ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTEMNT OF MANAGEMNT

LOGISTICS TIME AND COST ANALYSIS

CASE OF LUBRICANT SUPPLY OF LIBYA OIL ETHIOPIA LIMITED

BY

PETROS GULMA

RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMNTS FOR THE DEGREE OF EXECUTIVE MASTERS OF BUSINESS ADMNISTRATION

Advisor:- Dr. Matiwos Ensermu

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Approved by Board of Examiners

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Examiner	**Signature**

February 2015

Certification

This is to certify that PETROS GULMA TESFAYE has done the study on the topic “Logistics time and cost analysis – case of lubricant supply of Libya Oil Ethiopia Limited”. This study is original and has not been done before by any other researcher on the same topic.

Advisor’s name _____

Signature _____

Declaration

I, PETROS GULMA, declare that the research project entitled “Logistics time and cost analysis case of lubricant supply of Libya Oil Ethiopia Limited” is my original work that is done under the guidance and suggestions of my advisor, Dr Matiwos Ensermu.

This research project is done as partial fulfillment for the degree of Executive Masters of Business Administration (EMBA)

This research has not been done before and all sources of materials used for the study have been appropriately acknowledged.

PETROS GULMA

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Definition of Key Terms and Abbreviations

Bank permit:- Import permit

Container configuration- way packed lubricant loaded inside container

ESLSE:- Ethiopian Shipping and Logistics Service Enterprise

Ex-Work cost- Price at place of production

Fast moving- SKU with monthly turnover above 4.6 mc .

Slow moving- SKU with monthly turnover between 1-4.6 mc

Dead stock- SKU with monthly turnover less than 1 mc

Forex- Foreign currency

FCL:- Full load container

GSCF- Global Supply Chain forum

LOEG:- Libya Oil Egypt

LOEL:- Libya Oil Ethiopia Limited

LOMa- Libya oil Morocco

LOS- Libya Oil Supply(Dubai)

mc- meter cube

Normal Lubricant – Lubricant kept in stock for day to day sales

Tender Lubricant – Lubricant that is sold for consumers after winning tender

RFL:- Ready for loading

SCM:- Supply Chain Management

SKU – Stock Keeping unit

Uni modal – an arrangement whereby customer directly collect container from Djibouti port

Multi modal- an arrangement whereby goods are delivered up to dry ports in Ethiopia by ESLSE

Abstract

Efficiency of logistics and supply chain can be source of distinct competitive advantage for an organization. On the other hand failure on properly undertaking logistics and supply chain activities can cause organization to incur big costs in the form of demurrage and storage that will affect company profitability. This research is done to review the logistics aspect of lubricant supply of Libya Oil Ethiopia limited by reviewing the logistics time and cost dimension and the impact it will have on the company profitability. The whole import transactions during the years 2012 and 2013 are reviewed using the company data base as a source .As part of quantitative analysis lead time on lubricant importation and cost per liter of lubricant is determined using average and compared. As part of qualitative analysis key informant interview, review of contracts and intercompany correspondence is made. The researcher found out the lead time for lubricant importation to be 6.34 and 4.48 months in the years 2012 and 2013 respectively. Delays after vessel arrival until uplifting containers from either of the ports and delays until delivering back empty containers are found to be major source of demurrage and port storage charges which affect company profitability. The researcher also found out Ex work cost and logistics costs to be major component of the total lubricant cost per liter. It is the recommendation of this research that any endeavor that reduce the production lead time and the time it take to get foreign currency approval will have substantial impact in an attempt to reduce supply chain lead time. On top of this, as Ex work cost is major component of the cost of product, focused effort to get lubricant at reduced ex factory cost will substantially reduce the total cost of products and ultimately improve company profitability. It is also the recommendation of this research for further studies on lubricant logistics and supply chain to be conducted in the context of Ethiopia

CHAPTER ONE

1.1 Background of the study

Efficiency of logistics and supply chain operations can be source of distinct competitive advantage for an organization (Kampstra et al, 2006). As per Sahoo and Mishra (2013), the basic objective of supply chain management is to optimize performance of the chain to add as value as possible for the least cost possible. Chartered Institute of Logistics and Transport (UK) 2012 put the role of logistics as positioning of resources at the right time, at the right place at the right cost and at the right quality For Alan et.al (2014) Logistics is concerned with the efficient transfer of goods from the source of supply through the place of manufacture to the point of consumption in a cost-effective way while providing an acceptable service to the customer. For the same authors the role and importance of logistics continued to be recognized as a key enabler for business improvement. On the other hand, failure on properly undertaking logistics and supply chain activities can cause organization to incur big costs that has the potentially to affect company profitability. On IMF report it is also disclosed that logistics cost on average account for 12% of the world GDP and on another study conducted by Natan associates, Ethiopia‟s expenditure on logistics account for 30 up to 40 % of the county GDP showing magnitude of the impact of logistics. Thus for the reasons aforementioned logistics and supply chain need to be studied at country and organizational level critically especially in developing countries like Ethiopia. As part of this endeavor, this research will review and analyze logistics time and cost taking the case of lubricant supply of Libya Oil Ethiopia Limited into consideration.

1.1.1 Oil Industry in Ethiopia

In the years before 2001, only four companies SHELL,MOBIL, TOTAL and Agip controlled marketing and distribution of Fuel and Lubricant in Ethiopia Market. Following measures taken by the government that encourage local and regional players to enter in to the market, more and more local and regional companies are joining this industry. As indicated in locally printed News papers Ethiopia has 9 companies working in fuel and lubricant industry including Oilibya, TOTAL, NOC, KOBIL, YBP, TAF, Dalol, NILE and WAS.

These companies are involved in distribution of fuel and lubricant through their retail outlets, reseller channel and are involved in direct sales to consumers. In Ethiopia price of fuel is regulated by the government and is revised every month. As per key informants, the margin that oil companies get on fuel in Ethiopia is not more than USD 5 per mc which is very small as compared with margin the companies get in other parts of the world. As per the same sources, the margin that the companies get on Lubricant is USD 1,000 per mc on average. So we can say the survival of oil companies in Ethiopia highly depend on sales of Lubricant.

1.1.2 OILIBYA

Oilibya, is Company that is owned by the government of Libya. It entered into Ethiopian Market by acquiring the interest of Shell Ethiopia Limited from Royal Dutch Shell holding in November 2008. As indicated in company report, Shell leave the Ethiopian market after presence that exceed 70 years. Shell used to enjoy market share that exceed 50% in the last years before exit.

As company report indicate Libya Oil Ethiopia Limited (LOEL) is struggling hard to regain the market leadership position that Shell used to enjoy in Ethiopian market especially in Lubricant Business, The supply chain for lubricant will have a great role to play in this endeavor in availing quality lubricants timely, cost efficiently in price competitive manner to position LOEL as Lubricant market leader and thus lubricant supply chain of LOEL is the focus of this study.

1.2 Problem Statement

Efficiency of logistics and supply chain can be source of distinct competitive advantage for an organization. However as per the Internal audit report of Libya Oil Ethiopia Limited (LOEL), the company has paid Br 7.3 million in year 2013 only as demurrage and Storage charge on Lubricant importation which has affected the company‟s profitability. The same report also disclosed that the company is exposed to stock out situation as it fails to position all Lubricant SKUs‟ in its warehouse due to delay on the activities along the supply chain. The company also fails to win tenders in many instances due to cost factor. If logistics and supply chain can be source of competitive advantage and LOEL is taking longer lead time to position products in its warehouse and incurring demurrage and storage costs due to delay in the activities along the supply chain which affect company profitability, then the activities along the lubricant supply chain of LOEL need to be thoroughly studied. Therefore, this study is to explore and determine logistics lead time and cost structure of the lubricant logistics chain of LOEL from time of placing order up to positioning of the lubricant at the ware house and identify major areas of inefficiency in the activities along the lubricant logistics chain that need to be addressed to close gap.

1.3 Research question

This research will address the following questions

- What is the lubricant logistics lead time for LOEL and how much time it will take to undertake activities along the lubricant logistics chain.
- What is the cost structure on lubricant importation and the level of margin.
- Which activities along the chain and which cost element LOEL need to focus on so as to reduce lead time for the supply chain and the total cost.
- What is the level of demurrage and storage cost LOEL is incurring and which activities in the supply chain are major contributors for this cost.

1.4 Objective of the study

1.4.1 General Objective

The objective of this study is measure logistics lead time and cost structure for lubricant supply chain of LOEL and to identify areas of inefficiency along chain that do have direct effect on the bottom line of the company.

1.4.2 Specific Objective

Specific objectives of this study include

- To know the lead time to get products from time of establishing lubricant order up to getting the product at warehouse.
- To know cost structure per liter of the lubricant imported
- To identify areas of inefficiency on the activities along lubricant supply chain.
- To study the level of demurrage and storage cost LOEL is incurring due to inefficiency on the activities along the supply chain

1.5 Scope of the Study

This study will focus on reviewing all the activities and process along the lubricant supply chain of Libya Oil Ethiopia Limited starting from generating of lubricant orders, negotiation with suppliers, getting of foreign currency, production of lubricant, shipment of lubricant, getting of bank permit, clearing from ports and finally transporting and delivering to warehouse with special emphasis on lead time and cost implications of the activities for the year 2012 and 2013. Demurrage and port storage costs incurred with their root cause will also be focus of this study in which case data from year 2011 up to June 2014 is used

1.6 Limitation of the study

- Due to data protection policy of LOEL and sensitivity of information, limitation in some cases in collecting data.

- The study will majorly focus only on reviewing of lubricant import transactions in year 2012 and 2013 for lead time and cost analysis due to un availability of prior years researchable data.

- Lack of country wide benchmark figures especially related to lubricant logistics to compare performance against.

1.7 Significance of the study

Study has not been done before that review the lubricant import logistics of Libya Oil Ethiopia Limited. So this study will give an opportunity to better understand the lubricant import with special emphasis on logistics time and cost implication and indicate areas of focus that will help to make the lubricant supply chain more robust and source of competitive advantage.

This study can also serve as reference for further studies that will be conducted in the Oil Industry of Ethiopia with particular emphasis on supply chain of Lubricant.

CHAPTER TWO

2.1 LITERATURE REVIEW

2.1.1 Theoretical Review

2.1.1.1 Supply chain

Supply chain management (SCM) evolved from a traditional focus on purchasing and logistics practiced between the mid-1960s and mid-1990s, to a broader, more integrated emphasis on value creation in the new millennium (Kampstra et al, 2006). Leading companies increasingly view supply chain excellence as more than just a source of cost reduction – rather, they see it as a source of competitive advantage, with the potential to drive performance improvement in customer service, profit generation, asset utilization, and cost reduction (Kampstra et al, 2006)

Supply Chain Management involves managing the flow of materials from suppliers to customers in order to reduce overall cost and increase responsiveness to customers (Reid and Sanders,2011).As Reid and sander (2011),The network of entities that is involved in producing and delivering a finished product to the final customer is called a supply chain.. The objective is to have everyone in the chain work together to reduce overall cost and improve quality and service delivery. Supply chain management requires a team approach, with functions such as marketing, purchasing, operations, and engineering all working together. This approach has been shown to result in more satisfied customers, meaning that everyone in the chain profits.

