Addis Ababa University College of Business and Economics School of Commerce

Assessment of Factors Influencing Freight Mode and Carrier Selection: The Case of Packtra Plc. Addis Ababa, Ethiopia

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Statement of Declaration

I, Atitegeb Ayele declare that this study entitled "Factors Influencing Freight Mode and Carrier Selection: The Case of Packtra Plc, Addis Ababa" is my original work towards the Executive Masters of logistics and Supply Chain Management and has not been submitted for any Degree or Diploma in any University. To the best of my knowledge, all source of materials used for the study have been duly acknowledged.

Declared by: **Approved by:**

Atitegeb Ayele Dr Tariku Jebena (Advisor)

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Date & Signature Date & Signature

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List of Acronyms

MOTI	Ministry of Trade and Industry
SPSS	Statistical Package for Social Sciences
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
IT	Information Technology

Abstract

Due to an increasingly competitive market, companies forced to give due emphasis on determinants of freight transportation mode and carrier choice. Nowadays, having the best production system, producing with the best quality and offering to sale at the cheapest price are not enough to achieve competitiveness on the market. Business enterprises required to deliver their end-products to end-customers at the right time with the optimum way. Nonetheless, a delay of freight in transit is common problem for most land locked countries. Ethiopia, as one of these countries, is a victim of long transit periods coupled with additional transit charges. To this end, investigating and analyzing the factors contributing to the delay are worth of pondering. Hence, the purpose of this study was identifying factors influencing freight mode and carrier choice in the case of Packtra Plc, which is a company involved in the activities of inland logistic provision service in Ethiopia. The influence of important factors such as cost, time and reliability, safety and security, capacity, service, product nature, IT and managerial decision have been considered. The study has incorporated both primary and secondary source of data. The primary data was collected using 5 scale Likert's scale questionnaire. Secondary data was collected using journal articles and internet website. Out of 70 total populations 61 valid responses were collected. The data was analyzed descriptively through the use of Statistical Packages for Social Studies (SPSS) version 20. Result is presented in tables. The study tried to focus on factors of influencing freight transport mode and carrier choice. Consequently, it has been revealed that transportation price, purchasing contract, reliability of on time delivery, reliability of on time pickup, and product characteristics related factors influencing freight transport mode and carrier selection of the Packtra. Among the factors, the issues of security are very important for the reliability and safe arrivals of goods. It is concerned with the wellbeing of the goods in transit. Companies should consider the issues of security seriously. However safety and security being considered least preferred determinants factors of freight mode and carrier choice factor

Chapter One: Introduction

1.1. Background of the study

The growth of globalization, over the past decades, has caused an expansion of demand for trade. This in turn has caused logistic issues to become an important topic. For, improvements in logistics have enormously been contributing towards increased profits for companies by allowing them to maintain their competitive advantage (Owuor, 2014). Among its constituents, transportation system, which links the separated activities, is identified to be the key element in a logistics Management. Not only transportation accounts for one-third of the total logistics costs, it also influences significantly the overall performance of logistics system. For this reason, transportation is considered to be the backbone of the whole logistics system by forming a chain between productions to consumption activities. This chain links the manufacturer to delivery, then, to the final consumers and returns (Tseng and Yue, 2005).

Transportation as a whole and freight transportation in particular is a costly and time consuming component of supply chain management system, in Africa. Among others this is attributed to such issues as poor infrastructure, security risk, complex regulation and lack of available information. Surprisingly enough transportation represents a significant portion of overall cost of basic goods and commodities on consumer. Increasing the competitiveness and transparency of transportation systems may enable many African countries to reduce undue burden on their citizens that may in turn lead to increase their saving thereby generate investable surplus which is crucial for economic development (Rancourt et al., 2013).

Alike to any other African countries this is also true to Ethiopia. Even further to make things more worsen Ethiopia is a landlocked country that is located at Eastern Africa bordering the Sudan, Eritrea, Djibouti, Somalia, and Kenya. This makes efficient trade logistics an important issue. Because it influence such an activities like attracting foreign direct investment, which is crucial to increase the country production and productivity that will have a direct impact on a country's export capacity and foreign currency earnings.

