



Addis Ababa University
College of Business and Economics School of
Commerce
The Effect of Logistics Services on Ethiopian
Sesame Export Performance

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTERS OF ARTS IN
LOGISTICS AND SUPPLYCHAIN MANAGEMENT

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June 2018

The Effect of Logistics Services on Ethiopian Sesame Export Performance



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June / 2018

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ACKNOWLEDGMENT

I thank to Almighty God and his Mother St. Marry, for gratifying my dream by adding to my strength to deliver this dissertation; and next I would like to express my gratefulness to my advisor, Dr. Matiwos Ensermu for his advice and guidance that enabled me to successfully complete this thesis. I would like also to express my gratefulness to my husband Mr. Mulugeta Mohammed Director, Crop Marketing Directorate in the FDRE Ministry of Trade; for providing me with reliable support and continuous encouragement throughout my study and writing this thesis. I also thank my colleague Mr. Asefa Mulugeta Director General, Export Trade Promotion and Research Directorate General in the FDRE Ministry of Trade; for giving me valuable information. Finally I recognize and acknowledge all 79 respondents who provide me the required primary data for my study.

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LIST OF ACRONYMS AND ABBREVIATIONS

ATA- Agricultural Transformation Agency
CSA-Central Statistics Agency
EACWHS -Ethiopian Agricultural Commodities Warehouse Service,
ECX- Ethiopian Commodity Exchange
ELSE- Ethiopian Shipping and Logistics Enterprise
ELSE-.Ethiopian Shipping and Logistics Enterprise
EPOSPEA - Ethiopian Pulses, Oil Seeds and Spices Processors & Exporters Association
ERCA -Ethiopian revenue and customs authority
FAO – Food and Agricultural Organization
GDP-Gross Domestic Product
MOT- Ministry of Trade
MOT- Ministry of Transport,
OECD- Organization for Economic Co-operation and Development,
SBN- Sesame Business Network
SPSS- Statistical Package for Social Sciences
TL-Trade Logistics

ABSTRACT

Logistics services are closely linked with the value chain and export trade of sesame. Ethiopian logistics system is characterized with poor management, lack of coordination, low level of infrastructures and inadequate freight vehicles that exacerbate quality deterioration, damage of goods and excessive operation costs. The overall objective of this research is to examine how the access and delivery of logistics services in Ethiopia has affected the export performance of Sesame in the period 2003-2009 E.C. The primary data were collected from 41 Sesame exporters and 38 suppliers by using questionnaires and checklist; and the secondary data were collected from different government institution like Ministry of Trade, Ethiopian Commodity Exchange, Ethiopian Shipping and Logistics Enterprise, Ethiopian Revenue and Customs Authority and Central Statistics Agency). As a methodology for data analysis Descriptive Statistics and Multiple Regression were employed. The study conceptualizes and develops results based on three dimensions of logistics services, such as transport service, warehouse service and custom service. The finding of the study signifies that the efficiency, cost, capacity and quality of transport service, custom service and Ethiopian Commodity Exchange warehouse service have significant effect on the country's Sesame export performance, which can be improved by improving the number and capacity of vehicles serving in the value chain of sesame, through facilitating import of suitable vehicles either by the private or public sector; improve the quality of transport infrastructure; improve custom services by decreasing extra costs, wastage of time and inefficiency of custom services and in the other way round by improving the number, access, facility and quality of sesame warehouses in all potential sesame producing regions.

Keywords: Logistics Service, Export, Performance, Ethiopia.

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

Ethiopian economy is mainly based on the agricultural sector, which is very important for food and nutritional security of the nation. As of 2015, the sector remains a principal source of income for more than 85% of the population and accounts 40.5% of the country's GDP, 81% of its foreign exchange earnings and 85% employment in the economy. 90% of Ethiopian export earning is the share of raw agricultural commodities like coffee, oilseeds, pulses, chat and hide & skin. (World Bank- 2014)

This study focuses on Sesame, which ranks 3rd in terms of land coverage and production volume next to Cereals and Pulses and covers almost 95% of the total export of oil seeds. Sesame is a dominant agricultural export commodity next to coffee accounting 39-42% in volume and 45-52% in value of the total export of agricultural commodities. In terms of Sesame production Ethiopia ranks 5th in the world next to India, Myanmar, China and Sudan producing an average volume of 320,208.33 MT/year; and ranks 2nd next to India exporting an average volume of 288,187.5 MT and earning 443.61 million USD per year (MOT). FAO report (2015) indicated that Ethiopia is top raw sesame seed exporter in the world, supplying 14% of the global market for raw seeds.

Therefore to enhance the economic benefit of the country from the export of Sesame, it is crucial to give prior importance to explicit access and real time delivery of logistics services like transportation and standard storage facilities. Logistics is defined by council of logistics management ``as the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from point of origin to point of consumption for the purpose of conforming to customer requirements``.

The integration of two or more logistics within a network to create value, enhance efficiency and satisfy customers is called supply chain management. Analyzing and assessing logistics and supply chain practices will help identify important issues such as emerging trends and areas of concern, which will help in taking remedial measures (Srivastava, 2006).

Thus, this study examines the level of the access and delivery of logistics services in Ethiopia related to Sesame export in order to identify possible constraints and effective solutions to enhance the export performance of the sector.

1.2. Statement of the problem

Ethiopia mainly depends on the export of agricultural products as a source of foreign currency; and this export sector highly depends on explicit access and real time delivery of logistics services mainly transportation and standard storage facilities. The absence or shortage of such logistics services has significant impact on the export of agricultural products as the products need these logistics services beginning from the farm get to the outlet ports. So it is very important to study how these logistics services affect the export performance of agricultural products and this study examines the effect of logistics services specific to the export performance of sesame within the period 2011-2017 or 2003-2009 E.C.

In Ethiopia the logistics constraints arise from poor logistics management and coordination, inadequate fleets of vehicles along with high traffic congestion and accident, product damage and quality deterioration during storage as well as packaging and transportation.

Therefore, this study examines how far the access and delivery of logistics services in Ethiopia has affected the export performance of Sesame in the period 2011-2017. So as to attest suitable measures to avoid the logistics constraints specific to Sesame export.

1.3. Research Questions

1.3.1. Main research question

- How does the access and delivery of logistics services influence Ethiopian Sesame export performance?

1.3.2. Sub research questions

- What is the effect of the level of logistic services on Ethiopian Sesame export performance?
- What are the main logistics factors that affect Ethiopian Sesame export performance?
- What are the major problems that hinder the access and delivery of logistic services along the value chain of Sesame from primary markets to a port?

1.4. Objectives of the study

1.4.1. General objective

- To examine how the access and delivery of logistics services influence Ethiopian Sesame export performance.

1.4.2. Specific objectives

- To assess the level of the logistic services along the value chain of Sesame.
- To identify the main logistics factors that affect the export performance of Sesame
- To find out major problems which hinder the access and delivery of logistic services along the value chain of Sesame?

1.5. Scope of the study

The scope of the content of this study is limited to the analysis of the influence of the access and delivery of logistics services on sesame export performance of Ethiopia with in the period 2011-2017. The geographic scope of the study extends from primary markets of Sesame at Humera and Metema to port of Djibouti. The scope of the methodology covers Descriptive Statistics and Multiple Regression analysis.

1.6. Significance of the study

The study analyzes how the access and delivery of logistics services influence Ethiopian Sesame export performance and based on the findings it recommends possible solutions to enhance sesame export performance of the country.

1.7. Limitations of the Study

This study doesn't consider the segment from the farm gate to primary markets and the segment from the port to the destination markets abroad. The respondents from which the primary data collected are also limited to Sesame suppliers and exporters.

1.8. Organization of the Research Report

This research paper has five chapters. The first chapter is Introduction which contains the research a background of the study, statement of the problem, Research Questions, objectives of the study, Scope of the study, Significance of the study, Limitations of the Study and organization of the study. The second chapter deals with literature review, in which both theoretical and empirical literature work in the research topic is presented. The third chapter discusses the methodology utilized to conduct the research i.e. Methods of data Analysis, Data Source and Methods of Data Collection and method of data analysis. Chapter four provides the finding of the study in which data analysis, presentation and interpretation is conducted. Finally, the fifth chapter presents conclusions, and recommendations.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. THEORETICAL LITERATURE REVIEW

2.1.1. Definitions and Concepts related to the Study

Agricultural marketing

Agricultural marketing is defined as comprising of all activities involved in supply of farm inputs to the farmers and movement of agricultural products from the farms to the consumers. Agricultural marketing system includes the assessment of demand for farm-inputs and their supply, post-harvest handling of farm products, performance of various activities required in transferring farm products from farm gate to processing industries and/or to ultimate consumers, assessment of demand for farm products and public policies and programmes relating to the pricing, handling, and purchase and sale of farm inputs and agricultural products. Of late trade in the domestic and international markets also become the part of it. (National Commission on Agriculture (XII Report, 1976)

Agricultural marketing is a process which starts with a decision to produce a saleable farm commodity, and it involves all the aspects of market structure or system, both functional and institutional, based on technical and economic considerations, and includes pre-and post-harvest operations, assembling, grading, storage, transportation and distribution. (National Commission on Agriculture (XII Report, 1976)

Agricultural marketing system in Ethiopia can be understood to compose of two major sub-systems. Product marketing and input (factor) marketing. The actors in the product marketing sub-system include farmers, village/primary traders, wholesalers, processors, exporters, marketing cooperatives, regulated market committees and retailers. The input sub-system includes input manufacturers, distributors, related associations, exporters and others who make available various farm production inputs to the farmers. (National Commission on Agriculture (XII Report, 1976).

Export Market

Ethiopia exports almost all of its produce and is the second leading sesame-exporting country in the world. China is the number one importer of Ethiopian sesame seeds . However, in smaller quantities, countries from all over the world import sesame seed from Ethiopia, including Israel, Vietnam, USA and Turkey.

In the past years, demand for sesame has been high, but incentives for quality production and value addition are weak. Global production has increased, and a price decline is intensified with increased competition and greater demand for quality. Most of the traders at ECX also argue that China takes large quantities, but it wants products as cheap as possible. Hence, they believe that sales of organic farming cannot be sustainable with China, as its focus is more on price than on quality (Sesame Business Network (SBN), 2014)

Export Performance and Determinants of the Performance

Export performance addresses two parts: export and performance. Ex-port is the international marketing related decisions and activities of internationally active firms. The over-tone of the word performance, in the literature sense, does not pose any problem for it is the act of carrying out or accomplishing something such as a task or action (Cavugil and Neviv, 1981). When it comes to economics, this word has been defined in many ways and no unifying principle has underlined its quantification. However, in the context of current study, Export performance is defined as: (i) the success or failure of the efforts of a nation to sell domestically produced goods and services in other nations markets (Zou and stan, 1998); (ii) the export effectiveness, export efficiency and continuous engagement in exporting (Shoham, 1991); (iii) the composite outcome of a nation's international sales (Shoham, 1996); and (iv) the three sub-dimensions which encompasses sales, profit and growth (Madsen, 1987).

Determinants of export performance can be split into external and internal components. External components include market access/entry conditions and a country's location which include international markets. Internal components are related to supply-side conditions. Foreign demand is influenced by various elements. First, it is strongly linked to geography (the structural component); as countries at the center of a fast growing region are more likely to benefit than countries situated outside that region. Second, both the quantity and quality of physical infrastructures (the development component) are expected to play important roles. Third, it is likely to be related to competition and trade policy (the market access/entry component), which could have, in principle, a similar impact on trade (Lages et al., 2004).

Access to foreign markets is a critical determinant of export performance. It relates directly to the characteristics of the trading partner countries, such as the size of their market and transport facilities, and inversely to their own internal transport costs. It also depends positively on the size of the export basket and the number of differentiated items and their prices, which in turn are affected by market entry conditions. Further investigation also indicates that good internal conditions are necessary to obtain good export performance. For instance, good infrastructures and non-stringent institutions are necessary to put the export sector on a durable development path. (Redding and Venables, 2004)

Logistics Performance

The World Bank's study "Logistics Performance Index" is broader than a study of ports alone, and measures logistics instead. Yet the study is interesting as it includes port users' evaluations on specific factors dealing with logistics performance, as well as a framework on how to measure them. The Logistics Performance Index measures on-the ground trade logistics performance based on six dimensions: timeliness, international shipments, tracking and tracing, customs, infrastructures and services quality.