The „supply chain" encompasses all activities associated with the flow and transformation of goods from the raw materials stage to the end user (along with the associated information flow). For Robert and Ernest (1999) Supply Chain Management is the…"integration of these activities, through improved supply chain relationships, to achieve a sustainable competitive advantage"

The basic objective of supply chain management is to optimize performance of the chain to add as value as possible for the least cost possible (Sahoo and Mishra,2013), As per

Matiwos (2013) the objective of supply chain management is to maximize the overall value generated, minimize the cost, effective and timely distribution of products needed by ultimate customers. For Ronald (n.d.) ,Managerial efforts are directed towards setting the level of the logistics activities so as to make products and services available to customers at the time and place required, and in the condition and form desired, in the most profitable and cost-effective way

As quoted in Sahoo and Mishra (2013) many regard the supply chain as being composed of inbound materials, raw materials inventories, manufacturing, finished goods inventories and distribution and view these activities from point of origin to point of consumption. Supply chain is the network of companies or independent business units, from original suppliers to end customers; which include management of this network that is a broad and challenging (Sahoo and Mishra,2013), As Matiwos (2013) supply chain is the network of facilities (warehouses, factories, terminals, ports, stores, and homes), vehicles (trucks, trains, planes, and ocean vessels), and logistics information systems (LIS) connected by an enterprise‟s supplier‟s suppliers and its customer‟s customers. As quoted in Sahoo and Mishra (2013) previous research found that collaborative relationship between customer and supplier has positive significant influence to SCM performance improvement.

As quoted in Sahoo and Mishra (2013), Supply chain management (SCM) is progressively recognized by many organizations as a strategy to attain their business goals today (Altekar, 2005). Matiwos (2013) argue that Supply chain performance is now a distinct competitive advantage for companies who excel in this area. Choy, Kenny and Victor (2003) found that the long term success of a firm depends on the reliability of its suppliers and level of satisfaction of its customers. Bartlett Julien and Baines, (2007) also explored that supplier satisfaction and contribution lead to customer satisfaction and SCM performance. From the review we can see that all authors agree that excellence in supply chain will give distinctive competitive advantage for an organization..

2.1.1.2 Logistics

Logistics is concerned with the efficient transfer of goods from the source of supply through the place of manufacture to the point of consumption in a cost-effective way while providing an acceptable service to the customer (Alan et.al 2014). Logistics is what happens in the

supply chain. Logistics activities (customer response, inventory management, supply, transportation, and warehousing) connect and activate the objects in the supply chain (Matiwos,2013). Here under are different definitions for logistics as quoted in Alan et al. (2014).

> *Logistics is... the management of all activities which facilitate movement and the coordination of supply and demand in the creation of time and place utility.*
>
> *(Hesket, Glaskowsky and Ivie, 1973)*

> *Logistics is the management of the flow of goods and services between the point of origin and the point of consumption in order to meet the requirements of customers.*
>
> *(Wikipedia, 2012)*

> *Logistics management is that part of supply chain management 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.*
>
> *(CSCMP, 2012)*

> *Logistics is... the positioning of resource at the right time, in the right place, at the right cost, at the right quality.*
>
> *(Chartered Institute of Logistics and Transport (UK), 2012)*

The council of Logistics Management also define Logistics as:-

> "*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 significance of logistics has evolved from a more passive and cost minimization oriented activity to a key success factor for firm competitiveness. More recently it has become an integral part of a firm‟s strategic planning process (Carter et al., 1997). Logistics management tries to have the "right product", in the "right quantity", at the "right place", at the "right time", with the "right cost". However balancing between total logistics cost and customer service level is essential to successful logistics Alan et al (2014). It is now also recognized that distribution and logistics can be source of competitive advantage to company by helping to achieve either least cost or by offering value in the form of positioning the product or service exactly where, when and how the customer want it.

2.1.1.3 Logistics Strategy

Selecting a good logistics strategy may yield a competitive advantage. It must not been seen as a less creative process than developing the corporate strategy. As quoted in Life long learning program on Logistics (n.d.) logistics strategy has three (3) objectives:

1-Cost Reduction

- ✓ Minimizing the variable costs associated with movement and storage
- ✓ Evaluate alternative courses of action:
- ✓ choosing among different warehouse locations, or
- ✓ evaluate alternative transport modes

2-Capital Reduction

- ✓ Minimizing the level of investment in the logistics system
- ✓ Maximizing the return on logistics assets
- ✓ Shipping direct to customers to avoid warehousing
- ✓ choosing public warehouses over privately owned
- ✓ selecting a just-in-time supply approach rather than stocking to inventory

3-Service Improvement

- ✓ Recognizing that revenues depend on the level of logistics services provided
- ✓ Provide different and better services than the Competition.

As per Alan et.al, (2014), The total logistics concept (TLC) aims to treat the many different elements that come under the broad category of distribution and logistics as one single integrated system. It is a recognition that the interrelationships between different elements, for example delivery transport and storage, need to be considered within the context of the broader supply chain. Thus, the total system should be considered and not just an individual element or subsystem in isolation. if the concept of total logistics is ignored, this can be a significant cost to a company, thus emphasizing the importance of understanding the interrelationships of the different logistics elements. A more positive action would be to measure and interpret these and other interrelationships using a planned approach to identifying and determining any cost trade-off with the objective of achieving net gain to the system (Alan et.al, 2014).

Alan et.al (2014) identified four logistics trade off which are stated here under

1. **Within logistics components**: this refers to the trade-offs that occur within single functions (eg warehousing).
2. **Between logistics components**: these are the trade-offs that occur between the different elements in logistics.
3. **Between company functions**: there are a number of areas of interface between company functions where trade-offs can be made
4. **Between the company and external organizations**: there may be opportunities for a trade-off between two companies that are directly associated with each other

Leading organizations has now started to recognize the positive „value added" role that logistics could offer, as compared to the traditional view that the various functions within logistics were merely a cost burden that had to be minimized regardless of any other implications. Thus, the role and importance of logistics continued to be recognized as a key enabler for business improvement.(Alan et.al ,2014)

2.1.1.4 Supply Chain Management and Logistics

As quoted in Douglas et.al (2005) ,Supply chain management encompasses more than the activities of any individual corporate function. However, frequently it is seen as a synonym for logistics (Simchi-Levi, Kaminsky, and Simchi-Levi2000). Alan et. Al (2014) put simply the similarity and difference between logistics and supply chain as follows

Logistics = Materials Management + Distribution

Supply Chain = Suppliers + Logistics + Customers

Alan et al. (2014) also argue that logistics and the supply chain are concerned not only with physical flows and storage from raw material through to the final distribution of the finished product, but also with information flows and storage. The same authors argue that the total logistics concept advocates the benefits of viewing the various elements of logistics as an integrated whole. Supply chain management is similar, but also includes the supplier and the end user in the process or, the upstream (supply side) and downstream (demand side) partners in the supply chain. This is the major difference between supply chain management and traditional logistics. For Ronald (n.d.) on the other hand It is difficult, in a practical way, to separate business logistics management from supply chain management. In so many respects, they promote the same mission: "To get the right goods or services to the right place, at the right time, and in the desired condition, while making the greatest contribution

to the firm." He also argue that both Logistics and supply chain are collection of functional activities (transportation, inventory control, etc) which are repeated many times throughout the channel through which raw materials are converted into finished products and consumer value is added. Logistics / Supply Chain in a business aim to the following contributions:

- ✓ Achieve maximum customer service level
- ✓ Ensure high product quality
- ✓ Achieve minimum (possible) cost
- ✓ Be flexible in the constant market changes

2.1.1.5 Logistics practice in Ethiopia

Ethiopia is one of the landlocked countries in the world that is located in Eastern Africa bordering the Sudan, Eritrea, Djibouti, Somalia, and Kenya. Ethiopia is dependent on seaports of other countries for its export and import. Although, due to the existing circumstances the country is depending mainly on port Djibouti, future possibilities of using Port Sudan, Berbera, Assab, Massawa and Mombasa may be investigated with respect to the available transport infrastructure and geographical proximities (Fekadu,2013). As per Fekadu (2013) lack of direct sea-access presents growing challenges to the global integration and growth prospects of many landlocked developing countries. The problem mostly affects the poorest countries one of which is Ethiopia. The port charges at the monopolistic Djibouti port have become unbearably high for Ethiopian import and export goods (Fekadu 2013)..

As per Fekadu (2013) the logistics system in Ethiopia is characterized by:-

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

With the intention of providing one stop logistics solution and to minimize huge cost the country incurs in relation to port related and transit charges , the government of Ethiopia established commercial enterprise called (ESLSE) Ethiopian Shipping and Logistics service Enterprise that will provide sea transport, Inland transport up to dry ports, clearance and transit service. The shipping wing currently manage fleet of vessels with combined capacity of 400,000 MT with sea transport service from and to Middle East and Red Sea, Europe, the Gulf and Far East and South Asia (Fekadu, 2013). All imports via sea to Ethiopia are made only by Ethiopian Shipping lines but by securing waiver from the enterprise other liners can be used in the event ESL can not provide the service from the destination. The enterprise also run dry ports in different location including Modjo, Semera, Gelan, Comet ,Combolcha and others and provide such service as customs clearance, temporary storages, transshipment of goods, stuffing and un-stuffing of containers, consolidation of less than container loads and maintenance and repair of containers.

On the following page is the map that shows logistics infrastructure of Ethiopia including sea ports, Dry ports, road line and proposed rail way lines quoted from (Fekadu, 2013).

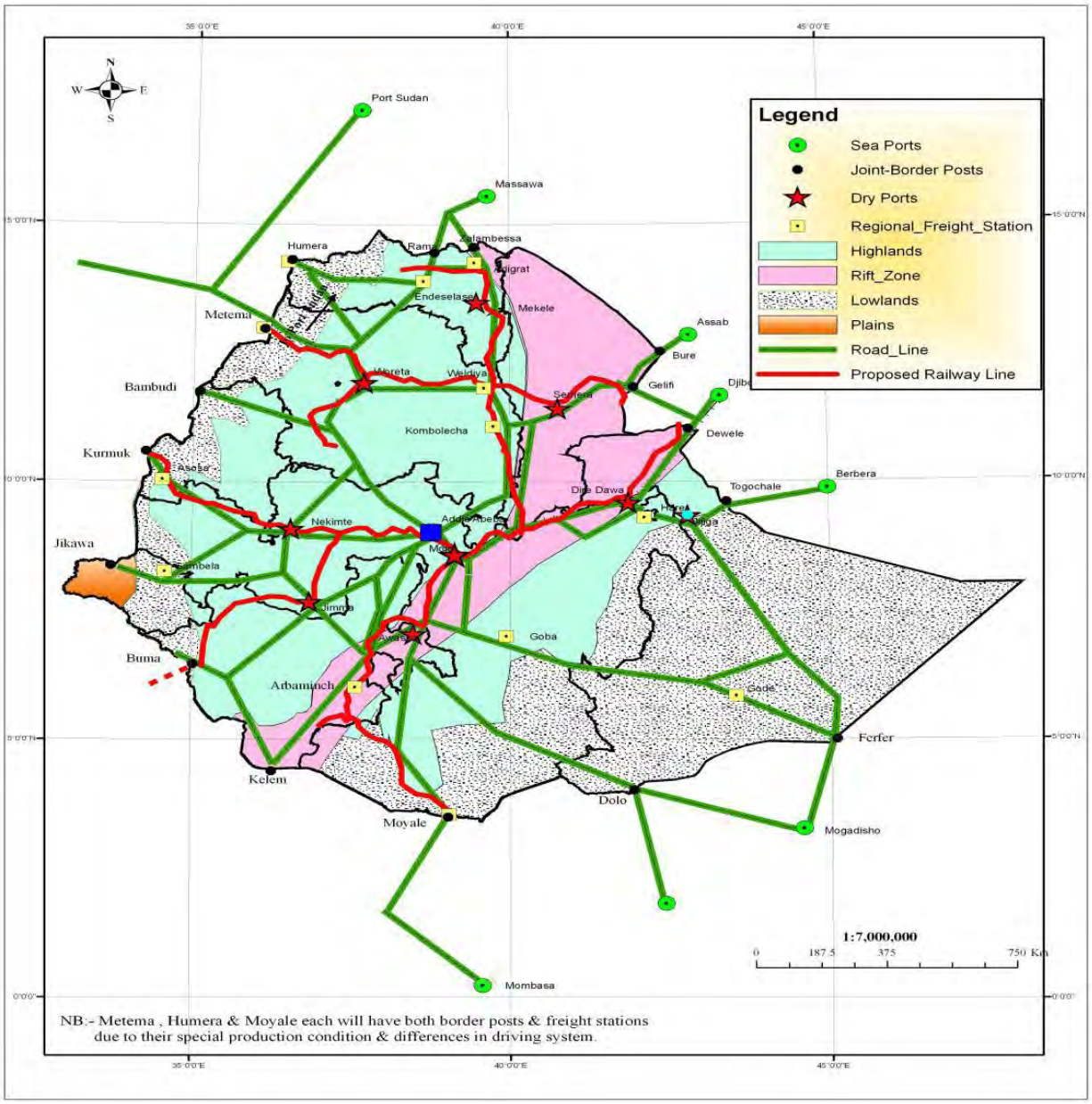

Figure 2.1:- Basic Topography, Dry Port/Freight Stations on Road & Railway Corridors in Ethiopia (MOT, 2009)