In the nutshell logistics practice in Ethiopia is characterized by poor logistics management system and lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage (Fekadu, 2013). Besides, the current transit transport system between Ethiopia and its transit countries, in particular Djibouti, is unimodal transport. This transport system makes Ethiopian importers to receive their imported goods at the port of Djibouti through their agents. Similarly, the Ethiopian Exporters send their cargoes to the port of Djibouti for being stuffed in containers at Djibouti Port using the agent service. This makes the logistic process more costly in addition it is being inefficient. The transportation modes available in Ethiopia are road transport, air transport and rail transport. Of these three types, the biggest service provider is the road transport. Accordingly, 90% of freight transportation both in the import and export sectors and 95% of the public transportation services is provided by this mode of transportation (Temesgen, 2006).

An efficient transportation system will ensure that the right amount of the product is on hand and delivered to the right customer. As transportation management systems improve, it encourages businesses to produce on a much larger scale since they have the situation creates favorable environment to search for additional market which demand their product and thereby increase the level of their profit. As more customers are reached, competitiveness increase even if the price will fall—inevitably resulting in higher product availability and the need to continue improving transportation systems to keep up with the pace of growing customer demands (Robert, 2012).

According to Majercak et al (2015), Choosing the right mode and carrier of transport in freight transport is very important part of transportation realization, because it has to ensure the right parameters of transportation depending on the characteristic of transported goods, but also provides a suitable duration of transportation and the selection of a suitable transport system provides considerable financial savings. Choosing the right mode and carrier of transport is essential to ensure the company's import or export operation efficient and cost-effective.

Packtra Plc is freight forwarding company was established in 1991. It was a pioneering freight forwarding firm emerging in Addis Ababa, Ethiopia. Packtra PLC is the only company in Ethiopia to be accredited by FIDI-FAIM for its quality moving service. It is engaged in the packing, moving, warehousing, heavy lifting, sea and air freight, land transportation, custom clearing, transiting and

door to door service. It has been playing a pivotal role in logistics process of the country. Third Party logistics (3PL)/Freight forwarding service providers do a very important job of organizing safe, efficient and cost effective transportation of goods from origin to destination as an intermediary between the shipper (importer, exporter, trader and other clients) and the carrier. They also provide auxiliary services such as packaging, documentation, consolidation, groupage, transit, warehousing and cargo clearing services. Cargo operation is one of the weakest links in the freight transport and logistics system of the country (Fekadu, 2013). Thus, the main purpose of this study was to assess factors influencing freight transportation mode and carrier selection decision in PacktraPLC.

1.2. Statement of the problem

As tried to indicate above Ethiopia is a landlocked country located in Eastern Africa bordering the Sudan, Eritrea, Djibouti, Somalia, and Kenya. Efficient trade and logistics are important for attracting foreign direct investment, as they can increase a country's export capability. Logistics practice in Ethiopia is characterized by its underdeveloped state and problematic issues such as lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage (Fekadu, 2013). Transportation usually represents the most important single element in logistics cost for most firms. Freight movement has been observed to absorb between one-third and two-thirds of the total logistics costs. Thus, the logistician needs to have a good understanding of transportation matters (Özceyla, 2010).

In order to be a choice of transportation service provider, understanding and acting on key factors that affect decision is very important for the freight transporter (Flodenet al, 2010). Mode and carrier selection have become increasingly important and complex (Owuor, 2014). Because on the one hand the customers' choice of transport service is based on a number of factors that are considered and weighted against each other and on the other for a transport service provider, e.g. third Party logistics (3PL)/Freight forwarding service providers, it is important to understand which factors are more relevant to the customer so as to be in harmony (Floden et al, 2010). According to a literature the performance of the transport carrier may influence the effectiveness of the entire logistics function of a company. It is a constituent of the process of selecting an

appropriate transport carrier that is among the determinant factors to the firm's success (Meixell and Norbis, 2008).

Accordingly, a key decision in logistics management is the selection of the transportation mode and carrier to move the firm's inbound and outbound freight (Roberts, 2012). Managers typically consider multiple attributes when making this decision, often focusing on cost and transit time as the primary criteria. This is not a trivial decision, however, as the process often involves multiple criteria, some of which are not readily quantified. Additionally, the importance of individual factors often differs from industry to industry, company to company, and even within a company from one facility to the next. Consequently, mode and carrier selection is often viewed differently for inbound and outbound shipments, even at the same location (Owuor, 2014). In Packtra PLC, decision makers are not considering multiple criteria in freight transport mode and carrier selection process. Constantly, there are extensive delivery delays and high transport costs, as the organization's officers complained about while the researcher informally interviewed them. Whereas, the importance of cost effective and efficient movement of freight transportation are directly related with timeliness to significantly affect the profitability and market competitiveness of the firm. But identifying the factors along with the corresponding weight of influence requires a through thought and investigation.