In doing so, World Bank (2012) developed two standardized questionnaires as a means to gather the data needed. The first one is the international questionnaire which request for an assessment of six key areas of logistics performance like Efficiency of the clearance process by border control agencies (including customs), Quality of trade-and transport-related infrastructure, Ease of arranging competitively priced shipments, Competence and quality of logistics services, Ability to track and trace consignments and Frequency with which shipments reach the consignee within the scheduled or expected delivery time. (World Bank (2012))

Infrastructure

According to Liu (1995) both investment in port infrastructure and the capital-intensity level are other factors that can explain the differences in performance and efficiency between ports, because without infrastructures or the ability to offer services, a port could not be able to handle an increasing number of vessels or cargo.

The quality of access to a dry port and the quality of the road/rail/waterway interface determines the quality of terminal performance therefore it is necessary to have scheduled, reliable, transport by high capacity means to and from seaport (Rosoet al., 2008). Thus dry ports are used much more consciously than inland terminals with the aim to improve the situations caused by increased container flows, focus on security and control by use of information and communication systems. (Rosoet al., 2008).

Transportation

Transportation is the process of moving an item from point A to point B. it is the safe, efficient, reliable and sustainable movement of persons and goods over time and space. Transportation refers to the movement of product from one location to another as it makes its way from the beginning of supply chain to the customer. Transport is responsible for

the physical movement of materials between points in the supply chain. At the heart of logistics are transport vehicles moving goods between suppliers and customers. Transportation is an important supply chain driver because products are rarely produced and consumed in the same location. Transportation can be defined as the actual, physical, movement of goods and people between two points, is pivotal to the successful operation of any supply chain because it carries the goods as they move along the chain. In addition, transportation is influenced by 6 logistics activities:

1. Transportation costs are directly affected by the location of a firm's warehouse.
2. Inventory requirements are influenced by the mode of transportation used. High speed, high-priced transportation system requires smaller amounts of inventories, whereas slower, less-expensive transportation requires larger amounts of inventories.
3. The transport mode selected influences the packaging required.
4. The type of carrier used dictates a manufacturing plant's materials handling equipment.
5. Customer service goals influence the type and quality of carrier and carrier service selected by the seller. (Afro Consult & Trading PLC, 2010).

Transportation in Logistics:

The role of transportation in logistics operations has changed dramatically over the last three decades. Today a wide range of transportation alternatives are available to support product or raw material logistics. For example, logistics managers may integrate private with for-hire transportation to reduce total logistics costs. Many for-hire carriers offer a wide variety of value-added services such as product sortation, sequencing, and customized freight delivery and presentation. Technology has enhanced real time visibility of where freight is throughout the supply chain and when it will be delivered. Precise product delivery reduces inventory, storage, and materials handling. As such, the value of transportation has become greater than simply moving product from one location to another.

Transport is responsible for the physical movement of materials between points in the supply chain. At the heart of logistics are transport vehicles moving goods between suppliers and customers.

Therefore, transportation is the base of efficiency and economy in business logistics and expands other functions of logistics system

The operation of transportation determines the efficiency of moving products. The progress in techniques and management principles improves the moving load, delivery speed, service quality, operation costs, the usage of facilities and energy saving. Transportation takes a crucial part in the logistics operation. Transportation and logistics systems have interdependent relationships that logistics management needs transportation to perform its activities and meanwhile, a successful logistics system could help to improve traffic environment and transportation development. Since transportation contributes the highest cost among the related elements in logistics systems, the improvement of transportation efficiency could change the overall performance of a logistics system. Transportation plays an important role in logistics system and its activities appear in various sections of logistics processes. Without the linking of transportation, a powerful logistics strategy cannot bring its capacity into full play. Therefore, transportation is the base of efficiency and economy in business logistics and expands other functions of logistics system. (Afro Consult & Trading PLC, 2010).

Warehouses

One of the major obstacles for efficient freight transport and logistics system of Ethiopia in rural, regional and international freight movement and distribution system is lack of storage facilities, adequate loading and unloading equipment and efficient management of the system. At present, there are a total of about 0.8 million metric ton capacity warehouses all over the country. Most of these are owned by government and non-government institutions such as Coffee Marketing Enterprise, Ethiopian Grain Trade

Enterprise and World Food Program etc. Most of the warehouses particularly the private ones are not designed to handle heavy truck trailers and semi-trailers. Adequate doors and turning areas are not provided. In short, there is no standard set for commercial warehouse building. There is a serious lack of cargo handling equipment all over the country which normally is part of warehousing businesses. Cranes, forklifts and other equipment's are rented as and when cargo is already waiting to be loaded and unloaded at the warehouses (Afro Consult & Trading PLC, 2010).

Route Optimization, Facility Location Analysis and Transportation

Optimization of facility locations plays a significant role in maximizing the effectiveness and efficiency of the supply chain. This includes location analysis, route optimization and vehicle coordination. Location analysis helps to determine locations that minimize the transport distance and travel time, reduce the vehicle operating cost & fuel consumption in the system and reduce congestion & environmental problems.

The collection-distribution centers to be selected through location analysis are based on the demand of import and export goods of the country; and the analysis has to give the location that is close to the export commodity producing sites and fertilizer consumer zones. This would also simplify the freight consolidation and quality control activities (Elias, 2011).

Transport is an important and major part of logistics. Without transport, logistics cannot function. Availability and Utilization of vehicles are the key characteristics of efficient and effective management of the transport system. Vehicles are very costly and ideally should be available for 95% of the time and used for paid work over 80% of this available time. But due to many factors such as delays through bad roads, border delays, weighbridge checks, customs delays at roadside and at destination, poor scheduling for loading and unloading, road accidents, single driver operation and congestion all reduce utilization (Elias W., 2011).

Logistics and Supply Chain Logistics

Logistics is the supporting management function which ensures a more efficient use of resources and the adequate performance of logistical elements during the life cycle of a product, so that effective control of resource consumption is ensured through timely intervention in the system in the product life cycle from planning, design, development, operation, decommissioning to scrapping. (Logistics management, Matiwos Ensermu (PhD), 2015)

Logistics is that part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of goods, services and related information from the point-of-origin to the point-of-consumption in order to meet customer requirements and satisfies the requirements imposed by other stakeholders such as the government. (Cooper et al., 1997)

Included within this definition are aspects such as customer service, transportation, storage, plant site selection, inventory control, order processing, distribution, procurement, materials handling, return goods handling and demand forecasting. In addition, aspects of product development, such as package design variations and associated product labels are also important. (Cooper et al., 1997)

Supply Chain Logistics is the flow of material, information, money between corporation (inter-workstation, inter-facility, inter-corporate, and intra-chain). There is a lot of confusion surrounding the terms logistics and supply chain management. The supply chain is the net work of facilities (warehouse, factories, terminals, ports stores, and homes), vehicles (trucks, trains, planes, and ocean vessels), and logistics information system (LIS) connected by an enterprise's supplier's suppliers and its customer's customers. Logistics is what happen in supply chain the supply chain is. Logistics activities (customer response, inventory management, supply, transportation, and warehousing) connect and activate the objects in the supply chain. (Logistics management, Matiwos Ensermu (PhD), 2015)

2.2. EMPIRICAL LITERATURE REVIEW

Logistics

Logistics is one of the trade facilitating factors in the global trade. It is a multidimensional factor in trade operation focusing on process, skills sets and technologies. Specifically, logistics affects trade performance of a country in terms of cost, time, reliability and predictability and customer services, which further affect overall competitiveness of the export in the international market other things being constant Arvis et.al (2007). Several investigations have been undertaken to try to estimate the extent of impact of logistics on the economy. In Trade Logistics (TL), recent studies that introduce time for exports from the new Doing Business Survey into gravity model estimates find that a 10% increase in time reduces bilateral trade volumes by 5 and 8% (Hildegunn et.al,2006; Djankov et.al, 2009). Limao and Venables (2001) find that a 10% increase in transport costs reduces trade volume by 20%. The costs of trade associated with logistics in the global trade accounts for more than 18% of developing countries' GDP, whereas it accounts for 8-10% of developed nations' GDP (Arvis et.al, 2010).

In the global economy, logistics received more attention as a major cost driver when the revolution of information technology to better monitor transaction activities such as the ordering, movement, and storage of goods is possible combined with the availability of computerized quantitative models. Ethiopia as a developing country recognized the significance of Trade Logistics before a decade after experiencing a bottleneck when importing heavy machineries to fulfill the demand of the industry and service sector. Similarly, the export market began to demand instant delivery and cost efficiency. Since Ethiopian economy is largely dependent on Exportable agricultural products mainly Coffee and oilseeds, logistical efficiency is very crucial. As a result, the Ethiopian government practiced many reforms in response to changes in the economy. Specifically, the country issued proclamations, deregulated the transport sector, merged logistics enterprises, restructured customs Authority and established dry ports connected by

railway, which are the major move in the country that gave recognition to trade logistics. (The Global Competitiveness Report, 2010),

Logistics practice in Ethiopia

According to (The Global Competitiveness Report, 2010), the following conclusions can be drawn from the assessment made about logistics practice in Ethiopia

1. The density and quality of transport infrastructure is very low. 70 percent of rural population is not connected to all weather roads. The freight vehicles are not adequate in number and age to meet the transport demand of the country.
2. The main freight transport companies lack capacity in terms of skilled human resource, management skills and number of fleets of vehicles. They are fragmented. The main/big companies are government owned, this will result in inefficiency
3. The efficiency of customs authority is very low and this causes a lot of delays at check points. The number of check points is also too much. The number of days required to get foreign currency from national bank is also very long.
4. 70 percent of rural population, which is the major part (85% of the total) is not connected to all weather road which hampers marketing of the farmers produce. A significant proportion of urban population is using imported food items. Even the produce of farmers that reaches market has got inferior quality especially for export market mainly due to poor handling and transportation. There is lack of organizational and consolidation infrastructure and services also to link producers (farmers) to consumers(market).
5. Multimodal transport system is used in the country: human portorage, pack animals, trucks and ship or airplane in uncoordinated fashion. A pilot Intermodal transport is begun by Ethiopian Shipping Lines SC (ESLSC) for import goods from foreign

suppliers through the port of Djibouti up to dry ports in the country through one bill of lading, which has run successfully. This has reduced the cost of delays, saved transport and warehouse charges and is able to provide prompt delivery of containerized goods. The service is expected to increase in the coming years. The ESLSC is in a better position to coordinate intermodal transport for import goods in the existing situations. (The Global Competitiveness Report, 2010),

Logistics Performance Indices of Ethiopia

According to World Bank Report The Logistics performance index: Overall (1=low to 5=high) in Ethiopia was 2.41 in 2009, according to a World Bank report, published in 2010. Logistics Performance Index overall score reflects perceptions of a country's logistics based on efficiency of customs clearance process, quality of trade and transport-related infrastructure, ease of arranging competitively priced shipments, quality of logistics services, ability to track and trace consignments, and frequency with which shipments reach the consignee within the scheduled time. The index ranges from 1 to 5, with a higher score representing better performance. (World Bank, 2010)

Number of documents required for export = 8

Number of documents required for import = 8

Lead time to export in days = 44 in 2010

Lead time to export in days = 46 (Logistics performance indices:- (World Bank, 2010)

The constraints associated with logistics system in Ethiopia could be characterized as follows:

- a. Underdevelopment of logistics management system
- b. Inadequate fleets of vehicles (means of transport) for goods transport
- c. The market possibility of the country is hampered by poor logistics system

- d. Very high traffic accident (the highest in the world) in which contribution of goods transport is significant
- e. Congestion in cities and at inlets/outlets
- f. Lack of coordination of goods transport (which resulted in low load rate)
- g. Damage of goods and quality deterioration while in storage, packaging transporting, and post-harvest loss in food items(up to 70%)
- h. Transport of animals (walking up to 10 days)
- i. No or little study has been made related to logistics
- j. Lack of Organization and management tools that are required to promote intermodal system logistics performance indices (World Bank, 2010)

Trade and Logistics in Ethiopia's Sesame Industry

Ethiopia has the potential to be a new origin for sesame seed. The national transport grid is improving year by year and the new railway to Djibouti opens up new avenues for transport. More railway lines are on the way and quality road infrastructure is increasing rapidly, including an already finished highway between Addis Ababa and Adama. Easier and less time-consuming transport will soon be available.