2.1.2 Empirical review

As per Alan et.al (2014) true to the Pareto 80/20 rule, it is estimated that product surround or logistics elements represent about 80 per cent of the impact of the product but only represent 20 per cent of the cost. Thus, no matter how attractive the product may be, it is essential that

the customer service elements are satisfactory and logistics plays a crucial role in providing good customer service. As quoted by Ronald (n.d.) there are widely varying estimates of the logistics cost levels. According to the International Monetary Fund (IMF), logistics costs average about 12 percent of the world‟s gross domestic product. As per Ronald (n.d.) referring the work of Robert Delaney, logistics costs for the U.S. economy are 9.9 percent of the U.S. gross domestic product (GDP), or $921 billion. For the firm, logistics costs have ranged from 4 percent to over 30 percent of sales Over the last decade, physical distribution costs have ranged between 7 percent and 9 percent of sales. As per Ronald(n.d.) Logistics costs, substantial for most firms, rank second only to the cost of goods sold (purchase costs) that are about 50 percent to 60 percent of sales for the average manufacturing firm. Value is added by minimizing these costs and by passing the benefits on to customers and to the firm‟s shareholders.

2.1.2.1 Logistics Performance index

World Bank published report on logistics performance Index of countries of the world, The 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. Here below is index for selected countries including Ethiopia

Table 2:1 Logistics performance indices for selected countries

	2010	2012	2014
Ethiopia	2.41	2.24	2.59
China	3.49	3.52	3.53
Germany	4.11	4.03	4.12
Kenya	2.59	2.43	2.81
Djibouti	2.39	1.8	2.15

Source:- World Bank, 2014

Taking Ethiopian context into perspective, as reported on Reporter News paper (June 18,2014) edition on the findings of the study conducted by Natan associates, Ethiopia‟s expenditure on logistics account for 30 up to 40 % of the County GDP. All the findings un

doughtily demonstrate the huge impact and importance logistics have on any economy of the World and Ethiopia in particular. On the same news paper it is disclosed that average port stay for Ethiopia import to be 38 days (only 8 free days with progressive rate from USD 5 up to 11 to be charged on the remaining 30 days) as compared to world average of 3 days and East Africa average of 11 days which clearly demonstrate how heavily such logistics cost in the form of demurrage and port storage is affecting the county economy. It is the interest of the researcher to find out the average stay at the port for Lubricants imported by LOEL and the cost implication on the company.

On the other hand the study conducted by Afro Consulting (2010) on lead time for import of consumer goods is depicted here under which clearly demonstrate the long lead time for import process in Ethiopia Quoted from (Fekadu, 2013).

Table 2.2: General consumer goods import process

No	Activity	Days
1	Request for import/foreign exchange permit	1
2	National Bank Clearance	5
3	Shipping quotation (Ethiopian Shipping lines)	0.5
4	Marine Insurance debit Note	1
5	Bank permit for import	3
6	Collection of Import Advice Note (IAN)	2
7	Time taken to obtain shipping documents	30
8	Collection of original import documents from L/C opening bank	2
9	Submission of import declaration form to Customs	1
10	Collection of notice of payment from Customs	1
11	Preparation of CPO	1
12	Issuance of Customs receipt	1
13	Document transmission to Djibouti by Customs	1
14	Port handling and clearance at Djibouti	13
15	Truck transport to Mojo Dry Port	2
16	Total customs delay at checkpoint along corridor particularly at Mille	1
17	Cargo handling at Dry port	2
18	Customs release at Dry Port	7
19	Arranging local transport	1
20	Dispatch to importer	1.5
	Sub Total (excluding time taken for obtaining shipping document)	46
	Total time (including time taken for obtaining shipping document)	76

Source:- Afro Consult & Trading PLC, 2010

The findings clearly emphasize the importance of addressing supply chain and logistics problem at country and organizational level.

Chopra (2007) classified supply chain problems into three levels

(1) competitive strategy such as location allocation decisions, demand planning, distribution channel planning, outsourcing, supplier selection, enabling information technology selection

(2) tactical planning such as inventory control, order consolidation, production /distribution coordination, and

(3) operation routines such as production shop floor scheduling, fleet scheduling, work force scheduling.

This study however will focus more on competitive strategy and tactical aspect of Lubricants supply chain logistics problem of LOEL with emphasis on logistics lead time and cost structure.

2.2 Conceptual framework

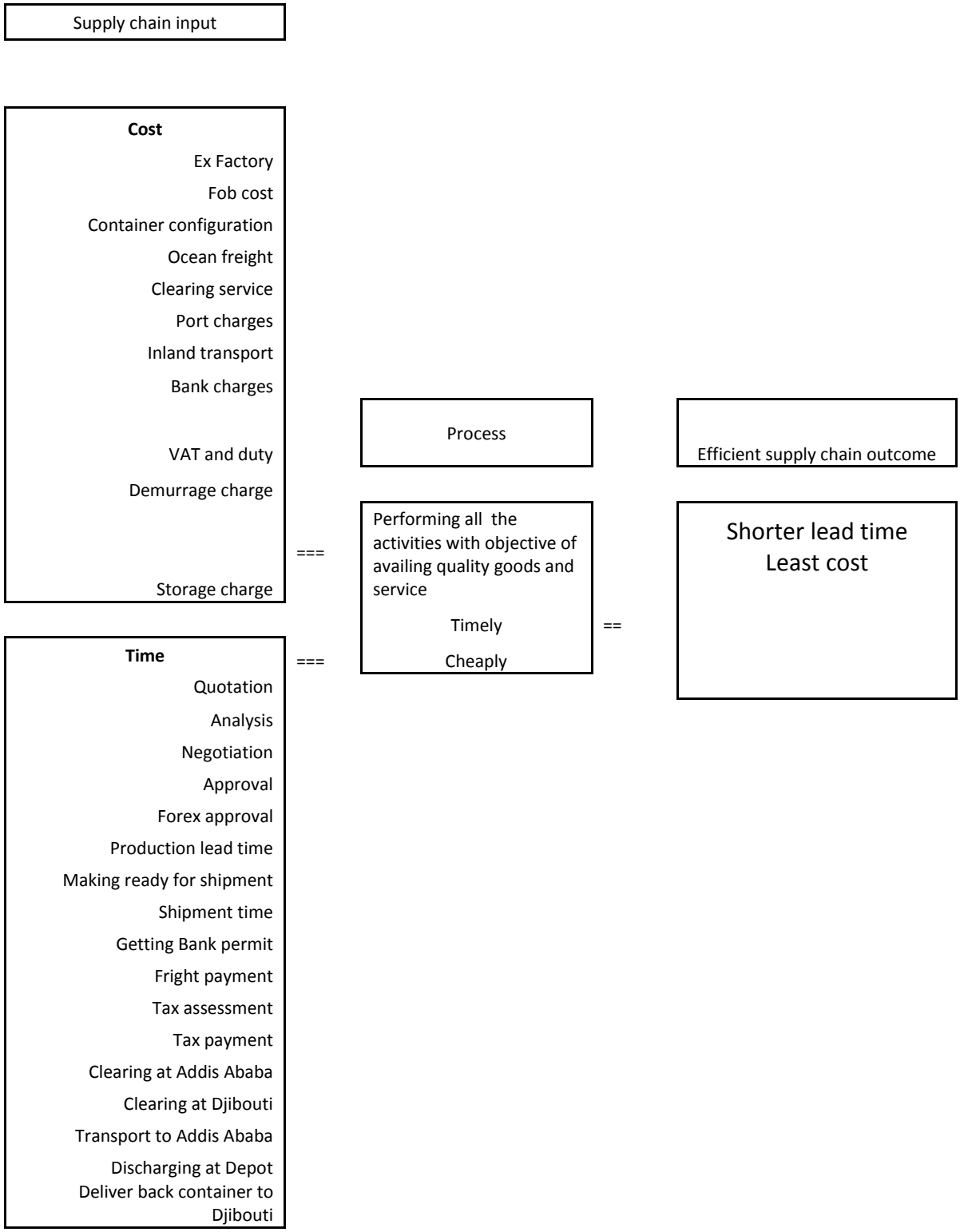

Figure 2.2 Conceptual frame work. adapted from the work of Carter et al. (1997), Afro consult, (2010), Reid and Sanders, (2011)

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This study involve analyzing of logistics time and cost implication of component of the lubricant supply chain of Libya Oil Ethiopia Limited. It uses import transactions during 2012 and 2013 as major source of data.

3.1 Research Design

The research involve analyzing of import transaction during 2012 and 2013 on special emphasis on the time and cost implication. Average lead time and logistical cost for each component of the supply chain determined and compared for the two years as part of quantitative analysis. For port storage and demurrage cost study, data from year 2011 up to mid 2014 is also used. Observation, key informant interview, review of contracts and inter company e mail correspondence used as part of qualitative analysis.

3.2 Research Methodology selected

Average lead time and logistical cost for each component of the supply chain is computed to determine the lead time to position lubricant at the warehouse starting from time quotation is requested from the supplier and to know the cost structure on each lubricant import transaction.

3.3 Samples and sampling technique

All Import transaction during 2012 and 2013 used as a sample and researched in this study as the size of the transaction was manageable and as the reviewing of all transaction will help to have more accurate understanding of the lubricant logistics of Libya Oil Ethiopia Limited. For the study that is made on port storage and demurrage, all payments made from year 2011 up to mid 2014 reviewed as there was sufficient data available for the analysis

3.4 Data source and Research Instrument

Raw data from the data base of Libya Oil Ethiopia Limited on Import transactions used as secondary data source. Statistical analysis using average is conducted, transaction analyzed to determine time it takes in terms of number of days per transaction and cost per transaction and per liter , and then average lead time and cost per import determined and compared. Data from News papers, Published books, Journals, Magazines, articles, internet, report provided by the government, research conducted by research agencies , and Invoices used as additional source for analysis of supply chain drivers.

CHAPTER 4

Research Findings, Analysis and Discussion

4.1 Lubricant supply chain lead time

Under this section the researcher will review the activities along lubricant supply chain starting from placing order up to positioning of the Lubricants at the warehouse with the objective to know the lead time for the whole chain and for specific activities.

All import transaction during 2012 and 2013 are reviewed and lead-time for the activities is computed using average number of days..

The researcher subdivided the major activities along the chain in to eleven as listed here under and lead time of each activity is then computed..