The purpose of this study, thus, was to assess the major factors influencing freight transport mode and carrier selection in PacktraPLC. However, freight transportation is one of the fundamental economic activities of the country in the international trade and affected by mode and carrier selection of transportation, it does not attract the researcher's attention. Although, a numbers of researches have been carried out internationally on factors influencing freight transportation mode and carrier selection, there are limited studies in Ethiopian case and even non respecting a particularly freight forwarding company. Therefore, this inspired the researcher to conduct a study on this topic to fill the research gaps by addressing the following research questions.

1.3. Research questions:

1. What are the major factors influencing freight transport mode and carrier selection?
2. Which factors are more important to freight transport mode and carrier selection?

1.4. Objective of the study

1.4.1. General Objective

The general objective of the study was to assess the factors influencing freight transport mode and carrier selection in Packtra Plc.

1.4.2. Specific Objectives

The specific objectives of the research study were as follows:

1. To assess the factors influencing freight transport mode and carrier selection.
2. To identify major factors influencing freight transport mode and carrier selection.

1.5. Significance of the Study

This study would have significance to managers and freight transportation officers who are involved in decision making processes of freight transport mode and carrier selection; by providing relevant information about the factors that affect the decision making processes. Management of Packtra PLC would also appreciate the factors influencing the decision making on freight transport mode and carrier selection processes. Through the findings of this study, they can visit the impacts of freight transport mode end carrier selection decisions on the overall logistics operational efficiency of their organization. It would possible for management to know the areas within their freight forwarding functions that will require improvement for the advancement of the overall organization. This Study would have a great importance not only for the organization under study but for the country at large to contributing its show for the body of knowledge in the area. Further this research paper can serve as a reference material either to students or researchers who want to undertake further researches on the same or related topics in future.

1.6. Scope of the Study

The research conducted in Packtra Plc in Addis Ababa, Ethiopia to make the study accessible and manageable enough. The Study includes the permanent employees of Packtra Plc, among those employees directly working on operation management, transportation management and air cargo PR was the target population of the study. In order to examine documentary information, five years

data was used from 2012 to 2016 to gather required data, specifically on influencing freight transport mode and carrier selection in Packtra PLC.

1.7. Definitions of Key Terms

The researcher was use the following technical terms in the study as defined as follows:

Logistics: - is an integrated flow of goods and services and information in the supply chain process.

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

Modes of transport: - are ways of transport used by transportation service providers in order to render their services. Such as: waterways, railways and airways.

Carriers:- who supply the transportation service for moving the demand and the intermodal network itself composed of multimodal service and terminal (Bektas, 2007)

Intermodal Transport: - is a particular type of multimodal transport, wherein the goods are moved in one and the same loading unit, for example: Containers. Intermodal Transport uses more than one mode of transport.

Multimodal Transport Service: - it is a transportation service provided by using at least two or more modes of transport in a single chain of transport with a single transport contract and single multimodal transport operator.

Dry Port: - is an inland port in the form of container freight stations and inland container depots.

Transit time: - is total time taken by the full chain of the multimodal transport system from the door of the shipper to the door of the consignee.

Consignee –The party such as mentioned in the transport document by which the goods, cargo or containers are to be received.

Shipper- the person or company who is usually the supplier or owner of commodities shipped

Shipment- is a separately identifiable collection of goods to be carried.

1.8. Limitation of the Study

Even though the study is very significant, there were some missing questioners because most of the participants are busy with their work. The other limitation of the study was lack of reference materials and previously conducted research on similar topic in Ethiopian contexts and the study

tried to address only the side of Packtra not included customers of the organization. In addition to this, the respondent's willingness to give their response on time and return back was cause of a problem. To overcome limitation of primary data collection, the researcher closely communicated with those respondents until the required data were collected.

