore, for especially landlocked countries like Ethiopia with over 100 million populations it is not questionable to give more and more attention to the development of infrastructures.
- ✓ In the day's world has been coming to one sight through ICT, using appropriate and updated ICT applications in multimodal transport operation can significantly make import business efficient in terms of cost and process time. And it has also a vital role in facilitating users to get different information on time.
- ✓ Even though the findings of this study show that no relations between the skill in multimodal operations and import efficiency in terms of cost and time, it is essential to focus on the man power development.

5.4. Suggestions for Further Study

The present study used only import business based on the selected import companies in Addis Ababa city future studies should consider the export business with multimodal transport system. Furthermore, the dimensions of multimodal transport for this study limited to only four variables in the future it is possible to conduct the study by adding other related variables.

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Appendix

QUESTIONNAIRE

Dear Sir/Madam

The purpose of this questionnaire is to gather data on the effect multimodal cargo transport system on the efficiency of the import business in Ethiopia in order to fulfill the University's i.e. Addis Ababa University requirement set for awarding of a Master's Degree in Logistics and supply chain Management. The study is purely for academic purpose and thus not affects you in any case. So, your genuine, frank and timely response is vital for successfulness of the study. Therefore, I kindly request you to respond to each items of the question very carefully.

General Instructions

- There is no need of writing your name
- Where answer options are available please tick (✓) in the appropriate box.

Contact Address

If you require any further details, please do not hesitate to contact me and I am available as per your convenience at: Mobile: 09-12-66-11-90 or e-mail: tadu1985ase@gmail.com

Thank you for scarifying your precious time effort in advance!

PART I: Demographic Information

1. Educational Background:

Grade 12 completed Certificate College Diploma First Degree Second Degree and above

2. Job title _____

CEO/Manager Deputy G/manager Dep't Manager Division Head Senior Officer
 Officer Junior Officer

3. Years stayed at the organization:

Under 2 year 2–5 years 6–10 years over 10 years

4. Your department/work unit _____

PART II: Instruments for multimodal cargo transport system

With regard to the statement provided below, please tick the appropriate box to indicate the extent to which you agree or disagree with each statement. The item scales are five-point Likert type scales with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

No.	1. Regulations	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
1.1.	Inland transport operators are too restricted by government regulations and this prevents effective competition in multimodal transport system.					
1.2.	The present multimodal transport regulation is barrier to the efficiency of the import business.					
1.3.	A privatized multimodal transport service is better than a state-owned one for import efficiency.					
1.4.	Customs procedures do not restrict the operation of multimodal transport.					
1.5.	Customs laws and formalities are greater barrier to a multimodal transport system than a long inland transport time.					
1.6.	Freight forwarders should not be multimodal transport operators if they do not own vessels.					
1.7.	There is insufficient port competition to make port service efficient.					
1.8.	The port system can be considered as an obstacle for the effectiveness of multimodal transport system.					
	2. Infrastructure					
2.1.	In Ethiopia there are sufficient inland clearance terminals for efficient multimodal transport system.					
2.2.	Inland dry ports are sufficiently developed to act as container terminals.					

2.3.	Ethiopian government should not invest any more for the development of inland terminals or inland clearance depots.					
2.4.	The overall inland transport infrastructure is suitable for multimodal cargo transport movement.					
2.5.	There are sufficient transport networks such as highway and railways for the effectiveness of multimodal transport system in Ethiopia.					
2.6.	In Ethiopia there are sufficient inland dry ports with customs clearance facilities.					
3. ICT Applications						
3.1.	Consignees are unable to get sufficient information about their cargos because of inadequate modern communication technology.					
3.2.	Sufficient information about multimodal transport rate or transit time is available online for the consignees.					
3.3.	There is integrated information system to enable ESLSE, customs, and freight forwarders for easier information exchange.					
3.4.	The absence using ICT applications in multimodal transport system has no significant effect on the efficiency of the import business in Ethiopia.					
4. Competence/Skill						
4.1.	The structure of government transport ministries (or departments) is already suitable for multimodal transport development.					
4.2.	There are insufficient skilled or competent employees in ESLSE to operate multimodal transport system.					

4.3.	Import and freight forwarding companies have sufficient skilled and competent employees to exercise their right and responsibilities towards import business and multimodal transport system in Ethiopian.					
4.4.	Lack of Competency in multimodal transport operator (ESLSE) could not be a reason for the inefficiency of the import business in Ethiopia.					
4.5.	Lack of competence towards multimodal transport system has no significant effect on the efficiency of the import business in Ethiopia.					

PART III: Instruments for import business efficiency in terms of cost and lead time

No.	1. Cost	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
1.1.	Privatizing multimodal transport service is better than a state-owned one to minimize the cost of the imported goods.					
1.2.	As a result of a high restriction of multimodal transport regulation there is no competitors in the sector and this can penalize importing firms additional cost.					
1.3.	Ethiopia lacks sufficient dry ports with customs facilitations and it could result in the increment of importing cost.					
1.4.	Using appropriate ICT application in the implementation of multimodal transport system can minimize the cost of the imported goods.					
	2. Lead Time					

2.1.	Lack of Competency in multimodal transport operator (ESLSE) could not be a reason for the dalliance of the import goods.					
2.2.	The absence of Sufficient information about multimodal transport rate or transit time has no significant effect on the lead time of the imported goods.					
2.3.	Lack of sufficient highway and railways can be a major reason for the dalliance of the imported goods.					
2.4.	Privatizing multimodal transport service is better than a state-owned one to minimize the lead time of the imported goods.					

Open-ended Questionnaires

1. Do you believe in, inland transport operators are too restricted by government regulations and this prevents effective competition? A. Yes, B. No. If your answer is No, explain why?

2. Do you agree with, the present multimodal transport regulation is barrier to the efficiency of import business in Ethiopia? A. Agree B. Disagree. If your answer is disagree, why?

3. Do you believe in, privatizing the multimodal transport service is better than a state-owned one for import business efficiency? A. Yes, B. No. If your answer is No, explain why?

4. Do you agree with the argument, Customs laws and formalities are greater barrier to a multimodal transport system than a long inland transport time? A. Agree B. Disagree. If your answer is disagree, why?

5. Do you believe in, there is insufficient port competition to make port service efficient for import business efficiency? A. Yes, B. No. If your answer is No, explain why?

6. Do you agree with, there are sufficient inland clearance terminals for efficient multimodal transport system? A. Agree B. Disagree. If your answer is Agree, please argue.

7. Do you believe in, there are sufficient inland dry ports with customs clearance facilities in Ethiopia that can help for the efficiency of imported goods? A. Yes, B. No. If your answer is YES, please argue.

8. Do you agree with, there are insufficient skilled or competent employees in ESLSE to operate multimodal transport system in order to ensure efficient import business in Ethiopia? A. Agree B. Disagree. If your answer is disagree, why?

9. Do you agree with, Lack of Competency in multimodal transport operator (ESLSE) could be one reason for the inefficiency of the import business in Ethiopia? A. Agree B. Disagree. If your answer is disagree, why?

10. Do you believe in, the absence of using ICT applications in multimodal transport system has a significant effect on the efficiency of the import business in Ethiopia? A. Yes, B. No. If your answer is YES, please explain how.

11. Do you agree with, Consignees are unable to get sufficient information about their cargos because of inadequate modern communication technology? A. Agree B. Disagree. If your answer is disagree, why?

12. Do you agree with, the port system can be considered as an obstacle for the efficiency of the import business in Ethiopia? A. Agree B. Disagree. If your answer is disagree, why?