1- Lead time to get quotation and for price negotiation
2- Lead time to get foreign currency approval from banks
3- Lead time for production by the supplier from date approved purchase order sent up to date the product is loaded on the Vessel
4- Lead time for sea transport
5- Lead time to get bank (Delivery order) permit
6- Lead time for tax assessment
7- Lead time for tax payment
8- Lead time for clearing and make ready for uplift
9- Lead time after clearing and before product is loaded
10- Lead time for Inland transport
11- Others

4.1.1 Lead time analysis year 2012

During the year ended 2012, LOEL ordered 5497 mc of lubricants out of which 90% of the order was for normal lubricant grades with the remaining 10% for tender products

Table 4.1 Purchased lubricant volume 2012

	Vol in Lts	Vol in mc	%
Normal	4958748	4959	90.21%
Tender	537920	538	9.79%
Total	5496668	5497	

Source :Own compilation, 2014

Average lead time during the year 2012 to position all lubricant at the warehouse from date quotation is requested was 190.34 days (6.34 months). From these, production lead time accounted for 45.73 % with 87.04 days followed by the time it took to secure foreign currency approval accounting for 16.95% with 32.26 days. The third contributor being time to secure bank permit or delivery order permit accounting for 8.62% of the lead time with 16.42 days.

Table 4.2:- Lead time for the year 2012

		# of Days	%
1	Production lead time	87.04	45.73%
2	Foreign currency approval	32.26	16.95%
3	Bank permit	16.42	8.62%
4	Quotation	10.99	5.77%
5	Ocean	10.50	5.52%
6	Others	8.24	4.33%
7	Inland Transport	7.40	3.89%
8	Clearing	7.15	3.76%
9	To pick after clearing	5.01	2.63%
10	Tax payment	3.58	1.88%
11	Tax Assessment	1.76	0.92%
		190.34	

Source: own compilation,2014

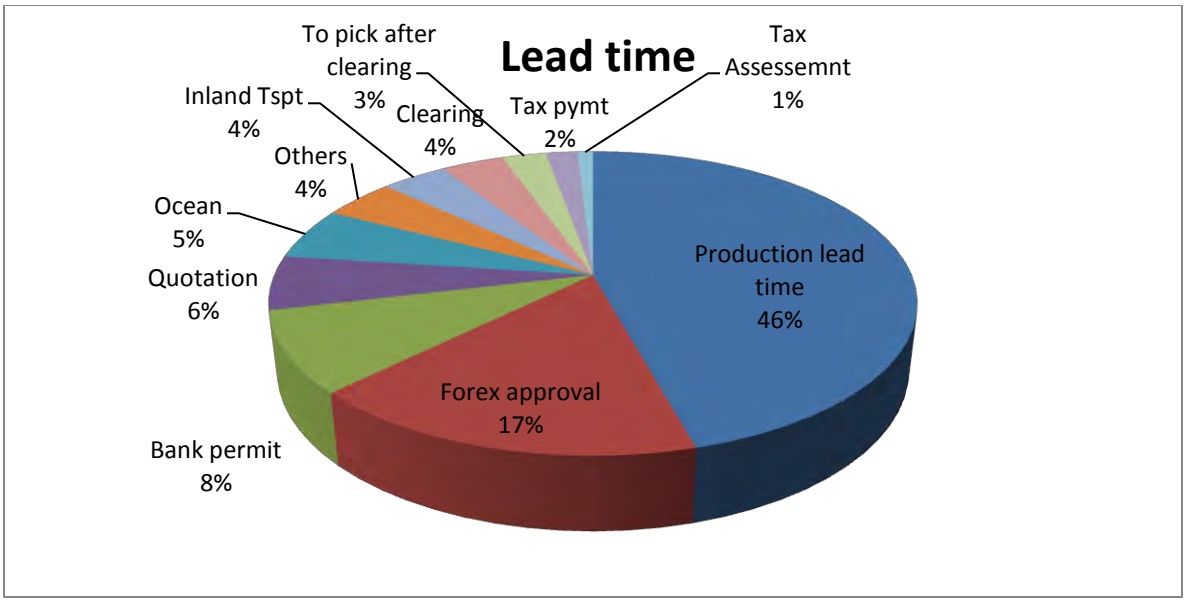

Figure 4.1: Percentage contribution of Lead time of activities for the year 2012

For Normal Lubricant the lead time for the whole supply chain was 199.03 days (6.63 months) as depicted here under with production lead time contributing 46.31%

Table 4.3: Lead time for normal lubricant for the year 2012

Normal Lubricant			
		# of Days	%
1	Production lead time	92.18	46.31%
2	Foreign currency approval	34.42	17.29%
3	Bank permit	16.73	8.40%
4	Quotation	11.83	5.94%
5	Ocean	10.33	5.19%
6	Others	9.01	4.53%
7	Clearing	7.54	3.79%
8	Inland Transport	7.02	3.53%
9	To pick after clearing	4.74	2.38%
10	Tax payment	3.40	1.71%
11	Tax Assessment	1.84	0.93%
		199.03	

Source :Own compilation, 2014

For tender products that is sold direct to consumers the lead time during the year was 102.88 days (3.43 months).Here also production lead time as lion share with 34.32% but with lead time of 35.30 days as compared to 92.18 days for normal products

Table 4.4: Lead time for tender lubricant for the year 2012

Tender Lubricant			
		# of Days	%
1	Production lead time	35.30	34.32%
2	Bank permit	13.27	12.90%
3	Ocean	12.24	11.90%
4	Inland Transport	11.21	10.90%
5	Foreign currency approval	10.55	10.25%
6	To pick after clearing	7.76	7.54%
7	Tax payment	5.33	5.18%
8	Clearing	3.27	3.18%
9	Quotation	2.55	2.47%
10	Tax Assessment	1.03	1.00%
11	Others	0.36	0.35%
		102.88	

Source :Own compilation, 2014

4.1.2 Lead time analysis year 2013

During the year ended 2013, LOEL ordered 4842 mc of Lubricants out of which 82% of the order was for Normal lubricant grades with the remaining 18 % for Tender products

Table 4.5: Purchased lubricant volume 2013

	Vol in Lts	Vol in mc	%
Normal	3993224	3993	82.47%
Tender	848640	849	17.53%
Total	4841864	4842	

Source :Own compilation, 2014

Average lead time during the year 2013 to position all lubricant range at the warehouse from date quotation is requested was 134.39 days (4.48 months). From these, production lead time accounted for 29.39 % with 39.50 days followed by the time it took to secure foreign currency approval accounting for 25.70% with 34.53 days. Unlike year 2012 the

third contributor for the lead time for the year 2013 was time to get quotation from the supplier accounting for 9.98 % with 13.41 days.

Table 4.6: Lead time for the year 2013

		2013	
		# of Days	%
1	Production lead time	39.50	29.39%
2	Foreign currency approval	34.53	25.70%
3	Quotation	13.41	9.98%
4	Bank permit	9.93	7.39%
5	Tax Assessment	7.99	5.95%
6	Ocean	7.84	5.83%
7	To pick after clearing	5.18	3.86%
8	Clearing	5.11	3.80%
9	Others	4.51	3.36%
10	Inland Transport	3.25	2.42%
11	Tax payment	3.13	2.33%
		134.39	

Source :Own compilation, 2014

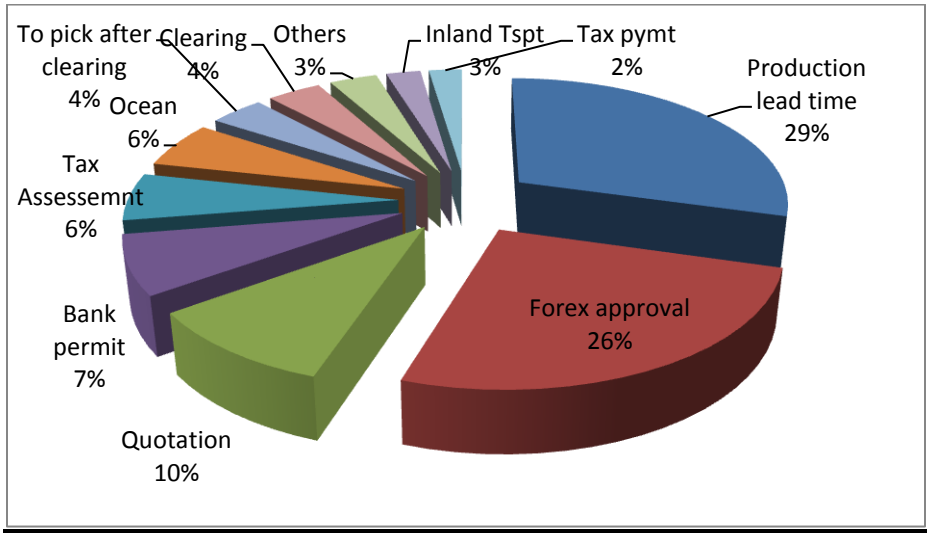

Figure 4.2: Percentage contribution of lead time of activities for the year 2013

For normal lubricant, the lead time for the whole supply chain was 136.56 days (4.55 months) unlike the other cases the lion share in normal product was accounted by foreign currency approval by 38.30 days (28.05%) followed by production lead time with 36.59 days (26.79%)

Table 4.7: Lead time for normal lubricant for the year 2013

NORAML			
		# of Days	%
1	Foreign currency approval	38.30	28.05%
2	Production lead time	36.59	26.79%
3	Quotation	13.95	10.22%
4	Bank permit	9.42	6.90%
5	Tax Assessment	8.44	6.18%
6	Ocean	7.67	5.62%
7	Others	5.37	3.93%
8	Clearing	5.21	3.82%
9	To pick after clearing	5.03	3.69%
10	Inland Transport	3.52	2.58%
11	Tax payment	3.06	2.24%
		136.56	

Source :Own compilation, 2014

For tender products that is sold direct to consumers the lead time during the year was 121.53 days (4.01 months).Here also production lead time has lion share contribution with 46.16 % with lead time of 56.01 days.