Intermediaries (middlemen, collectors, traders, wholesalers and retailers) are active between producers and consumers. The time aspect refers to the inventory and sourcing functions. Due to seasonality of agricultural production patterns and uneven seasonal demand pattern for sesame, storing products bridges the time between harvest and consumption. Trucks mainly do transport of oilseeds like sesame from the producing areas to nearby ECX warehouses then to the port of export, mostly Djibouti and Port of Sudan. Most of the exporting companies have well-maintained or new IVECO trucks. The distance between the sesame production regions and Djibouti is about 1,500km: for

instance, the distance from Bahir Dar in the Amhara region to Addis is 560 km and from Addis Ababa to Djibouti 900 km. Although road density is very low in Ethiopia, most of the main roads are in good condition. Transport costs to Djibouti port are indicated at 50 USD per ton. Moreover, distributors are bulk breakers and varieties assemblers: providing retailers or consumers with small quantities of a large number of products. Intermediaries provide services in the marketing channel that enables producers to focus and to specialize. In addition, the above-mentioned functions (collecting, storing, logistics, bulk breaking, assortment assembling) they perform also functions for instance like quality control, financing stock, price negotiation, invoicing or matching supply and demand (J.H.M. Wijnands, J. Biersteker and E.N. van Loo, 2009).

According to J.H.M. Wijnands& et al (2009), freight and logistics costs in the sesame industry within the boundaries of Ethiopia are the following;

1. The collector's cost of sesame seed amount to ETB56/100 kg and is around 10 per cent of the producer's value.
2. The collector's and export trader's gross margins (rent for own labor and capital) are 2-3 per cent, the rest are direct costs,
3. The exporters' cost without logistics are between ETB38 and 56/100kg.
4. Logistic costs are around ETB 0.05/10kg/km

Export Trade Logistics Determinant Factors

According to the Organization for Economic Co-operation and Development (OECD), for every 1 percent saving achieved in transaction costs, the worldwide benefit would be USD43 billion (Sandford & Temby 2010). Hildegunn et.al (2006) find domestic trade costs to be more limiting for international trade than tariffs.

According to them, a 10 per cent reduction in the cost associated with importing (exporting) would increase imports (exports) by about 5 per cent. Costs relate not only to the direct cost of transporting products; goods in transit incur indirect costs such as

inventory handling costs (Hildegunn et.al, 2006). The longer the transit time, the higher are these costs. Hildegunn et.al (2006) finds that shippers are willing to pay a premium for faster delivery. Some of the factors contributing to high trade costs poor infrastructure, lack of transparent border clearance and high red-tape. Cumbersome Customs and administrative procedures have been found to be a challenge for developing countries in exporting to developed and other developing countries Alberto, (2009), Widdowson (2007). The capacity of customs intelligence also needs further improvement to support risk-based Customs control. Furthermore, Customs needs to abandon the 'gatekeeper' mentality that has traditionally dominated their thinking to embrace trade facilitation measures in a climate of ever-increasing volume of trade and limited resources since it cannot counter all frauds as recognised by Cantens, Raballand and Bilangna (2010) as cite by Yusuf, (2011). Logistics performance is influenced by the availability of quality, competitive private services namely: trucking, customs brokering, warehousing and Communication technologies Arvis et.al (2007).

According to Arvis et.al, (2007), the LPI suggests that there are strong synergies among reforms to customs, border management, infrastructure, and transport regulations.

Just as strong logistics performance is associated with increased trade in developing countries; firmlevel competitiveness is extremely sensitive to the quality of the logistics environment in which it operates. A firm's competitiveness is affected by cost and performance of its supply chain and thus depends on the overall logistics environment, but the main impact is less through cost than through the predictability of the deliveries.

In the international logistics firms have to bear the direct costs associated with moving goods, such as freight costs, port and handling charges, procedural fees (such as bonds), agent fees, and side payments. But they also have to absorb the induced costs associated with hedging for the lack of predictability and reliability of the supply chain (Arvis et.al, 2007). Predictability is central to the overall costs that companies incur in logistics and thus to their competitiveness in global SC.

According to present literatures including: Arvis et.al, (2010), Clark et.al, (2004) and Yusuf et.al (2010), Alberto et.al (2009), Werren et.al (2005) and Limao and Venables, (2001); the most common determinant factors of TL are: quality of infrastructure, competency of private logistics service provides, efficiency of public logistics services providers, good governance and reliability among SC partners). All together confirm that logistics performance is about predictability. In other words, each of the mentioned logistics factors are interdependent in which case poor performance of one factor would neutralize the benefit of a well performing system component Yusuf and Uzzama, (2011), and (Arvis et.al, 2010). Present literatures show that government economic policies have paramount importance in facilitating international trade. The government policy that encourages competitive market attract investment by private sectors in core logistics service areas would play critical roles. Similarly, there is a need to have a competitive Banking, Telecom and ICT service providers of the private sector (Arvis et.al, (2010)

2.3. CONCEPTUAL FRAMEWORK

Improving logistics performance is at the core of the economic growth and competitiveness agenda (Arviset *al.* 2014). Policymakers globally recognize the logistics sector as one of their key pillars for development. Indeed, inefficient logistics raises the costs of trading and reduces the potential for global integration. In international trade besides other factors the logistics performance of ports are very important for the competitiveness of countries.

The country's trade competitiveness can be affected with the way by which its logistic activities and services are being undertaken; and this is the foundation on which this study has been established and conducted. Logistics is Part of the supply chain processes that plans, implements, and controls the efficient, effective forward and reverse flow and

storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements. (Arviset *al.* 2014).

The operation of logistic determines the efficiency of moving products. The progress in techniques and management principles improves the moving load, delivery speed, service quality, operation costs, the usage of facilities and energy saving. Transportation takes a crucial part in the manipulation of logistic. Reviewing the current condition, a strong system needs a clear frame of logistics and a proper transport implements and techniques to link the producing procedures. (Arviset *al.*2014).

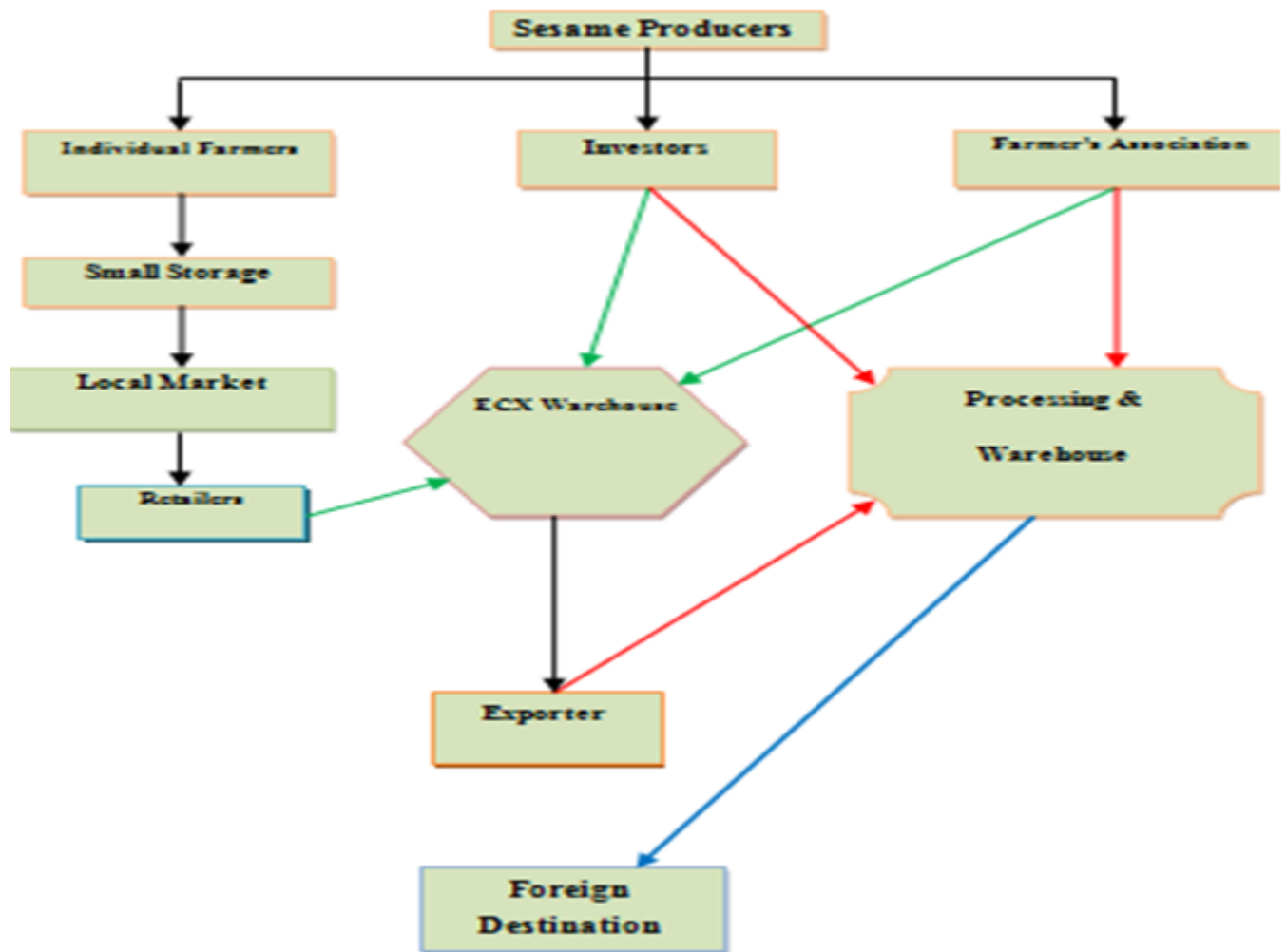
The key element in a logistics chain is transportation system, warehouse service, customer service, etc. Transportation occupies one-third of the amount in the logistics costs and transportation systems influence the performance of logistics system hugely. Without well-developed transportation systems, logistics could not bring its advantages into full play. A good transport system in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality. The improvement of transportation systems needs the effort from both public and private sectors. A well-operated logistics system could increase both the competitiveness of the government and enterprises. (Arviset *al.*2014).

- **Sesame Supply Chain**

Sesame is the second largest export item in Ethiopia next to coffee. Sesame is mainly produced for the market and used for its oil content in the seed. It contains up to 60% oil of a very high quality and 25% protein. Its demand in the international market comes from the oil industry and the confectionary sector. (Sesame Supply Chain (Kemal, 2011).

Sesame supply chain starts from producers which may be individual farmers, medium or large scale farmers/investors/ or farmers associations. After the introduction of ECX marketing system for sesame, producers are allowed to sell their product only through this marketing system. Due to lack of capacity, individual farmers sell their sesame to licensed suppliers/assemblers in the primary markets established near to their villages; and the

suppliers should have to sell to Exporters through ECX market platform either using electronics marketing or open outcry marketing. Investors and farmers associations have given two alternatives; they can either sell their sesame to exporters through ECX market platform or export it to international markets. On the other hand Exporters are allowed to buy sesame only from ECX market platform (Kemal, 2011)



Sesame supply chain (Kemal, 2011)

- **Stakeholders in the Supply Chain sesame**

Sesame supply chain starts from producers which may be individual farmers, large scale farmers/investors or farmers associations. After the introduction of ECX marketing for sesame, producers are allowed to sell their product only through this system. Due to lack of capacity, individual farmers sell sesame to suppliers which have license to sell to Exporters through ECX channel. Investors and farmers associations have two alternatives, they can sell sesame to exporters through ECX channel or they can export sesame for foreign market. As for Exporters they are only allowed to buy sesame from ECX market for export. Sesame supply chain (Kemal, 2011)

CHAPTER THREE

3. RESEARCH DESIGN AND METHODS

This chapter discusses the research methodology used in the study including description of the study areas, research design, research approach, types and source of data and methods of data collection, methods of data analysis, sampling size, the variables treated in the study and ethical considerations

3.1 Description of the study area

The study focused on the area of analyzing the influence of the access and delivery of logistics services on Ethiopian sesame export performance in the period 2011-2017. The analysis has been undertaken based on the data collected from 38 suppliers engaged on aggregating sesame from primary markets in Hummera and Metema woredas of Tigray region and Amhara region respectively to supply to ECX; and from 41 exporters in Addis Ababa who are buying Sesame from ECX to export to about 38 destination countries. In addition data on production, supply and export of Sesame has been collected from 5 Federal Government Institutions based in Addis Ababa and engaged on the follow up and support activities along the value chain of sesame.

3.2 Research Design

With the intent of generalizing from a sample to a population, the research has applied a combination of quantitative and qualitative methods, which involved cross-sectional data survey to describe trends and multiple regression analysis to establish the relationship between the logistics services and the sesame export performance of Ethiopia. The dependent and independent variables were simultaneously collected using questionnaire and secondary data sources. The primary data were collected with a prior focus on the dimensions like quality, capacity efficiency and cost of the logistics services along the value chain of sesame so as to infer the relationship with and the effect on the countries Sesame export performance.

The contribution and effect of logistics services as independent variables on the Ethiopian Sesame export performance as dependent variable were statistically processed using the Statistical Package for Social Sciences (SPSS) version 20, particularly employing Multiple regression to analyze primary data; and Descriptive method to analyze secondary data.