Table 4.8: Lead time for tender lubricant for the year 2013

TENDER			
		# of Days	%
1	Production lead time	56.10	46.16%
2	Bank permit	12.96	10.66%
3	Foreign currency approval	12.29	10.12%
4	Quotation	10.24	8.42%
5	Ocean	8.80	7.24%
6	To pick after clearing	6.06	4.99%
7	Tax Assessment	5.37	4.42%
8	Clearing	4.51	3.71%
9	Tax payment	3.53	2.90%
10	Inland Transport	1.67	1.37%
11	Others	-	0.00%
		121.53	

Source :Own compilation, 2014

4.1.3 Lead time comparison 2012 Vs 2013

The analysis reveal that during the year 2012 It took on average 190.34 days or 6.34 months to position lubricant at warehouse starting from time quotation is requested from the supplier. Where as in year 2013 it took 134.39 days or 4.48 months to complete the same transaction on average. So in the year 2013 it took 55.95 days or 1.87 months lesser to complete transaction on average as compared to year 2012 performance. In absolute terms the major contributor for the decline in the supply chain lead time is found to be production lead time which is the time it take for the supplier to produce order and ship after receiving of approved purchase order. In year 2012 the production lead time for the suppliers was 87.04 days (2.9 months). but in year 2013 this has declined to 39.50 days (1.32 months) which is

lesser by 47.54 days (1.58 months).The table here under summarizes lead time for activities along the lubricant supply chain in the year 2012 and 2013

Table 4.9: Lead time comparison 2012 Vs 2013

All						
		2012			2013	
		# of Days	%		# of Days	%
1	Quotation	10.99	5.77%		13.41	9.98%
2	Foreign currency approval	32.26	16.95%		34.53	25.70%
3	Production lead time	87.04	45.73%		39.50	29.39%
4	Ocean	10.50	5.52%		7.84	5.83%
5	Bank permit	16.42	8.62%		9.93	7.39%
6	Tax Assessment	1.76	0.92%		7.99	5.95%
7	Tax payment	3.58	1.88%		3.13	2.33%
8	Clearing	7.15	3.76%		5.11	3.80%
9	To pick after clearing	5.01	2.63%		5.18	3.86%
10	Inland Transport	7.40	3.89%		3.25	2.42%
11	Others	8.24	4.33%		4.51	3.36%
		190.34			134.39	

Source :Own compilation, 2014

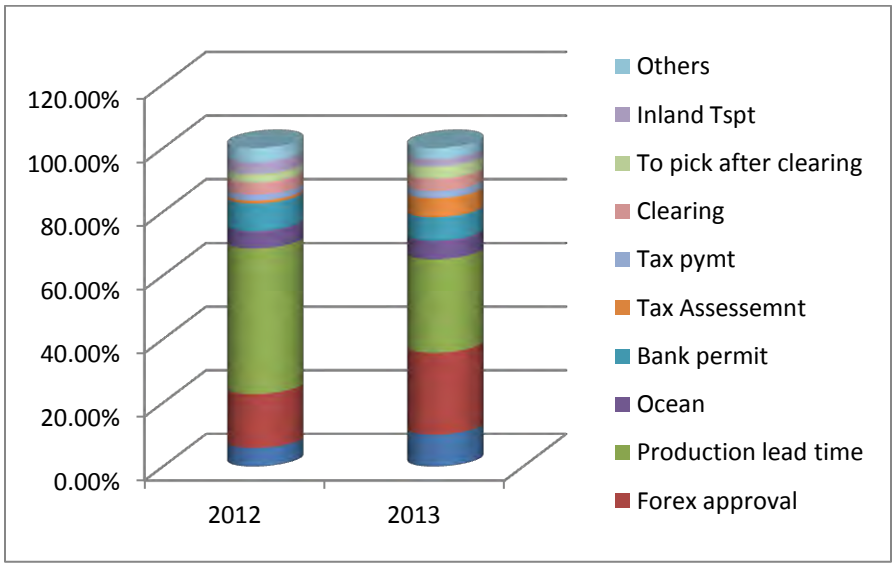

Figure 4.3: Lead time comparison 2012 Vs 2013

Interview with Key informants and review of e mail correspondence between LOEL and LOEG during 2013 reveal an agreement reached with regard to production

arrangement to commence even before foreign currency approval is sent to the supplier unlike the previous transactions during 2012 in which case the supplier start production only after receiving of approved purchase order for foreign currency which could be major factor for sharp decline in production lead time for 2013 orders. The sales contract that is signed between LOEL and LOEG towards the end of 2012 that contain service level for production lead time of 25 days for drums and 40 days for small pack could also be major reason for the sharp decline in the production lead time.

As far as lead time for normal products is concerned, in the year ended 2012 It took on average 199.03 days or 6.63 months until receiving of product at warehouse starting from request for price quotation. Where as in year 2013 it took 136.56 days or 4.55 months to complete the same transaction on average. So in the year 2013 it took 62.47 days or 2.07 months lesser to complete transaction on average as compared to year 2012 performance. For normal products in absolute terms the major contributor for the decline in the supply chain lead time once again is found to be production lead time In year 2012 the production lead time for the suppliers was 92.18 days (3.07 months). but in year 2013 this has declined to 36.59 days (1.22 months) which is lesser by 55.59 days (1.85 months).

Table 4.10: Normal lubricant lead time comparison 2012 Vs 2013

NORMAL						
		2012			2013	
		# of Days	%		# of Days	%
1	Quotation	11.83	5.94%		13.95	10.22%
2	Foreign currency approval	34.42	17.29%		38.30	28.05%
3	Production lead time	92.18	46.31%		36.59	26.79%
4	Ocean	10.33	5.19%		7.67	5.62%
5	Bank permit	16.73	8.40%		9.42	6.90%
6	Tax Assessment	1.84	0.93%		8.44	6.18%
7	Tax payment	3.40	1.71%		3.06	2.24%
8	Clearing	7.54	3.79%		5.21	3.82%
9	To pick after clearing	4.74	2.38%		5.03	3.69%
10	Inland Transport	7.02	3.53%		3.52	2.58%
11	Others	9.01	4.53%		5.37	3.94%
		199.03			136.56	

Source :Own compilation, 2014

As far as lead time for Tender products is concerned, in the year ended 2012 It took on average 102.88 days or 3.43 months until receiving of product at warehouse starting from request for price quotation. Where as in year 2013 it took 121.53 days or 4.05 months to complete the same transaction on average. So in the year 2013 it took 18.65 days or 0.62 months more to complete transaction on average as compared to year 2012 performance. For Tender products in absolute terms the major contributor for the increase in the supply chain lead time was found to be production lead time In year 2012 the production lead time for the suppliers was 35.30 days (1.18 months). but in year 2013 this has increase to 56.67 days (1.89 months) which is more by 21.36 days (0.71 months).

Table 4.11: Tender lubricant lead time comparison 2012 Vs 2013

TENDER						
		2012			2013	
		# of Days	%		# of Days	%
1	Quotation	2.55	2.47%		10.24	8.42%
2	Foreign currency approval	10.55	10.25%		12.29	10.12%
3	Production lead time	35.30	34.32%		56.67	46.63%
4	Ocean	12.24	11.90%		8.80	7.24%
5	Bank permit	13.27	12.90%		12.96	10.66%
6	Tax Assessment	1.03	1.00%		5.37	4.42%
7	Tax payment	5.33	5.18%		3.53	2.90%
8	Clearing	3.27	3.18%		4.51	3.71%
9	To pick after clearing	7.76	7.54%		6.06	4.99%
10	Inland Transport	11.21	10.90%		1.67	1.37%
11	Others	0.36	0.35%			
		102.88			121.53	

Source :Own compilation, 2014

4.1.4 Lead time of activities before placing an order with the supplier

Here below is summary of lead time for activities starting from getting quotation from suppler until sending of approved LC to supplier.

Table 4.12: Lead time of the activities before placing an order with supplier

	Year	
	2012	2013
	Number of days	
Lead time to get Proforma Invoice	9.3	13.4
Lead time to negotiate	5.7	3.3
Lead time to do assessment , get approval and pass proforma to Treasury section	7.6	2.6
Total lead time from getting quotation until getting of approval by the General Manger for importation	22.6	19.4
Lead time to get forex(import) approval	32.0	33.9
Lead time up to sending of approved LC to supplier	54.6	53.3

Source :Own compilation, 2014

Getting of quotation from supplier on average took 9.3 days in year 2012 But in 2013 it took 13.4 days increasing the lead time by 4.1 days. Lead time for price negotiation which took 5.7 days in year 2012 decrease to 3.3 days on average in year 2013 resulting in lead time saving of 2.4 days. On the other hand in house routine of doing margin assessment, getting of approval along the chain and passing of document to treasury which took 7.6 days in year 2012 declined to 2.6 days in year 2013 with lead time saving of 5 days. So the aforementioned three activities which took 22.6 days to complete in year 2012 took 19.4 days in year 2013 with net lead time saving of 3.3 days.

It took 32 days to get foreign currency approval from the Banks in year 2012. Where as it took 33.9 days to get approval there by increasing lead time by 1.9 days. So in aggregate LOEL required 54.6 days in average in year 2012 as lead time from time of requesting quotation upto securing foreign currency approval. In year 2012 it was 53.3 days in average with lead time overall net saving of only 1.3 days.

4.2 Lubricant Cost structure

In order to position lubricants at the warehouse LOEL will incur different types of costs all along the supply chain The major cost being FOB cost of the product. Other important costs include ocean freight, clearing and port handling, port storage, demurrage, bank charges, Insurance, Inland transport, VAT, duty and others. In this research the transaction during 2012 and 2013 reviewed with the objective to know cost break down per liter of lubricant import and the finding is summarized here under.

During 2012 the company incurred Br 52.99 per liter which is the total cost until the product reach warehouse. From this, FOB price on average accounted for 71.73% with cost of ETB 38.01. The company paid Br 5.96 on VAT and Br 1.62 per liter on every import for Inland transport. On the other hand the company paid Br 7.48 per Lt which account for 14.12% of total cost incurred for logistics related transaction including Ocean freight, Inland transport, Storage and demurrage charges and for port related fees .Cost breakdown for year 2012 per liter of Lubricant is summarized here under.

Table 4.13: Lubricant cost break down for the year 2012

	2012 % Contribution	Cost Break down
FOB price	71.73%	38.01
VAT	11.25%	5.96
Inland Transport	3.05%	1.62
Bank Charges	2.78%	1.47
Ocean Freight	2.38%	1.26
Clearing and port handling	1.55%	0.82
Port storage	1.14%	0.60
Demurrage	0.39%	0.20
Customs Duty	0.08%	0.04
Insurance	0.04%	0.02
Others	5.63%	2.98
Total cost in ETB	**100.00%**	**52.99**

Source :Own compilation, 2014

During 2013 on the other hand the company incurred Br 50.62 per liter of lubricant imported. Here also FOB price on average accounted for 70.15% with cost of ETB 35.51. The company paid Br 5.63 on VAT and Br 2.23 per liter on every import for Inland transport On the other hand the company paid Br 8.38 per Lt which account for 16.57 % of total cost incurred for logistics related transaction including Ocean freight, Inland transport, Storage

and demurrage charges and for port related fees. Cost breakdown for year 2013 per liter of Lubricant is summarized here under.

Table 4.14: Lubricant cost break down for the year 2013

	2013 % Contribution	Cost Break down
FOB price	70.15%	35.51
VAT	11.12%	5.63
Inland Transport	4.41%	2.23
Bank Charges	1.83%	0.93
Ocean Freight	2.95%	1.49
Clearing and port handling	1.82%	0.92
Port storage	1.34%	0.68
Demurrage	0.46%	0.23
Customs Duty	0.29%	0.14
Insurance	0.04%	0.02
Others	5.60%	2.83
Total cost in ETB	**100.00%**	**50.62**

Source :Own compilation, 2014

As compared to 2012 cost per liter of lubricant in year 2013 decreased to ETB 50.62 from ETB 52.99 which is lesser by ETB 2.37 (-4.5%) in absolute terms. Among the cost components the biggest decline in absolute terms comes from FOB price. In year 2012 the FOB price per liter was ETB 38.01. This has declined to ETB 35.51 in year 2013 which is lesser by ETB 2.5. The cost break down comparison for the two years in summarized here under.

Table 4.15: Lubricant cost break down comparison 2012 Vs 2013

	Cost Break down for 2012	Cost Break down for 2013
FOB price	38.01	35.51
VAT	5.96	5.63
Inland Transport	1.62	2.23
Bank Charges	1.47	0.93
Ocean Freight	1.26	1.49
Clearing and port handling	0.82	0.92
Port storage	0.60	0.68
Demurrage	0.20	0.23
Customs Duty	0.04	0.14
Insurance	0.02	0.02
Others	2.98	2.83
Total cost in ETB	52.99	50.62

Source :Own compilation, 2014

The cost components contribution comparison in percent is also summarized here under.

Table 4.16: Lubricant cost percentage contribution comparison 2012 Vs 2013

	2012 Contribution	2013 Contribution
FOB price	71.73%	70.15%
VAT	11.25%	11.12%
Inland Transport	3.05%	4.41%
Bank Charges	2.78%	1.83%
Ocean Freight	2.38%	2.95%
Clearing and port handling	1.55%	1.82%
Port storage	1.14%	1.34%
Demurrage	0.39%	0.46%
Customs Duty	0.08%	0.29%
Insurance	0.04%	0.04%
Others	5.63%	5.60%
	100.00%	100.00%

Source :Own compilation, 2014

From the review we can observe that almost all the cost components had fairley similar percentage contribution in both years.

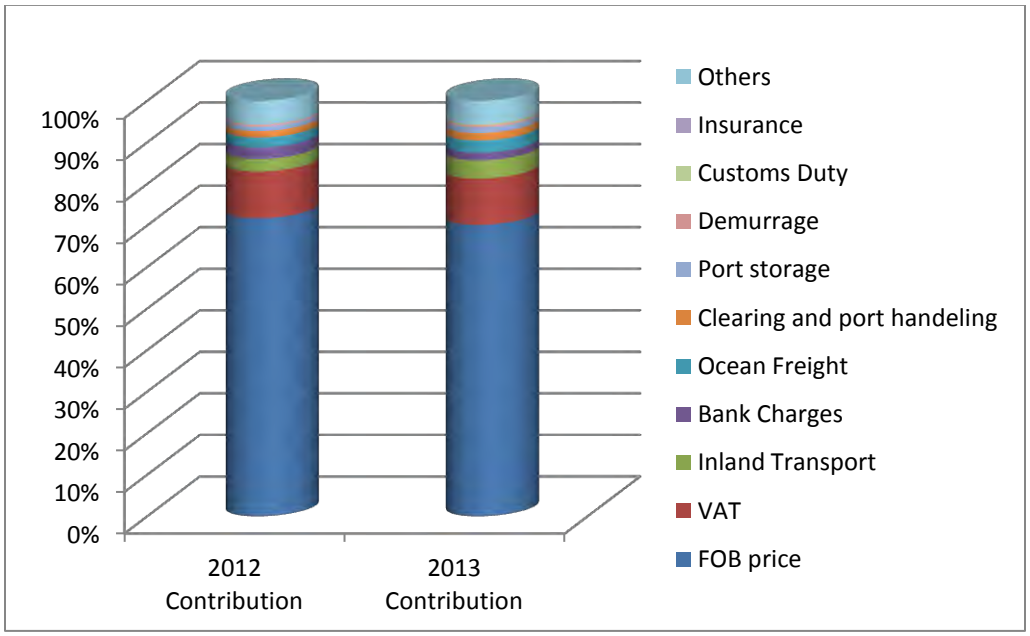

Figure 4.4: Lubricant cost percentage contribution comparison 2012 Vs 2013

4.2.1 FOB cost per liter analysis

The table here under summarizes FOB cost per liter for year 2012 and 2013

Table 4.17: FOB cost per liter analysis

	Year			
	2012	2013	Absolute d/ce	d/ce in %
Total FOB Value in USD	10,183,842.53	7,542,925.99	(2,640,916.54)	-25.93%
Volume purchased in Liters (Normal lubricant)	4958748.0	3954194.0	(1,004,554.00)	-20.26%
FOB cost per liter in USD	2.05	1.91	(0.15)	-7.12%

Source :Own compilation, 2014

LOEL purchased Lubricant with total FOB cost of USD 10.2 million during the year 2012 which in average means USD 849 thousand per month. In year 2013 the purchase worth USD 7.5 million which in average means USD 629 thousand per month. The purchase for year 2013 show decline of 25.93% from year 2012 taking total FOB cost into consideration. In terms of volume, the purchase decline from 4959 mc to 3954 mc or on average from 413 mc per month to 330 mc per month. The FOB cost per liter also declined from USD 2.05 per liter in 2012 to USD 1.91 per Liter. This means a discount of USD 0.15 per liter of 7.12%. If we multiply this figure by the volume purchased for year 2013 which is 3954 mc, we can see that the total discount or contribution to bottom line to be USD 578 thousand or ETB 11 million using 1USD= ETB 19.1061 as exchange rate (average exchange rate used for purchase during 2013) or ETB 2.79 per liter. This can imply that LOEL sourced the lubricant more cheaply in year 2013 as compared to year 2012 (sourcing efficiency).

4.2.2 FOB cost per container and volume per container analysis

Here below is the table that summarizes average FOB cost per container in USD for year 2012 and 2013. The table also summarize the volume of Lubricant loaded per container in year 2012 and 2013.

Table 4.18: FOB cost per container and volume per container analysis

	Year			
	2012	2013	Absolute d/ce	d/ce in %
Total FOB Value in USD	10,183,842.53	7,542,925.99	(2,640,916.54)	-25.93%
Volume purchased in Liters	4958748.0	3954194.0	(1,004,554.00)	-20.26%
Number of Containers	335.00	288.00	(47.00)	-14.03%
FOB cost per container in USD	30,399.53	26,190.72	(4,208.81)	-13.84%
Total product volume per container	14802	13730	(1,072.39)	-7.24%

Source :Own compilation, 2014

In year 2012 on average 14802 Lts of lubricant loaded per container. Where as in year 2013 on average 13730 Lts of lubricant loaded per container which shows a decline of 1.01 mc per container or decline in volume per container of 7.24 %. In year 2013, 288 containers were thus used to accommodate the volume of 3,954 mc. But if on average the containers were to accommodate 14.8 mc just as the case of year 2012 the same volume can be loaded using only 267 containers which is lesser by 21 containers. Taking total logistical cost per container of ETB 90,975 as will be discussed under 4.2.6 (the sub topic on container configuration) ,LOEL could have saved ETB 1,898,196.26 using of the configurations used in year 2012.

On the other hand FOB cost per container show decline from USD 30,399 in year 2012 to USD 26,191 in year 2013 which could be attributed to the decline in volume accommodated per container as discussed in the above paragraph and for decline in the FOB cost per liter from the source of supply

4.2.3 Mark up analysis for year 2012 and 2013

Here below is summary of cost, price and margin per liter analysis for the year 2012 and 2013.

Table 4.19: Margin per liter analysis

	Year			
	2012	2013	d/ce in ETB	d/ce in %
Average total cost per Lt in ETB	52.99	50.31	(2.68)	-5.05%
Average selling price per Lt in ETB	71.90	77.81	5.91	8.22%
Margin per Lt in ETB	18.92	27.50	8.59	45.40%

Source :Own compilation, 2014

The findings are summarized here under

✓ Average total cost per liter decreased from ETB 52.99 to ETB 50.31 in year 2013 which is lesser by 5.05 % which could be attributed to sourcing of lubricants cheaply as evidenced by decline in FOB cost per liter as discussed above and as summarized here under which can demonstrate better efficiency interms of product purchase in year 2013 as compared to year 2012

Table 4.20: Cost per liter analysis

	2012	2013	Absolute d/ce	d/ce in %
Average total cost per Lt in ETB	52.99	50.31	(2.68)	-5.05%
FOB cost per liter in USD	2.05	1.91	(0.15)	-7.12%

Source :Own compilation, 2014

✓ Average selling price of the lubricant increased to ETB 77.81 from ETB 71.90. during the two years period there were lubricant price revisions made by government which were generally have upward trend. This could be the source for 8.22 % increase in the price of Lubricant.

✓ The margin per liter increased from ETB 18.92 in year 2012 to ETB 27.50 which represent an increase of ETB 8.59 per liter or growth of 45.40 % . The decease in cost per liter followed by the increase of whole sale price per liter should have contributed for the sharp increase in margin.

4.2.4 Demurrage and port storage charges

Under this section payments for container demurrage made to ESLSE from Year 2011 up to June 2014 reviewed with the objective to find out the demurrage and storage fee the company is paying and its impact on company profitability. Analysis is made using average time between date of container arrival at port and the date empty container returned to port. The analysis focus on lubricant products imported via Djibouti port through uni modal arrangement Lead time between date of vessel arrival and date the container loaded is also established to arrive at exposure for port storage charges at port of Djibouti.

But first here below is applicable rates for storage and demurrage at Djibouti and Dry ports in Ethiopia. The data is collected from payment Invoices issued by ESLSE and invoices issued from Djibouti port

Table 4.21: Container demurrage charge at Djibouti

Number of days	Fee per 20 ft container per day in USD
Up to 30 days	0
Above 30 days	6

Source: ESLSE sales Invoice. 2014

Table 4.22: Container demurrage charge at Modjo

Number of days	Fee per 20 ft container per day in USD
Up to 15 days	0
Above 15 days	6

Source: ESLSE sales Invoice. 2014

Table 4.23: Port storage charge at Djibouti

Number of days	Fee per 20 ft container per day in USD
From 0-8 days	0
From 9-15 days	5.65
From 16-20 days	7.05
From 21-25	8.80
From 26 till delivery	11.00

Source: Djibouti port Invoice. 2014

Table 4.24: Port storage charge at Modjo dry port

Number of days	Fee per 20 ft container per day in ETB
From 0-8 days	0
From 9-15 days	43.00
From 16-20 days	56.00
From 21-25	73.00
From 26 -30	95.00
From 31 Till delivery	113.00

Source: ESLSE sales Invoice. 2014

Here below is summary of the analysis of demurrage cost incurred from Year 2011 upto mid 2014

Table 4.25: Summary of port storage and demurrage from 2011-mid 2014

Year	Date container reached at port upto date empty container returned	Exposure for Container Demurrage after reducing free days	Av. Demurrage Charge per Container in USD	Exposure for Port storage	Exposure for Port storage after free days	Av. Cost of Port storage Demurrage per Container in USD	# of FCL
Year 2011	51.01	21.01	126.03	38.81	30.81	270.71	368
Year 2012	44.21	14.21	85.28	32.09	24.09	196.79	122
Year 2013	49.99	19.99	119.94	33.39	25.39	211.09	346
Year 2014	44.22	14.22	85.35	24.78	16.78	116.86	49

Source :Own compilation, 2014

LOEL took from 44 to 51 days after date of vessel arrival at Djibouti port until returning of the empty containers back to Djibouti port for the years between 2011 and June 2014. The maximum being 51.days in year 2011 followed by 49.99 days in year 2013. After reducing of 30 free days, the company was exposed to 20 days container demurrage charge at the rate of USD 6 per day on those two years which make average container demurrage charge per container around USD 120 per container.

On the other hand after vessel arrival the containers stay at Djibouti port on the range between 24 and 39 days before up lift thus with port storage exposure on the range

between 16 and 31 days after reducing 8 free days. the maximum being 2011 with 30.81 non free days followed by 25.39 non free days during 2013. As result of these LOEL pay as on average 271 USD per container as port storage during 2011 followed by 212 USD per container that is paid as port storage during 2013.

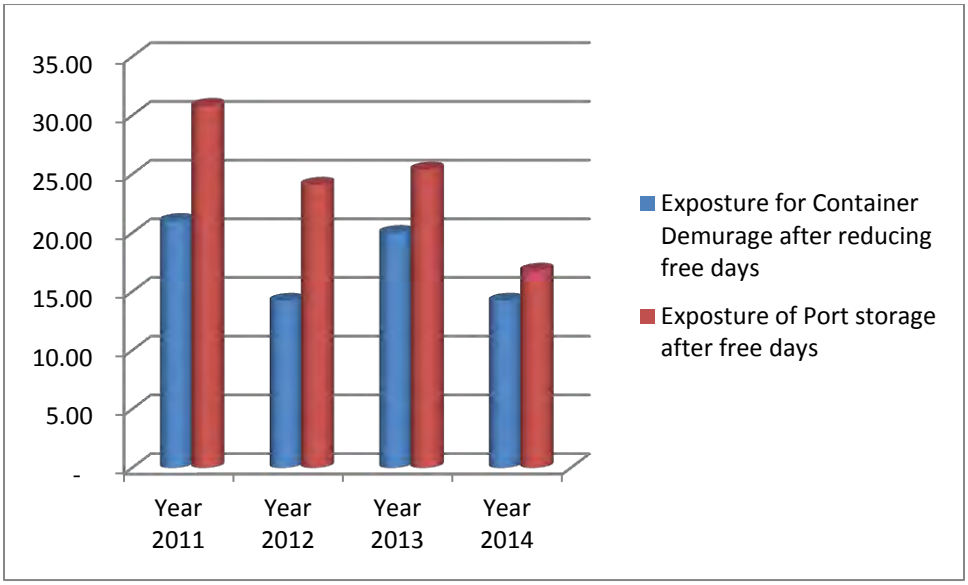

Figure 4.5:Exposture days for port storage and demurrage after reducing free days

From the year 2012 upto mid 2014 the average port stay for LOEL is lesser from country average of 38 days but shapely higher from east Africa and world average of 11 and 3 days respectively.