3.3 Research approach

According to Bajorklund and Paulsson (cited in Stromgren, 2007) academic works can be signified by the voyage between different obstruction levels; between the general, commonly known methods and theories. These are several strategies to approach research as Home and Solvang (cited in Stromgren, 2007), which present two approaches; inductive and deductive approaches. Inductive approach is initialized by specific observations in a data material from which generalizations are made; thus, relating new theory from observation, pattern identification and hypothesis. A deductive approach is the opposite initiated by reviewing and gathering theory from where collection and conclusions are based up on. Therefore, as this study generalizes from a sample to a population involving cross-sectional data survey to describe trends; and multiple regression analysis to establish relationships between logistics services and sesame export performance of Ethiopia the researcher has employed inductive research approach.

3.4 Data Source and Methods of Data Collection

The study focuses on: (i) sesame supplier, (ii) sesame exporter and (iii) logistics service provider. The main concerns of the study, although they differ in specificity according to the respective actor, were issues related logistics service sesame export, accessibility quality and delivery time of transport, warehouse and custom clearance service,

The study has relied heavily on primary and secondary data collected from (i) sesame supplier, (ii) sesame exporter and (iii) logistics service provider. Appropriate data

collection questionnaires and checklists were designed before being applied by the study team.

To complement the primary information collected at different levels, possible secondary sources are also explored. Among others, CSA, ECX, MOT, **ERCA**, other research, study and EPOSPEA 7TH International Conference Nov. 22nd – 23rd, 2017 reports and Ethiopian Shipping and Logistics Enterprise (ESLE) were some of the secondary information sources that were used for this study.

In this study, both primary and secondary data was used. For primary data collection purpose, survey questionnaire is used. Sesame exporters and suppliers was approached personally and asked to fill the questionnaire. The questionnaire has three sections. First section is about general information of the participant and the company. In the second and the third section participants were asked to evaluate the overall performance and indicate the degree of satisfaction of logistics services in the process of sesame export.

3.5 Methods of data Analysis

Descriptive method of data analysis was used for the secondary data and the Statistical Package for Social Sciences (SPSS) version 20 was used to analyze the primary information collected from different sources. The tool was selected for its flexibility to accommodate both quantitative and qualitative information and the ease with which it can analyze information by using basic statistics such as ratio, averages, etc., in the cross-tabulation of different variables. Moreover, time series data, trend analyses, growth rates, graphs and charts were employed to examine and present the underlying study.

In this part the performance of sesame seed export in Ethiopia and its determinant will be figure out with both descriptive and Multiple regression (econometric) method of data analysis. The descriptive analysis explained by table and graph.

3.6 Sampling size

An important decision to be taken while adopting a sampling technique is about the size of the sample. Hence, the sample size of the study will be determined based on the scientific formula that is designed to find out the appropriate size of the research. In the study, the Khotari (2004), sample size determination formula will be used in order to decide the size of sample population:

Therefore, by using the formula using $Z = 1.96$ to 95%, $p = 0.5$, $q = 1-p$ and $e^2 = 0.02$ values and the sample size calculated $n = 79$ (including 38 suppliers and 41 exports which is the necessary sample size of the study. The types of data collected at all levels are both quantitative and qualitative in nature.

$$n = \frac{Z^2 * N * p * q}{e^2 (N - 1) + Z^2 * p * q}$$

Where: -

N = total population

n = size of the sample

Z = standard variation at a given confidence level

P = proportion of successes

q = proportion of failures

e^2 = acceptable error

3.7 The variables treated in the study

The variables mainly embraced and treated in this are :-

Transportation services

Transport is an important and major part of logistics. Without transport, logistics cannot function. Availability and Utilization of vehicles are the key characteristics of efficient and effective management of the transport system

Transport is responsible for the physical movement of materials between points in the supply chain. At the heart of logistics are transport vehicles moving goods between suppliers and customers. Transportation is an important supply chain driver because products are rarely produced and consumed in the same location.

Warehouses services

One of the major obstacles for efficient freight transport and logistics system of Ethiopia in rural, regional and international freight movement and distribution system is lack of storage facilities, adequate loading and unloading equipment and efficient management of the system.

Custom service

Custom can play a supportive role as it is a logistics center which can provide services such as handling, storage, stuffing/un-stuffing, consolidation, customs clearance and container maintenance. As customs practice involved in the premise of the dry port the customs procedure in the clearance of the goods have impact on the performance of the port.

The statistical analysis would be help full in order to analysis the degree of the effect of logistics determinant variables on sesame export performance of Ethiopia.

$$Y=B_0+B_1X_1+B_2X_2+.... + B_nX_n$$

Where; Y= Dependent variable

B_0 = a constant

X_n = Independent variable

B_n = coefficients of the independent variables

Where:

- Y: Ethiopian Sesame export performance
- X1: The efficiency of transport service
- X2: The quality of transport infrastructures
- X3: The number and age of freight vehicles
- X4: The capacity of transport companies
- X5: The average cost of transport service.
- X6: The efficiency of ECX warehouse service
- X7: The quality of ECX warehouse service
- X8: The number and capacity of ECX sesame warehouse for value addition (consolidation and packaging)
- X9: The average cost of warehouse service
- X10: The efficiency of operation of custom services
- X11: The efficiency of service delivery of custom
- X12: The average cost of custom service

3.8 Ethical Considerations

This relates to moral standards that the researcher should consider in all research methods in all stages of the research design. In the research approach the researcher has followed three principles; namely beneficence, respect for human dignity as well as justice.

According to (Polit et al 2001:75):

i. Principle of beneficence

This principle means “above all do no harm”. This principle contains broad dimensions such as freedom from harm and exploitation as well as the researcher’s duty to evaluate the risk/benefit ratio. The researcher-participant relationship should not be exploited.

ii. Principle of human dignity

This principle includes the right to self-determination. The researcher has to share the aim and purpose of study, the type of questionnaire and other data collection procedures with

the participants. Participants in the study should be protected from adverse situations. They should be assured that information that they provide to the researcher or their participation will not be used against them.

iii. The principle of justice

This principle includes participants' right to fair treatment and privacy

CHAPTER FOUR

4. DATA ANALYSIS AND INTERPRETATION

4.1. DESCRIPTIVE ANALYSIS

4.1.1. Overall Performance along the Value Chain of Sesame in Ethiopia

A. Production

In 2016/17, Ethiopia ranked world fourth-largest sesame producer next to India, Myanmar and Sudan, producing 586,000; 530,000; 480,000; and 361,000 metric ton of Sesame respectively.

The sub-sector engages about 3 million small, medium and large scale farmers; and largely contributing to transform the subsistence farming system of the country in to commercial farming.

Amhara, Tigray, Oromia and Beneshangul regions are the major Sesame producing regions. In addition as Sesame production is gradually expanding to different parts of the country, nowadays SNNP, Gambela, Ethiopian Somale and Afar regions are becoming emerging Sesame producing regions.

Ethiopia has different sesame varieties like Whitish Humera/Gonder, Mixed Humera/Gonder, Whitish Wollega, Mixed Wollega, Reddish, and Mixed Reddish Sesame, which are well known in the international market (ECX Sesame Contracts, 2010).

Table 1:- 2016/17 Sesame area coverage, production and productivity by Regions

Regions	Area coverage in hectares	Production in tone	Productivity (tone/ha)
Amahara	163,049.00	146,626.20	0.9
Tigrai	108,319.00	70,160.00	0.65
Oromia	36,028.00	27,905.80	0.77
Benishangule Gumuz	29,180.00	22,661.70	0.78
SNNP	1,351.00	511.3	0.38
Total	337,927.00	267,865.00	0.79

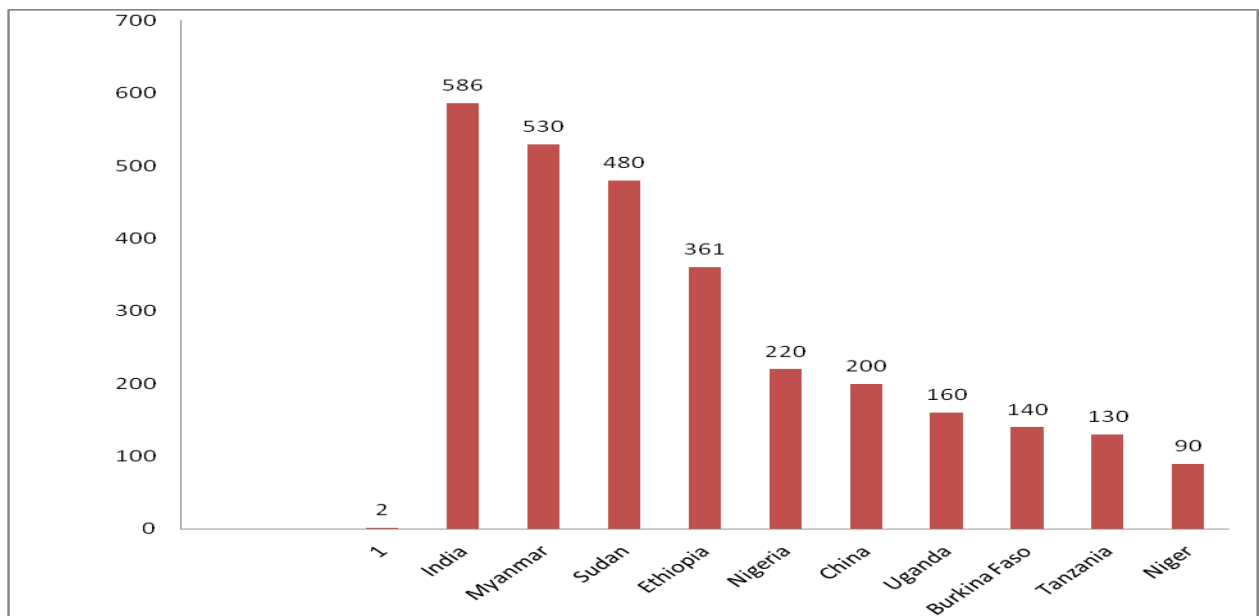
Source: Central Statistics Agency, 2017

The data for area coverage, production and productivity of the potential as well as the emerging Sesame producing regions in 2016/17, proves that Amhara and Tigray Regions are the most dominant and potential Sesame producing areas of the country covering more than hundred thousand hectares of land with Sesame cultivation. The high quality types of Sesame like Whitish Humera/Gonder and Mixed Humera/Gonder are produced in these regions as well, which are skimming premium price in the world market.

On the other hand, despite the relative low land coverage of Sesame in Oromiya and Benishangul Gumuz regions, the production is promising as the productivity is even greater than the productivity in Tigray region and nearly closer to the productivity in Amhara region.

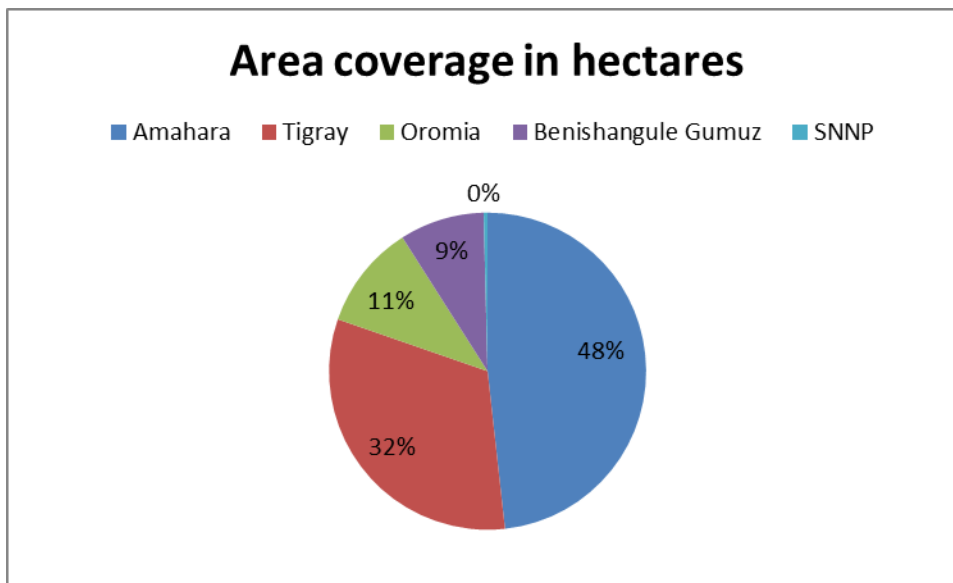
The emerging Sesame producing regions like SNNP, Gambela, Ethiopian Somale and Afar regions have large potential cultivable land which can be used for Sesame production as long as the right focus is given by the Federal Government, Regional States and concerned Non-Government Organizations.