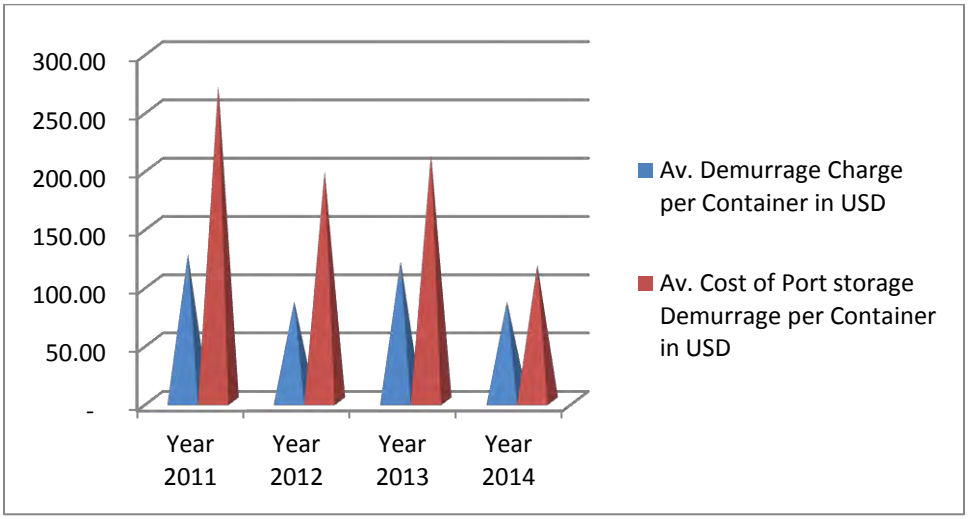

Figure 4.6:Average port storage and demurrage cost incurred per container

Here below , the break down of the activities from date of vessel arrival up to returning of empty containers back to Djibouti port is analyzed here under in terms of number of days..

Table 4.26: Total exposure days for container demurrage

Year	Vessel arrival and Doc given to clearing agent	Doc given to Clearing and Goods ready for loading	Container RFL and loaded date	Goods loaded and Rcvd at Akaki	Goods Rcvd and FCL returned to port	Exposure for Container Demurrage
Year 2011	21.06	12.59	5.16	6.31	5.89	51.01
Year 2012	18.58	8.69	4.82	6.84	5.28	44.21
Year 2013	16.31	10.28	6.80	6.80	9.80	49.99
Year up to June 2014	12.96	7.02	4.80	6.61	12.84	44.22

Source :Own compilation, 2014

LOEL took from 44 to 51 days after date of vessel arrival at Djibouti port until returning of the empty containers back to Djibouti port for the years between 2011 and June 2014. The maximum being 51.days in year 2011 followed by 49.99 days in year 2013. The break down of the activities from date of vessel arrival up to returning of empty containers back to Djibouti port is analyzed here under in percentage.

Table 4.27: Lead time % contribution of activities for demurrage exposure

Year	Vessel arrival and Doc given to clearing agent	Doc given to Clearing and Goods ready for loading	Container RFL and loaded date	Goods loaded and Rcvd at Akaki	Goods Rcvd and FCL returned to port
Year 2011	41.29%	24.68%	10.11%	12.37%	11.55%
Year 2012	42.03%	19.65%	10.90%	15.48%	11.94%
Year 2013	32.63%	20.56%	13.60%	13.61%	19.60%
Year up to June 2014	29.30%	15.87%	10.84%	14.95%	29.03%

Source :Own compilation, 2014

In almost all cases the time from vessel arrival until giving full set document and C.P.O to the clearing agent account for the largest portion followed by the time it took the clearing agent to process the clearing and make ready the product for loading

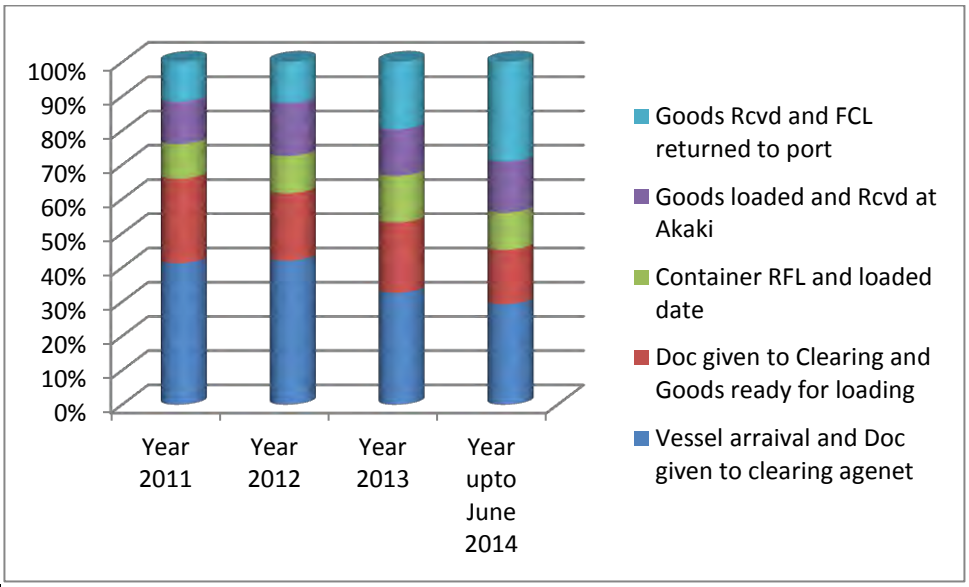

Figure 4.7: Lead time of activities until returning back empty container to port 2011-mid 2014

For the years from 2011 up to June 2014 LOEL took on average 49.30 days after vessel arrival to clear the product, transport the product to the warehouse in Addis Ababa and discharge the product and transport back the empty containers and deliver to Djibouti port. So the company was paying container demurrage for 19.30 days (after subtracting 30 days free charge) at the rate of USD 6 thus making demurrage charge for each container USD 115.80

From date of vessel arrival it took on average 18.41 days which account 37.35% to process the bank permit and Ocean freight payment , Tax assessment and preparation of C.P.O for tax payment and deliver to the clearing Agent. It took on average 10.84 days (21.99%) for the clearing agent to process activities at the customs office in Ethiopia and to process port related activities and payments at Djibouti port and make ready the product for loading. From the date the product is discharge at the warehouse in Addis Ababa it took for the transporter 7.72 days (15.66%) until transporting and deliver back the empty container to Djibouti port. On average it took 6.59 days (13.38%) from the date the product is loaded at Djibouti port to transport and deliver the product at the Warehouse in Addis ababa and

discharge the product. It took 5.73 days (11.63%) for the transporter to arrange trucks and uplift the product from Djibouti port after the product is ready for loading by the clearing agent.

Table 4.28: Lead time of activities until returning back empty containers

	No of days	Percentage
Vessel arrival and Doc given to clearing agent	18.41	37.35%
Doc given to Clearing and Goods ready for loading	10.84	21.99%
Container RFL and loaded date	5.73	11.63%
Goods loaded and Rcvd at Akaki	6.59	13.38%
Goods Rcvd and FCL returned to port	7.72	15.66%
	49.30	100.00%

Source :Own compilation, 2014

4.2.5 Port storage analysis

In General for the years between 2011 and June 2014 from date of vessel arrival it took more time for processing the bank permit, freight and tax assessment and deliver tax payment C.P.O to the clearing agent. Here below activities that are to be performed before the product is uplifted from Djibouti port thus contributors for port storage charges and their percentage contribution for the lead time is analyzed.

Table 4.29: Lead time % contribution of activities for port storage exposure

year	Vessel arrival and Doc given to clearing agent	Doc given to Clearing and Goods ready for loading	Container RFL and loaded date
Year 2011	54.27%	32.44%	13.29%
Year 2012	57.91%	27.08%	15.02%
Year 2013	48.85%	30.79%	20.36%
Year upto June 2014	52.31%	28.34%	19.36%

Source :Own compilation, 2014

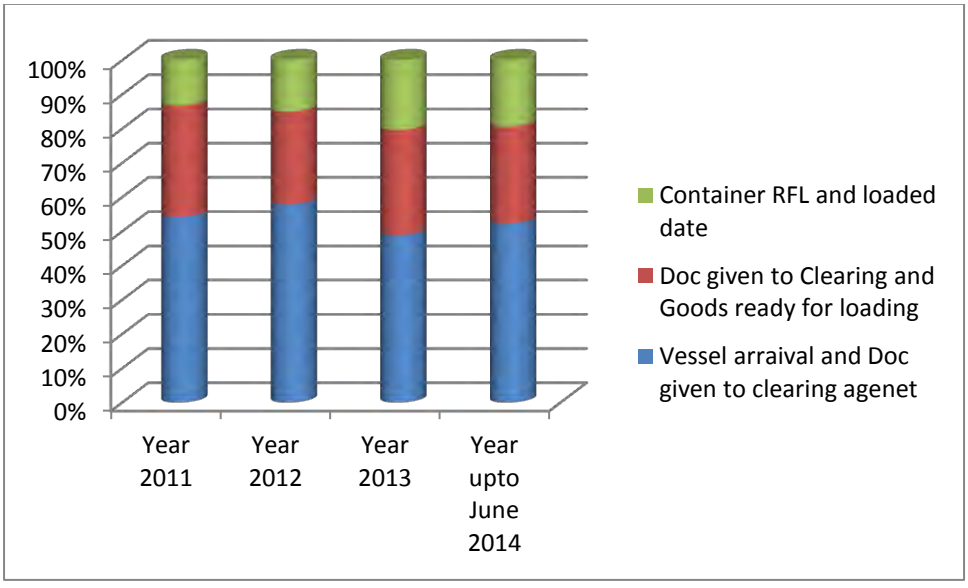

Figure 4.8: Lead time of activities for port storage exposure from 2011-mid 2014

For the years from 2011 up to June 2014 LOEL took on average 34.99 days after vessel arrival to clear the product and uplift the product from Djibouti port So the company was paying port storage for 26.99 days (after subtracting 8 free days) the company was being progressively charged from 5.65 USD per container per day upto 11 USD per container per day with average port storage per container of USD 228.69 for the 26.99 non free days.