Figure 1:- Ethiopia's Rank in World Sesame Production (2016/17)



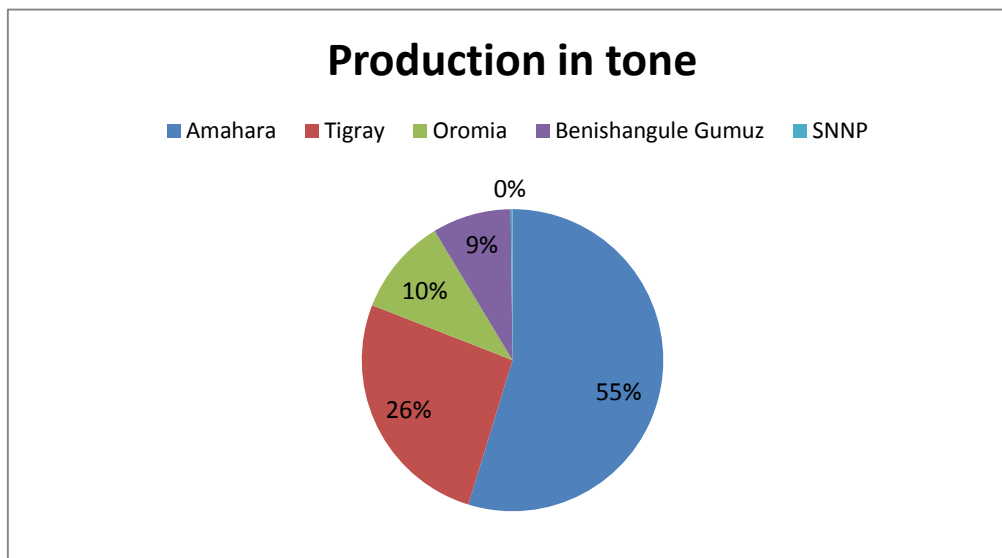
Source: UN COMTRADE Database, 2017

Figure2:- Sesame area coverage by Regions (2016/17)



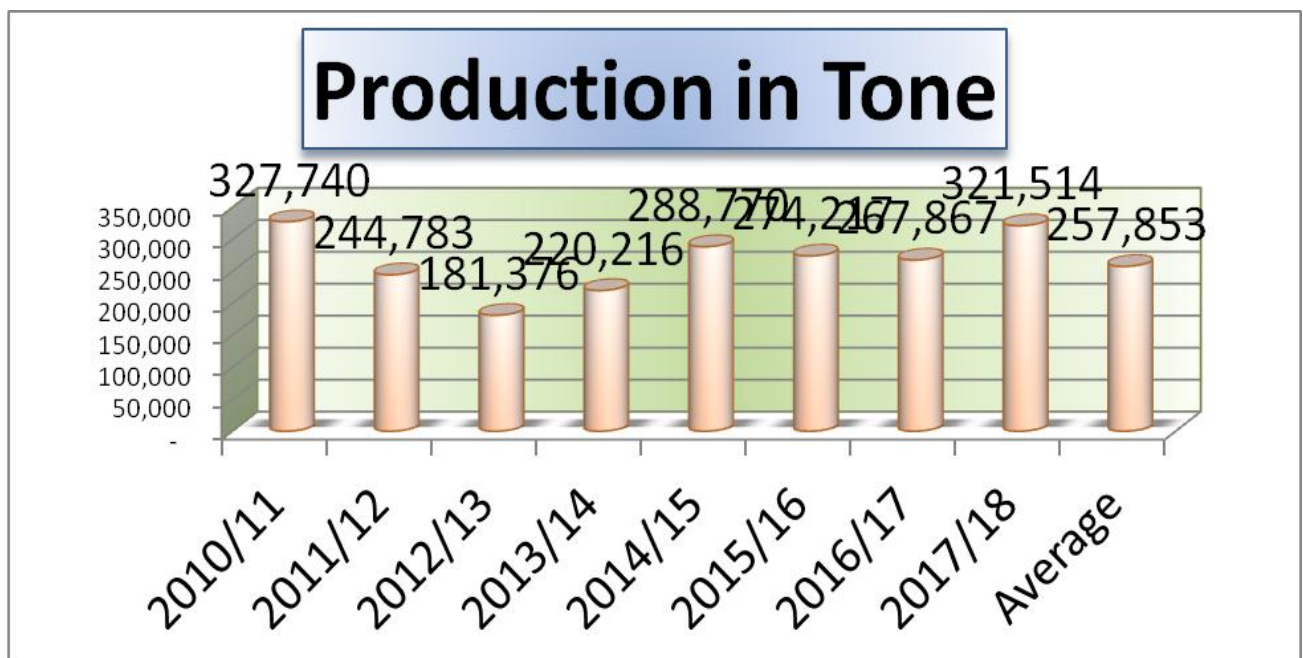
Source: Central Statistics Agency, 2017

Figure3:- Sesame production percentage share by Regions(2016/17)



Source: Central Statistics Agency, 2017

Figure 4:- Sesame Production Trend in Ethiopia



Source: Central Statistics Agency

The graph based on CSA data showing the country's Sesame production trend depicts that in 2010/11 the country has produced a large amount of Sesame which could be probably justified by the introduction of modern marketing system in 2010; then after shows declining trend up to the year 2013 following the decline in the world price of Sesame.

As of the year 2016 and following years the production shows increasing trend with a peak of 2015 in between following the significant increase in the world price of sesame in the year 2014.

B. Marketing

The council of ministers regulation NO.178/2010 passed on 22 may 2010, mandates that sesame seed trading in Ethiopia shall be conducted only at primary transaction/market centers and the Ethiopian commodity exchange (ECX). Article 18.2 of the regulation reserves the right for any producer to export sesame seed directly, individually or through a cooperative in which he/she is a member.

The regulation is fully effected as October 2010. Though ECX launched sesame trading in may 2009, the volume traded through has been low. However, as a result of the enforcement of the mandatory trading provisions of the regulation, nearly all of the country's sesame has started to be traded through ECX; and about 90 percent of sesame seeds and all white pea beans are bought by exporters on the state-owned Ethiopia Commodity Exchange.

Nowadays, the total number of sesame warehouse branches reached 11 and number of ware houses reached 27. The average storing capacity of the warehouses is about 189,084 ton. The warehouse rental cost of sesame per quintal per day is for the first 30 days ETB 0.16 and after that it doubles (ETB 0. 32).

Table 2:- Total volume of sesame arrival per year in MT 2010/11-2016/17

No	year	The total amount of sesame arrival
1	2010/11	101,820
2	2011/12	214,159
3	2012/13	280,791.30
4	2013/14	445,862.90
5	2014/15	365,018
6	2015/16	465,018
7	2016/17	353,563.20

Source: Ethiopian Commodity Exchange (ECX), 2017

C. Export market

Global Sesame production has increased and a price decline is intensified with increased competition and greater demand for quality. Though the demand for Ethiopian sesame is increasing, the incentives for quality production and value addition are yet weak. Most of sesame traders at ECX argue the issue is related with China's market, as China is a big

buyer of Ethiopian Sesame and mostly seeks for cheaper price rather than for quality. Hence, they believe that sales of quality/Organic Sesame cannot be sustained with China's market (Sesame Business Network (SBN), 2014).

Sesame is the major Oil Seed in terms of Ethiopian Oil Seeds export. In the year 2010/11-2016/17 Sesame accounts about 89% of the average export volume and value of all oil seeds. Humera, Gondar and Wollega types of sesame are among the different varieties of sesame produced in Ethiopia, which are all well known in the world market. As a result Ethiopian sesame has good market prospect as it has high demand in the world market due to its quality suitable for a wide range of applications.

The Ethiopian Sesame export trend shows that as of the year 2009/10 up to 2016/17 the country has exported an average volume of 282,118 MT of Sesame and earned about 444,740.8 USD.

The export volume of sesame fluctuates from year to year as a result of fluctuations in the world price of Sesame. The largest export volume was recorded in 2015/16, which is about 394,255 MT and the highest value was recorded in 2013/14, which is about 619,033 USD; whereas the lowest export volume was recorded in 2012/13, which is about 222,705 MT and the lowest value was recorded in 2010/11, which is about 300,656 USD.

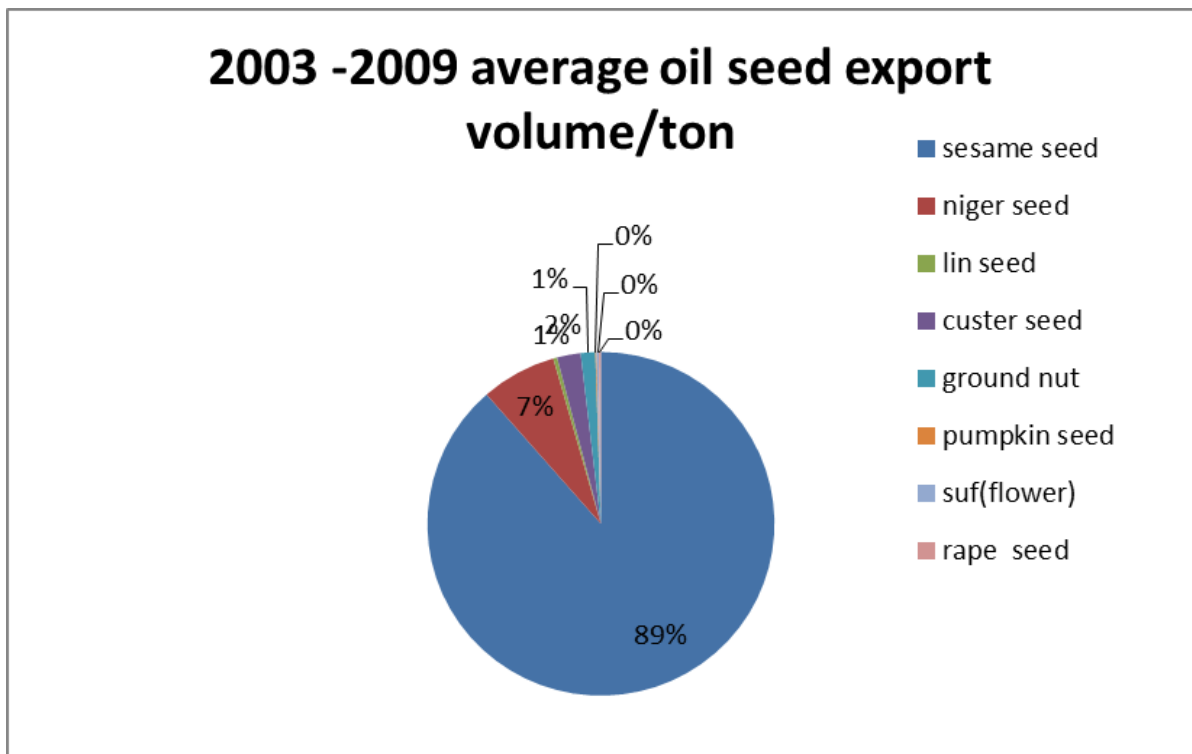
Ethiopian Sesame export price trend indicates that the highest price of sesame was recorded in the year 2013/14, which is about 2,300 USD per MT and the lowest was recorded in the year 2015/16, which is about 1,095 USD per MT.

Table 3:- 2010/11 -2016/17 export share of sesame out of the total Oilseeds export

2010/11 -2016/17 GC sesame and other oil seeds export trend														
oil seed	2010/11		2012/11		2013/12		2014/13		2014/15		2015/16		2016/17	
	volume/ MT	value in 000USD	volume/ MT	value in 000USD	volume/ MT	value in 000USD	volume/ MT	value in 000USD	volume/ MT	value in 000USD	volume/ MT	value in 000USD	volume /MT	value in 000USD
sesame seed	218,247	300,656	331,584	436,914	222,705	390,625	269,221	619,222	301,633	483,043	394,255	431,709.3	280,473	307,512
Niger seed	24,325	15,925	15,299	11,791	29,782	23,640	17,019	12,789	15,402	14,352	29,674.6	33,117.8	27,925	28,181
line seed	391	223	391	223	3,729	2,588	3,340	2,360	2	2	10	8.4	412	497
cluster seed	3,034	2,569	3,613	2,793	8,343	6,030	8,832	6,786	7,271	5,658	8,872	5,906.4	9,843	7,113
ground nut	2,809	2,763	14,302	18,050	12,433	14,144	592	581	156	156	72.3	74	295	859
pumpkin seed	25	61	183	324	447	833	613	1,450	260	852	316	1,293.6	515	432
sunflower	198	110	47	37	434	295	204	126	6	8	117.5	108.4	4,145	667
rape seed	654	151	7	7	2,514	1,437	1,052	344	6	3	23.8	22.2	2	3.1
total	250,708	323,729	365,436	470,152	280,986	440,938	300,906	642,746	315,516	504,075	434,455	473,697	323,755	345,290

Source: Ethiopia Revenue & Customs Authority and MOT, 2017

Figure 5 Export share of Sesame out of the total Oilseeds export (2010/11 -2016/17)



Source: Ethiopia Revenue & Customs Authority and MOT, 2017

Export Share of Sesame

The share of the export of raw agricultural commodities to Ethiopian export earnings in 2016/17 was coffee 41.8 %, oilseeds 16.3 %, pulses 13.3%, Chat 12.9 % and flower 10.3%.

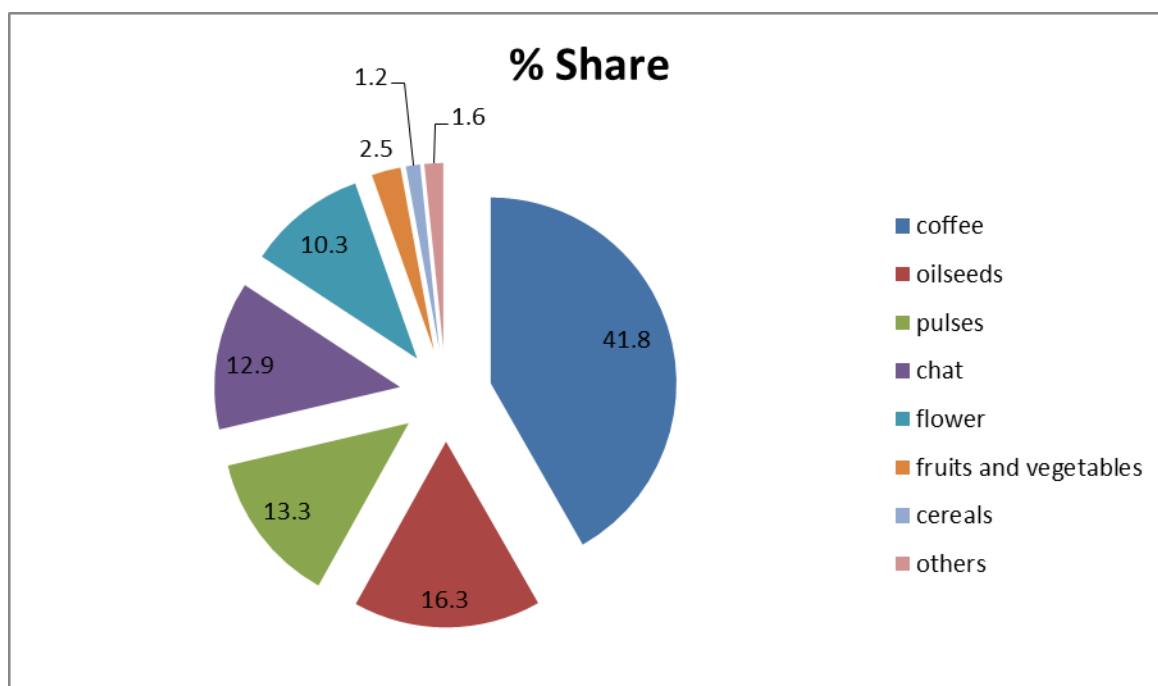
Sesame ranks 3rd in terms of land coverage and volume of production next to Cereals and Pulses; and covers almost 90% of the total export volume of Oil Seeds. Sesame is a dominant agricultural export commodity next to coffee accounting 11.88% of the total export volume of agricultural commodities.

Table 4:-2016/17 Oilseeds export share out of the total crops export

Type	volume/MT	value/000USD	volume/%	value %
coffee	225,667.7	882,473.8	17.0	41.8
oilseeds	323,755.3	345,289.8	24.4	16.3
pulses	393,281.9	280,226.3	29.6	13.3
chat	48,754.8	272,979.7	3.7	12.9
flower	49,356.1	218,521.4	3.7	10.3
fruits and vegetables	184,579.0	53,512.2	13.9	2.5
cereals	70,298.5	26,112.3	5.3	1.2
others	31,384.0	34,247.5	2.4	1.6
total	1,327,077.3	2,113,362.9	100.0	100.0

Source: Ethiopian Revenue and Customs Authority and MOT, 2017

Figure 6:- 2016/17 Oilseeds share out of the total Crops export revenue



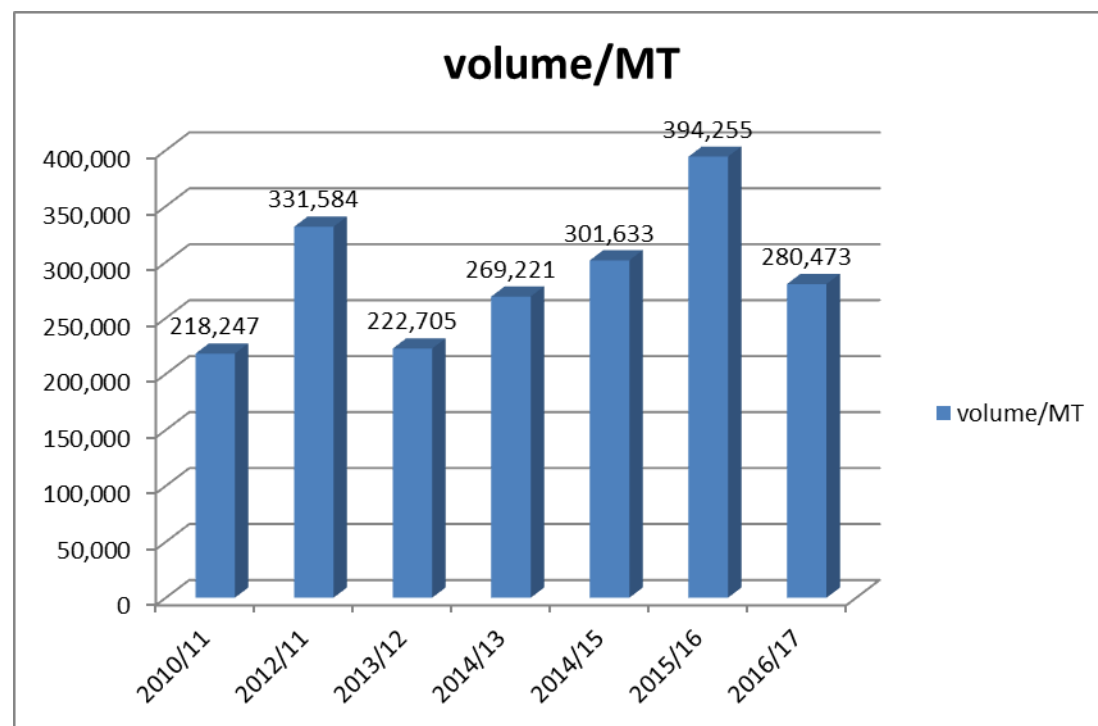
Source: Ethiopian Revenue and Customs Authority and MOT, 2017

Table 5- 2010/11 -2016/17 Ethiopian Sesame export trend

year	volume/MT	value in 000/USD
2010/11	218,247	300,656
2012/11	331,584	436,914
2013/12	222,705	390,625
2014/13	269,221	619,222
2014/15	301,633	483,043
2015/16	394,255	431,709.30
2016/17	280,473	307,512

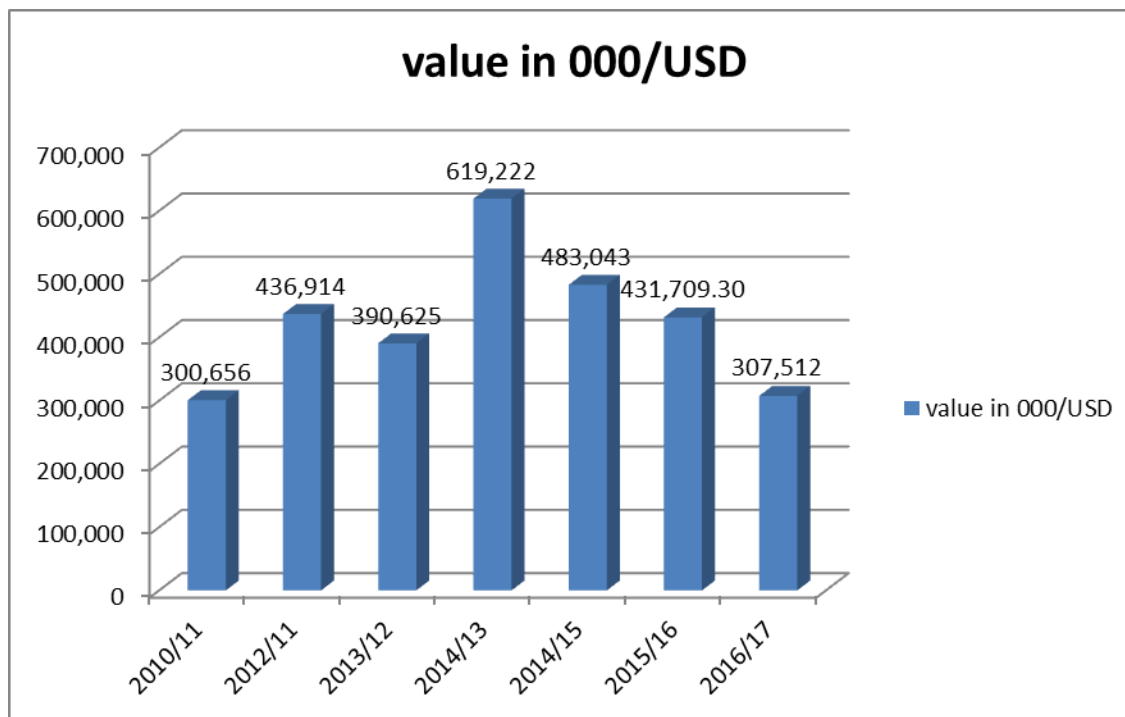
Source: Ethiopian Revenue and Customs Authority and MOT, 2017

Figure 7:- Ethiopian Sesame export trend by volume in Mt



Source: Ethiopia Revenue & Customs Authority and MOT, 2017

Figure 8:- Ethiopian Sesame export trend by value in 000 USD



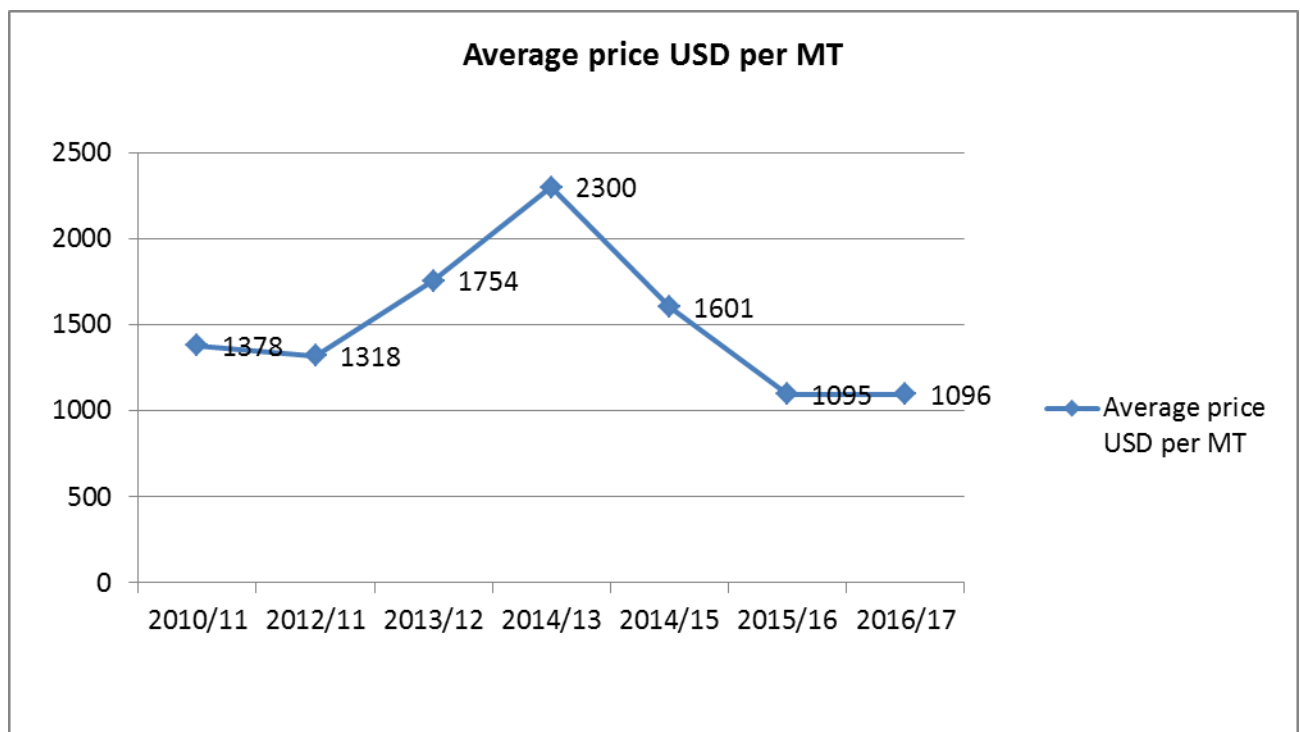
Source: Ethiopia Revenue & Customs Authority and MOT