From date of vessel arrival it took on average 18.41 days which account 52.63 % to process the bank permit and Ocean freight payment , Tax assessment and preparation of C.P.O for tax payment and deliver to the clearing Agent. It took on average 10.84 days (30.98 %) for the clearing agent to process activities at the customs office in Ethiopia and to process port related activities and payments at Djibouti port and make ready the product for loading. It took 5.73 days (16.38%) for the transporter to arrange trucks and uplift the product from Djibouti port after the product is ready for loading by the clearing agent. Thus showing areas of focus to minimize port storage charges

Table 4.30: Lead time of activities until uplifting container from port

	No of days	Percentage
Vessel arrival and Doc given to clearing agent	18.41	52.63%
Doc given to Clearing and Goods ready for loading	10.84	30.98%
Container RFL and loaded date	5.73	16.38%
	34.99	

Source :Own compilation, 2014

4.2.6 Financial impact of change of container configuration on bottom line

As per the interview with Key informants, In response to complaint on damage on small packs, proposal was made to reduce the number of packs loaded per containers for orders of small packs that LOEL has with LOEG. The different configurations are summarized here under

Table 4.31: Different container configurations by pack type

Pack Type	Per container quantity		
	Old Oilibya	New Oilibya # 1	New Oilibya # 2
0.5 LT	24960	21600	21600
1 LT	12480	9600	9600
4 LT	2880	1920	2400
5 LT	2250	1560	1800
25 LT	720	640	720

Source :Own compilation, 2014

The researcher found out that new oilibya configuration # 1 to result in an increase in the number of containers imported by 65 from 172 per annum to 237 per annum for small packs orders from LOEG with out increasing the volume imported.

New oilibya configuration # 2 on the other hand will increase the number by 30 from 172 to 202 per annum without increasing volume imported.

The increase in the number of containers will have cost implication per container as summarized here under..

Table 4.32: Logistics cost per container analysis

	USD	Ex. Rate	ETB
FOB Charge	1,050.00	19.50	20,475.00
Ocean Fright	1,170.00	19.50	19,500.00
Inland Transport, port handling and Storage charge per FCL			51,000.00
Total Logistical cost per Container			90,975.00

Source :Own compilation, 2014

Note Costs, rates and Exchange rate as at December 30 2013 (Source CBE web site) is used for this analysis

These costs are driven by the number of containers not by volume imported. So increasing the number of containers without changing volume imported will result in additional cost of ETB 90,975 per each container imported.

So the revised configuration will have cost implication on the company as summarized here under per annum.

Table 4.33: Cost implication of different container configurations

Type of Configuration	Total Cost per year	Cost / Lt in Br	Cost / MC in Br	# of FCL	Lts per FCL
Total Cost using Old Oilibya Configuration	15,692,653.61	7.12	7,123.39	172.49	12,771.30
Total Cost using New Oilibya Configuration # 1	21,586,409.01	9.80	9,798.75	237.28	9,284.34
Total Cost using New Oilibya Configuration # 2	18,467,293.23	8.38	8,382.89	202.99	10,852.46
D/CE B/N Existing & new #1per annum	5,893,755.41	2.68	2,675.36	64.78	(3,486.96)
D/CE B/N Existing & new # 2 per annum	2,774,639.62	1.26	1,259.50	30.50	(1,918.84)

Source :Own compilation, 2014

New configuration # 1 will cost the company additional Br 5.9 million birr per annum and New Configuration #2 will cost additional Br 2.7 million birr per annum.

Thus analysis should be first made on the level of reduction in damage on small packs the revised configuration will result and then should be compared with cost implication of that will result with revising configuration.

4.3 Other findings

4.3.1 Level of Investment in Lubricant stock

LOEL import and trade around 126 types of Lubricant grades. The analysis in terms of their average monthly sales reveal that only 24 grades (19%) contribute for 80% of the total sales and the 29 account for 16% of the sales. The remaining 73 grades contribute for only 4% of the sales amount. True to pare to 20/80 rule, LOEL can focus its effort interns of investment in stock on those 24 grades that account for 80% of the sales.

The paradox is that those grades that contribute for 80 % of the sales account only for 46% of the stock in hand volume and the dead stock that contribute for 4% of sales account for 38% of the stock volume taking December 31 2013 as cutoff date as depicted in the tables here under.

Table 4.34: Stock contribution by each category of lubricants

Classification	# of items	Average monthly sales	Stock in Lts	Stock in mc	Stock in Br	Stk %
Fast moving	**24**	**From 4.7 -44.9 mc**	1072550	1,072.55	45,671,517.00	46%
Slow moving	**29**	**From 1-4.7 mc**	363157	363.16	17,721,557.00	16%
Dead Stock	**73**	**from 0-1 mc**	891676	891.68	46,252,873.00	38%
	126	**Ending Stock**	2327384	2327.38	109,645,948.24	

Source :Own compilation, 2014

Table 4.35: Sales contribution by each category of lubricants and stock months

Classification	# of items	Sales Contribution in Lts	Sales Contribution in mc	Sales %	Stk Months
Fast moving	**24**	363,047.88	363.05	80%	2.95
Slow moving	**29**	74,789.00	74.79	16%	4.86
Dead Stock	**73**	16,436.00	16.44	4%	54.25
	126	454,274.36	454.27		

Source :Own compilation, 2014

The investment in inventory need to be in direct proportion to contribution to sales. So company need to minimize the investment in those items classified as dead stock which is around 46.2 million Birr using aggressive sales, by giving of discount, even selling at cost and should channel it to investing in fast moving items upon which the survival of the company depend upon.

The other problem is that there are many SKUs that can be classified as dead stock which are SHELL grades that worth more than Br 17 million kept in LOEL warehouse most of which are ending their shelf life and require for an immediate intervention.

CHAPTER FIVE

SUMMARY OF KEY FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of key findings

- The Research study reveal that during the year 2012 It took on average 190.34 days or 6.34 months until receiving of product at warehouse starting from request for price quotation. Where as in year 2013 it took 134.39 days or 4.48 months to complete the same transaction on average.

- In year 2012 the production lead time for the suppliers was 87.04 days (2.9 months). but in year 2013 this has declined to 39.50 days (1.32 months) which is lesser by 47.54 days (1.58 months).

- During 2012 the company incurred Br 52.99 per liter which is the total cost per liter until the product reach warehouse. From this, FOB price on average accounted for 71.73% with cost of ETB 38.01 per liter

- During 2013 on the other hand the company incurred Br 50.62 per liter of lubricant imported. Here also FOB price on average accounted for 70.15% with cost of ETB 35.51.

- During 2012 company paid Br 7.48 per Lt which account for 14.12% of total cost incurred for logistics related transaction including Ocean freight, Inland transport, Storage and demurrage charges and for port related fees

- During 2013 the company paid Br 8.38 per Lt which account for 16.57 % of total cost incurred for logistics related transaction including Ocean freight, Inland transport, Storage and demurrage charges and for port related fees

- For the years from 2011 up to June 2014 LOEL took on average 49.30 days after vessel arrival to clear the product, transport the product to the warehouse in Addis

Ababa and discharge the product and transport back the empty containers and deliver to Djibouti port. So the company was paying container demurrage for 19.30 days (after subtracting 30 days free charge) at the rate of USD 6 thus making demurrage charge for each container USD 115.80 on average

- During 2013 LOEL on average took 49.9 days after date of vessel arrival at Djibouti port until returning of the empty containers back to Djibouti port. If 30 free days are subtracted. The company paid container demurrage for each container for 20 days at rate of 6 USD thus paying 120 USD for each container as container demurrage charge.

- For the years from 2011 up to June 2014 LOEL took on average 34.99 days after vessel arrival to clear the product and uplift the product from Djibouti port So the company was paying port storage for 26.99 days (after subtracting 8 free days) the company was being progressively charged from 5.65 USD per container per day up to 11 USD per container per day with average port storage per container of USD 228.69 for the 26.99 non free days.

- In year 2013 after vessel arrival containers of LOEL stay on average for 33.89 days at Djibouti port. If 8 free days are subtracted the company was exposed to port storage charge at progressive rate from USD 5.65 to USD 11 for 25.39 days which will result in average port storage charge of USD 211.09 per container.

- Increasing the number of containers without changing volume imported will result in additional cost of ETB 90,975 per each container imported.

- Those grades that contribute for 80 % of the sales account only for 46% of the stock in hand volume and the dead stock that contribute for 4% of sales account for 38% of the stock volume taking December 31 2013 as cutoff

5.2 Conclusion

Based on the review and analysis made on lubricant import by Libya oil Ethiopia Limited and related activities along the supply chain starting from request for quotation up to positioning of lubricants at company warehouse the following conclusions are made

- Production time and the time it took to get foreign currency approval are the two major activities along the lubricant supply chain that consume substantial portion of lead time on lubricant importation. Thus any endeavor to reduce the production lead time and the time it take to get foreign currency approval will have substantial impact in an attempt to reduce supply chain lead time.

- Ex work cost is major component of the cost of product , focused effort to get lubricant at reduced ex factory cost will thus substantially reduce the total cost of product

- In efficiency on the activities after vessel arrival at ports until returning back of empty containers back to port are major source of bad costs in the form of demurrage and port storage which affect company profitability. Thus reducing of lead time on all the activities undertaken after product arrival to either of the ports until the empty containers are returned back to the respective ports will avoid or reduce the demurrage and port storage charge the company is currently paying

- The same volume of lubricant can be imported using different type of container configuration. And the type of configuration chosen can have meaning full cost implication or saving for the company.

In general, there is every indication that being efficient on the activities along supply chain on top of its contribution for the company bottom line, it has potential to be source of competitive advantage for the company in the market it operates

5.3 Recommendation

Here below are specific recommendation the application of which would contribute for improvement of the LOLE‟s supply chain efficiency

- The company to use 134 days or 4.48 months as lead time for importation. Thus the company need to hold stock of 4.48 months stock plus any additional buffer stock which is three months stock as per the current policy of the company.

- Production lead time need to be major focus for reducing of lead time. Thus Suppliers need to be engaged to further squeeze down the production lead time. LOEL can give sales forecast for 6-12 months to help supplier to better plan raw material acquisition and other production input.

- Foreign currency approval is another major activity that need focus in order to secure lead time reduction. It would help for LOEL to negotiate with its Banks on the issue of foreign currency availability in shortest possible lead time. As an alternative the company could make use of its own foreign currency reserve from sales to its aviation customers to reduce lead time

- Bank permit or deliver order approval is another major activity that need intervention. This activity on top of contributing as major factor to the lead time, it has direct implication on demurrage and storage charge the company pay as it undertaken once all shipping document is sent by the supplier. Thus the Treasury class of section need to do this activity more efficiently. Supply section need to sign service level agreement with Treasury with explicitly established lead time for this specific activity and performance monitored and reported.

- In order to avoid demurrage cost. LOEL need to return back empty containers within 30 days if the container has to be delivered to Djibouti and within 15 days if the containers has to be delivered to Modjo dry port. after container arrived to either of the ports. In order to achieve this, the company has to increase its efficiency by 40%

to reduce the lead time from 49.9 to 30 days. This can be achieved by squeezing the bank permit, Tax assessment and payment process from 18 to 11 days, by avoiding the time it took for waiting truck at port once the clearing process is finished which can reduce lead time by 5 days, The clearing agent processing time if reduced from 10.8 to 6.6 days another 4 days can be saved and finally if the transporter can deliver the empty containers within 4 days it can give saving of 3 days. If LOEL can manage to avoid demurrage cost it will reduce lubricant cost per liter by 20 cents or avoid cost of USD 120 per container which can give the company saving of more than 1 million birr per year.

- The investment in inventory need to be in direct proportion to contribution to sales. So company need to minimize the investment in those items classified as dead stock which is around 46.2 million Birr using aggressive sales, by giving of discount, even selling at cost and should channel it to investing in fast moving items upon which the survival of the company depend upon

- As far as SHELL stock kept in the warehouse is concerned the company need to either sale this items even below cost the quickest possible if they are in salable condition and or need to dispose the items and the financial statements need to reflect the true stock value and the expense from disposing the items must be reflected in the Income statement.

All these action will enable the company to import lubricant efficiently, timely and competitively and ultimately improve company profitability and customers satisfaction which is the ultimate objective of efficient logistics and supply chain

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