Table 6- Ethiopian Sesame export trend by price in USD

Year	Average price USD per MT
2010/11	1378
2012/11	1318
2013/12	1754
2014/13	2300
2014/15	1601
2015/16	1095
2016/17	1096

Source: Ethiopian Revenue and Customs Authority and MOT, 2017

Figure 9:- Ethiopian Sesame export trend by price in USD



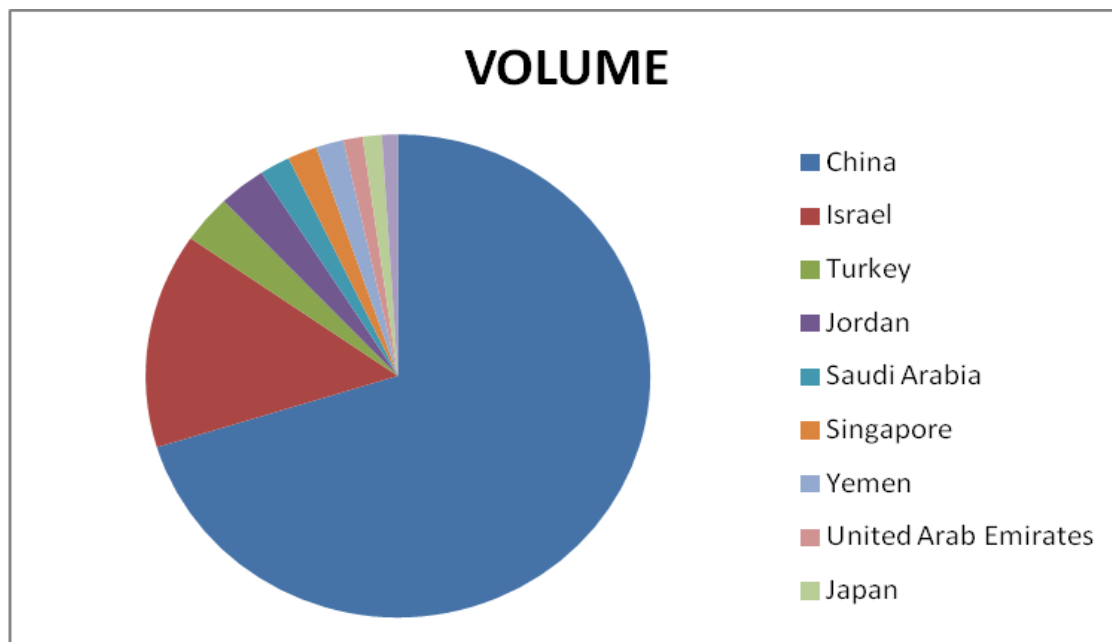
Source: Ethiopia Revenue & Customs Authority and MOT

Table 7:- 2016/17 Top Ethiopian Sesame Destination Countries

	DESTINATION	VOLUME	VALUE	VOLUME % SHARE	VALUE % SHARE
1	China	261400.5	281245.5	66.5	65.3
2	Israel	53825.9	62624.5	13.7	14.5
3	Turkey	12019.9	12836.4	3.1	3.0
4	Jordan	11303.0	12743.2	2.9	3.0
5	Saudi Arabia	7238.8	7944.3	1.8	1.8
6	Singapore	7029.7	7490.8	1.8	1.7
7	Yemen	6580.5	6590.5	1.7	1.5
8	United Arab Emirates	4578.8	4872.7	1.2	1.1
9	Japan	4522.0	5197.0	1.1	1.2
10	Korea, Republic of	3801.0	5610.7	1.0	1.3

Source: Ethiopia Revenue and Customs Authority and MOT,2017

Figure 10:- 2016/17 Top Ethiopian Sesame Destination Countries



Source: Ethiopian Revenue and Customs Authority and MOT, 2017

In 2015/16 the number of destination markets for Ethiopian sesame has reached about 38, and out of these the top destination markets to date are China, Israel, Turkey and Japan. Among the top destination markets the share of the big buyer China to Ethiopian Sesame export in the year 2015/16 was 66.5% by volume and 65.3% by value; paying an average low price of 1, 076 USD/MT. Conversely, less than 5% of Ethiopian Sesame was exported to highly paying markets like South Korea, Japan and Europe, where the price of sesame is on average 1,149 USD/MT, which is 10% more than the price in China.

4.2. STATISTICAL ANALYSIS

4.2.1. Demographic Profile of Respondents

The study analyzed the background information of the respondents by using the following parameters: gender, level of education, type of organization, experience in sesame export, and position held by the respondents.

Table 8:- Demographic Profile of Respondents

		Frequency	Percent
Gender	Male	66	84%
	Female	13	16%
Education Level	Diploma	7	9%
	First Degree	14	18%
	Master's Degree	58	73%
	Other	0	0%
Types of Organization	Exporter	41	52%
	Supplier	38	48%
position	Senior Level Manager	34	43%
	Middle Level Manager	33	42%
	Lower Level Manager	9	11%
	other	3	4%
Engaged in sesame export	Over 10 years	5	6%
	5-10 years	48	61%
	1-4 years	26	33%
	Less than one year	0	0%
Total		79	100

Source: Own Survey, 2017

4.2.2. Results of the analysis

Table 9:- Assessment on the level efficiency, Quality, capacity and the average cost of Logistics Service (Transportation, warehouse and custom services)

Dependent Variable	Independent Variable		Frequency					Mean
			Very high	High	Medium	Low	Very low	
(Y) Ethiopian Sesame export performance	Transportation services	The efficiency of transport service (X1)	0	16	47	5	11	2.73
		The quality of transport infrastructures (X2)	0	11	0	63	5	2.21
		The number and age of freight vehicles. (X3)	5	47	0	27	0	3.38
		The capacity of transport companies (X4)	5	37	0	32	5	3.06
		The average cost of Transport services(X5)	3	47	29	0	0	3.67
	Warehouses services	The efficiency of ECX warehouse service (X6)	11	27	16	14	11	3.16
		The quality of ECX warehouse service (X7)	11	28	27	4	9	3.33
		The number and capacity of ECX sesame warehouse for value addition (consolidation and packaging) (X8)	11	32	0	31	5	3.19
		The average cost of	0	12	67	0	0	3.15

		warehouse service (X9)						
	Custom service	The efficiency of operation of custom services (X10)	5	69	0	0	5	3.87
		The efficiency of service delivery of custom(X11)	5	69	0	0	5	3.87
		The average cost of custom services(X12)	0	38	32	9	0	3.37

Source: Own Survey, 2017

Multiple linear regression model used for data analysis

$$Y=B_0+B_1X_1+B_2X_2+\dots + B_nX_n$$

Where; Y= Dependent variable

B₀ = constant

X_n = Independent variable

B_n = coefficients of the independent variables

Description of the dependent and independent variables used in the study

Y: Ethiopian Sesame export performance

X1: The efficiency of transport service

X2: The quality of transport infrastructures

X3: The number and age of freight vehicles

X4: The capacity of transport companies

X5: The average cost of transport service.

X6: The efficiency of ECX warehouse service

X7: The quality of ECX warehouse service

X8: The number and capacity of ECX sesame warehouse for value addition (consolidation and packaging)

X9: The average cost of warehouse service

X10: The efficiency of operation of custom services

X11: The efficiency of service delivery of custom

X12: The average cost of custom service

Table 10:- Values of the regression coefficients treated in the analysis

Variables	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
Bo	(Constant)	-0.205	0.839		-0.245	0.808	-1.88	1.47
B1	The efficiency of transport service	0.733	0.102	0.737	7.192	0	0.53	0.937
B2	The quality of transport infrastructures	-0.051	0.196	-0.044	-0.262	0.795	-0.443	0.341
B3	The number and age of freight vehicles	-0.147	0.113	-0.169	-1.299	0.198	-0.373	0.079
B4	The capacity of transport companies	-0.041	0.13	-0.054	-0.312	0.756	-0.301	0.22
B5	The average cost of transport service	0.037	0.177	0.023	0.209	0.835	-0.316	0.39
B6	The efficiency of ECX warehouse service	0.163	0.147	0.232	1.113	0.27	-0.129	0.456
B7	The quality of ECX warehouse service	-0.013	0.185	-0.017	-0.072	0.943	-0.383	0.357
B8	The number and capacity of ECX sesame warehouse for value addition (consolidation and packaging)	-0.053	0.126	-0.075	-0.42	0.676	-0.304	0.199
B9	The average cost of warehouse service	0.115	0.297	0.046	0.389	0.699	-0.477	0.708
B10	The efficiency of operation of custom services	0.089	0.098	0.079	0.917	.362	-.105	0.284
B11	The efficiency of service delivery of custom	0.089	0.098	0.079	0.917	.362	-.105	0.284
B12	The average cost of custom service	0.201	0.150	0.21	1.335	0.186	-0.1	0.501

Estimated multiple linear regression equation:

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + B_9X_9 + B_{10}X_{10} + B_{11}X_{11} + B_{12}X_{12}$$

$$Y = -0.205 + 0.733X_1 - 0.051X_2 - 0.147X_3 - 0.041X_4 + 0.037X_5 + 0.163X_6 - 0.013X_7 - 0.053X_8 + 0.115X_9 + 0.089X_{10} + 0.089X_{11} + 0.201X_{12}$$

4.2.3. Discussion of the results

Factors that have significant effect on Ethiopian Sesame Export Performance

According to the results of the analysis among the logistics services being provided along the value chain of Sesame, typically transport service & infrastructure; custom service and ECX warehouse service have significant effect on Ethiopian Sesame export performance.

Transport Service

As the efficiency of transport service increases by a unit, the Sesame export performance increases by 0.733 units. This makes the transportation service to be a very decisive factor to impact the export performance of Sesame. The higher standard error value for the quality of transport infrastructures (0.196) also indicates that quality of transport infrastructures inflicts a big impact on Ethiopian Sesame export performance; which can be substantiated by for example if the quality of transport infrastructure declines by a unit the Sesame export performance drops by 0.05 units.

On the other hand, if the average cost of transport service increases by a unit the country's Sesame export performance declines by 0.037 unit and if the capacity of transport companies deteriorates by a unit the export performance of Sesame reduces by 0.04 unit; which signifies cost and capacity of transport service are vital factors that adversely affect the export performance of Sesame.

Custom service

As the average cost of custom service increases by a unit, the Ethiopian Sesame export performance decreases by 0.201 units. The standard error value for the average cost of custom service (0.150) also implies that cost of custom service has significant effect on Ethiopian Sesame export performance. In addition if the efficiency of the operation and services delivery of custom increases by a unit the export performance of Sesame boost by 0.089 units; which indicates Custom service is a decisive factor to improve or deteriorate the performance.

Warehouse service

As the efficiency of ECX warehouse service is improved by a unit, the export performance of Sesame increases by 0.163 units. The standard error value for the quality of ECX warehouse service (0.185) also indicates that it has substantial impact on Ethiopian Sesame export performance.

On the other hand as the average cost of warehouse service increases by a unit, the export performance of Sesame declines by 0.115 units. The standard error value for the average cost of warehouse service (0.297) also signifies that cost of warehouse service has substantial effect on Ethiopian Sesame export performance. In addition if the quality of ECX warehouse service deteriorates by a unit the country's Sesame export performance will drop by 0.01 units.

The autonomous Sesame export performance

The value of the constant B_0 (-0.205) implies that, Ethiopian Sesame have a declining autonomous export performance by 0.205 units per year, independent of the supply of any recognized logistics service along the value chain of Sesame.

Table 11:- The multiple linear regression model summary
Fd

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.955	0.912	0.898	0.287	0.912	63.435	11	67	0.000

About the multiple linear regression model used in the analysis

The model summary table below shows the strength of the relationship between the model and the dependent variable. R is the multiple correlation coefficients which is the linear correlation between the observed and predicted value of the dependent variable. The larger its value is the stronger the relationship. This model had a very strong coefficient of determination $R^2 = 0.912$ which means 91% of the variation in the dependent variable is explained by the model.

Based on the results of the analysis, the value of the adjusted R^2 (0.898), indicates that the proportion of the variation in the dependent variable is highly explained jointly by the independent variables incorporated in the function, because in multiple linear regression analysis the higher the adjusted R^2 value implies that the better the model is determined by the independent variables. Therefore, the proportion of the variation in the dependent variable that remains unexplained by the independent variables ($1 - R^2_{\text{adj.}} = 1 - 0.898 = 0.102$) is insignificant. Thus, the value of the adjusted R^2 implies that no error of measurement and no perfect multicollinearity of the independent variables in the model; which means, the model have no specification error in that all the important independent variables appeared explicitly in the function.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATIONS

5.1. CONCLUSION

1. The level/extent of logistic services has a very significant effect on the country's Sesame export performance; as a unit improvement in the efficiency of transport service; efficiency of operation and service delivery of Custom; efficiency of ECX warehouse service increases the export performance by 0.733, 0.089 and 0.163 units respectively; while a unit deterioration in the capacity of transport companies reduces the export performance by 0.041.
2. The main logistics factors that affect Ethiopian Sesame export performance are cost of Custom service; cost of ECX warehouse services; cost of transport service; capacity of transport companies; quality of transport infrastructures and quality of ECX warehouse service. This is proved by a unit increment in the average cost of Custom service, cost of ECX warehouse service and cost of transport service decreases the export performance by 0.201, 0.115 and 0.037 units respectively. Likewise, a unit deterioration in the capacity of transport companies, quality of transport infrastructures and quality of ECX warehouse service reduce the export performance by 0.041, 0.051 and 0.013 units respectively.
3. Therefore, from the results of the analysis the major problems/factors that hinder the access and delivery of logistic services along the value chain of Sesame from primary markets to a port are the cost of Custom service, the cost of ECX warehouse service, the cost of transport service, the capacity of transport companies, the quality of transport infrastructures and the quality of ECX warehouse service.

5.2. RECOMMENDATION

As the result of the analysis in this study has proved that cost of Custom service, cost of ECX warehouse service, cost of transport service, capacity of transport companies, quality of transport infrastructures and quality of ECX warehouse service have significant effect on Ethiopian Sesame export performance, recommendations based on the conclusions are given bellow:

1. The transport service along the value chain of sesame is highly complicated from the interference of brokers, insufficient number and capacity of vehicles and poor transport infrastructure; which exacerbate the cost of sesame export, triggering high transportation cost and delay of delivery time. Therefore, the Ministry of transport, the Ethiopian Transport Authority and the Ethiopian Roads Authority need to exceptionally recognize the contribution and/or influence of the transport service, the capacity of transport companies and the quality of transport infrastructures on the country's export performance and act accordingly to manage the cost of transport service by issuing legal frame work on how brokers can involve legally to facilitate transport service with reasonable fee; permit import of suitable vehicles by incentivizing the private sector with minimal import taxes to increase the number and improve the capacity of vehicles that serve in the value chain of sesame; improve the quality of transport infrastructures existing between Humera and Metema Sesame primary markets and port of Djibouti by initiating and commissioning incentivized private investments; increase the efficiency and minimize the cost of transport service being provided to Sesame cargoes by facilitating priorities to be conveyed through the newly commenced Addis-Djibouti rail way.
2. Inefficient custom services contributing to extra cost and wastage of time certainly increase the cost of sesame export, which in turn weakens competitiveness and export performance of the country. Therefore, such hitches need to be investigated and improved by Ethiopian Custom Authority in a way that facilitates efficient, cost

effective and timely custom service that enhance the country's Sesame export performance; for instance, by furnishing one window's services at all custom branches and one stop border post at Ethio-Djibouti border.

3. In Ethiopia, the major warehouse service in the value chain of sesame is provided by ECX. The prevailing inefficiency of ECX warehouse service occasioned by insufficient number, dearth facility and poor quality is being obstructing to efficiently and timely accommodate the volume arrived during peak harvest season, which is followed by costly loading and unloading, extended waiting time, high demurrage cost, extra expense for warehouse rent and poor handling of customers commodity, where all have destructive effect on the export performance of sesame. Therefore, Ministry of trade, Ethiopian Commodity Exchange Authority and Ethiopian Commodity Exchange need to exceptionally recognize the influence of ECX warehouse service on the country's Sesame export performance and commence attentive and collaborative intervention to manage the cost and improve the quality of the warehouse service through enhancing the access, facility and number of the warehouses in all potential sesame producing regions.

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5. APPENDICES

Appendix 1: Questionnaire Used For Primary Data Collection

Dear Respondent:

Thank you for taking your time to assist me in collecting primary data for my dissertation. The data you provide will have significant importance to reach on factual findings and useful recommendations regarding the influence of access and delivery of logistics services on Ethiopian sesame export performance.

I kindly request you to honestly & fully complete the questionnaire and return it back promptly. If you need additional information or have any question, please contact me through my address listed below.

Sincerely,

Woineshet Endeshaw

Phone number: +251911993966

Email: woineshet.kassa@gmail.com

SECTION I- GENERAL INFORMATION

1. BACKGROUND INFORMATION OF RESPONDENTS

1.1. Sex of the respondent:

Male ----- Female -----

1.2. Level of education:

Diploma -----First Degree -----

Masters Degree ----- Other (specify) _____

1.3. Type of organization

Exporter ----- supplier -----

1.4. What is your position/status in the organization?

Senior Level Manager ----- Middle Level Manager -----

Lower Level Manager ----- Other (Specify) _____

1.5 How long have you been engaged in Sesame export?

- a) Less than one year b) 1-4 years c) 5-10 years d) over 10 years

SECTION II- PERFORMANCE EVALUATION

In this section Please indicate the degree of your satisfaction by the following logistics services in the process of sesame export.

1. Transport services

1.1 The efficiency of operation of Transport services

- a) Very high b) high c) medium d) low e) Very low

1.2 The Quality of transport infrastructures

- a) Very high b) high c) medium d) low e) Very low

1.3 The number and age of the freight vehicles are adequate to meet the transport demand of the sector.

- a) Very high b) high c) medium d) low e) Very low

1.4 The capacity of Transport companies

- a) very high b) high c) low d) very low

If the above question your answer is low/very low, dissatisfied /very dissatisfied what are the major problems you face regarding shipping?

1.5 The average cost of transport service

- a) very high b) high c) low d) very low

2. Warehouse services

2.1 The efficiency of ECX warehouse service

a) Very high b) high c) medium d) low e) Very low

2.2 The quality of ECX warehouse service

a) Very high b) high c) medium d) low e) Very low

2.2.1 If your answer is low /very low what are the major problems you face regarding warehousing?

2.3 The number and capacity of ECX sesame warehouse for value addition (consolidation and packaging)

a) Very high b) high c) medium d) low e) Very low

2.3.1. If your answer is low/very low what are the major problems of warehouses and terminals you face in the value addition activities like consolidation, packaging etc

a)-----
b) -----
c) -----
-
d) -----

2.4 The average cost of warehouse service

a) Very high b) high c) medium d) low e) Very low

3. Customs service

3.1 The efficiency of operation of customs

a) Very high b) high c) medium d) low e) Very low

3.2 The efficiency of service delivery of customs authority

a) Very high b) high c) medium d) low e) Very low

3.3 The cost of customs service

a) Very high b) high c) medium d) low e) Very low

3.2.1 If your answer is low/ very low what are the major problems you face regarding custom services?-----

SECTION III- In this section Please specify /answer the question honestly

1. How much sesame your company exports on average per year (tone)? -----
-
2. Which Port your company uses most frequently? -----
-
3. The average annual cost of transportation your company incurs per tone-----
-
4. Average waiting time from initial warehouse to port-----
-
5. The average annual cost of warehouse service your company incurs per tone -----
-

6. What are the major problems you face, which hinder the access and delivery of logistic services along the value chain of Sesame?

a)-----

--

b)-----

-

c)-----

--

d)-----

-

7. What are the main constraints of logistics services you face in the process of Sesame export?

a)-----

-

b)-----

-

c)-----

--d)-----

8. The development of logistics service providers, transistors, shipping agents and brokers need to be encouraged in terms of technical skills, human resources and finance because they add so much efficiency to goods flow at lower costs.

9. Does the logistics service provider along the value chain of Sesame emphasize quality, time to market and customer satisfaction adequately

THANK YOU VERY MUCH FOR YOUR TIME!

Appendix 2- Demographic Profile of Respondents

		Frequency	Percent
Gender	Male	66	84%
	Female	13	16%
Education Level	Diploma	7	9%
	First Degree	14	18%
	Master's Degree	58	73%
	Other	0	0%
Types of Organization	Exporter	41	52%
	Supplier	38	48%
position	Senior Level Manager	34	43%
	Middle Level Manager	33	42%
	Lower Level Manager	9	11%
	other	3	4%
Engaged in sesame export	Over 10 years	5	6%
	5-10 years	48	61%
	1-4 years	26	33%
	Less than one year	0	0%
Total		79	100

Appendix 3- Assessment on the level efficiency, Quality, capacity and the average cost of Logistics Service (Transportation, warehouse and custom services)

Dependent Variable	Independent Variable		Frequency					Mean
			Very high	High	Medium	Low	Very low	
(Y) Ethiopian Sesame export performance	Transportation services	The efficiency of transport service (X1)	0	16	47	5	11	2.73
		The quality of transport infrastructures (X2)	0	11	0	63	5	2.21
		The number and age of freight vehicles. (X3)	5	47	0	27	0	3.38
		The capacity of transport companies (X4)	5	37	0	32	5	3.06
		The average cost of Transport services(X5)	3	47	29	0	0	3.67
	Warehouses services	The efficiency of ECX warehouse service (X6)	11	27	16	14	11	3.16
		The quality of ECX warehouse service (X7)	11	28	27	4	9	3.33
		The number and capacity of ECX sesame warehouse for value addition (consolidation and packaging) (X8)	11	32	0	31	5	3.19
		The average cost of warehouse service (X9)	0	12	67	0	0	3.15
	Custom service	The efficiency of operation of custom services (X10)	5	69	0	0	5	3.87
		The efficiency of service delivery of custom(X11)	5	69	0	0	5	3.87
		The average cost of custom services(X12)	0	38	32	9	0	3.37

Appendix 4 estimated multiple linear regression equation:

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + B_9X_9 + B_{10}X_{10} + B_{11}X_{11} + B_{12}X_{12}$$

$$Y = -0.205 + 0.733X_1 - 0.051X_2 - 0.147X_3 - 0.041X_4 + 0.037X_5 + 0.163X_6 - 0.013X_7 - 0.053X_8$$

$$+0.115X_9+0.089X_{10}+0.089X_{11}+0.201X_{12}$$

Appendix 5- Values of the regression coefficients treated in the analysis

Variables	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
Bo	(Constant)	-0.205	0.839		-0.245	0.808	-1.88	1.47
B1	The efficiency of transport service	0.733	0.102	0.737	7.192	0	0.53	0.937
B2	The quality of transport infrastructures	-0.051	0.196	-0.044	-0.262	0.795	-0.443	0.341
B3	The number and age of freight vehicles	-0.147	0.113	-0.169	-1.299	0.198	-0.373	0.079
B4	The capacity of transport companies	-0.041	0.13	-0.054	-0.312	0.756	-0.301	0.22
B5	The average cost of transport service	0.037	0.177	0.023	0.209	0.835	-0.316	0.39
B6	The efficiency of ECX warehouse service	0.163	0.147	0.232	1.113	0.27	-0.129	0.456
B7	The quality of ECX warehouse service	-0.013	0.185	-0.017	-0.072	0.943	-0.383	0.357
B8	The number and capacity of ECX sesame warehouse for value addition (consolidation and packaging)	-0.053	0.126	-0.075	-0.42	0.676	-0.304	0.199
B9	The average cost of warehouse service	0.115	0.297	0.046	0.389	0.699	-0.477	0.708
B10	The efficiency of operation of custom services	0.089	0.098	0.079	0.917	.362	-.105	0.284
B11	The efficiency of service delivery of custom	0.089	0.098	0.079	0.917	.362	-.105	0.284
B12	The average cost of custom service	0.201	0.150	0.21	1.335	0.186	-0.1	0.501

Appendix 6 -Summary of the multiple linear regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.955 ^a	.912	.898	.287	.912	63.435	11	67	.000