1.9. Organization of the study

The report is organized into five chapters. Chapter one were the introductory chapter that covers the background of the study, a statement of the problem, research questions and objectives of the study, significance and scope of the study. The second chapter presents the review of theories and literatures on the factors of influencing freight transport mode and carrier selection. Research methodology of the study presented in the third chapter, and it includes study area, research design, and the population of the study, sampling techniques, and data collection procedures and data analysis approach. Chapter four presents the data presentation and data analysis of the study. It includes data analysis and reliability analysis, and follows with demographic evaluation of age, gender, income, education, and occupation of the respondents, and descriptive analysis. Chapter five finally presents the findings, conclusions, and recommendations of the study.

Chapter Two: Literature Review

2.1. Theoretical literature

2.1.1 Concept of Freight Transportation

Logistics is the management of the flow of goods, information and other resources, between the point of origin and the point of consumption in order to meet the requirements of consumers. Logistics includes the transportation, inventory, warehousing, material-handling, and packaging, insurances and customs etc. The most important component of logistics is transportation (Özceyl, 2010). The ability to transport goods quickly, safely, economically and reliably (logistics) is seen as vital to success of businesses, and to a nation's prosperity and capacity to compete in globalized economy (Fekadu, 2013).

As per Kveiborg (2005) transportation is a consequence of economic activities taking place at different geographic locations. According to this definition any economic activity concluded between two parties in two different locations results the demand of transportation services. On the other hand Chopra &Meindl (2001) defines transportation from supply chain the begging of a supply chain to the customer. In this definition, transportation has been considered as an important supply chain driver because products are rarely produced and consumed in the same location where most of the consumers are located.

In the 21st century, transportation systems will face significant challenges and problems because of global competition, government budget constraints, and increased demand from special interest groups such as senior citizens, infrastructure challenges, sustainability issues, and energy costs. The pattern of trade that helps to drive transportation requirements is changing more quickly and becoming more complex because of the dynamic global environment and the changing economic base(Coyle et al, 2011)..

Due to the trend of globalization and using the resources efficiency in recent decades, the importance of transportation in logistics management has been growing in various areas. The ability to transport goods quickly, safely, economically and reliably (logistics) is seen as vital to success of businesses, and to a nation's prosperity and capacity to compete in globalized economy (Fekadu2013). Transport system makes goods and products movable and provides timely and

regional efficacy to promote value-added under the least cost principle. Transport affects the results of logistics activities and, of course, it influences production and sale (Tseng and Yue, 2005).

The demand for transporting a product from a given location depends on the existence of demand to consume or use that product in the distant location. Freight is not usually transported to another location unless there is a need for the product. Thus, the demand for transportation is generally referred to as a derived demand, as opposed to customer demand for a product. Sometimes it is also referred to as a secondary demand as opposed to a primary demand (Coyle et al, 2011).

Transportation is a major contributor to the economy and a competitive force in business. It is the activity that physically connects the business to its supply chain partners, such as suppliers and customers, and is a major influence on the customer's satisfaction with the company. Transportation is among the more vital economic activities for a business. By moving goods from locations where they are sourced to locations where they are demanded, transportation provides the essential service of linking a company to its suppliers and customers. It is an essential activity in the logistics function, supporting the economic utilities of place and time. *Place utility* infers that customers have product available where they demand it. *Time utility* suggests that customers have access to product when they demand it (Roberts, 2012). Freight movement has been observed to absorb between one-third and two-thirds of the total logistics costs. Thus, the logistician needs a good understanding of transportation matters (Özceylan, 2010).

According to Tseng and Yue (2005), the role that transportation plays in logistics system is more complex than carrying goods for the proprietors. Its complexity can take effect only through highly quality management. Transportation is typically viewed as the "most important single element in logistics costs for most firms. It is also very important for businesses in creating time, place, and quantity utility, in addition to enabling larger scale production, geographic specialization, and increased competition (Roberts, 2012). By means of well-handled transport system, goods could be sent to the right place at right time in order to satisfy customers' demands. It brings efficacy, and also it builds a bridge between producers and consumers. Therefore, transportation is the base of efficiency and economy in business logistics and expands other functions of logistics system. In addition, a good transport system performing in logistics activities brings benefits not only to service quality but also to company competitiveness (Tseng and Yue, 2005).

According to Meixell and Norbis., (2008), Mode choice and carrier selection are part of the decision-making process in transportation that includes identifying relevant transportation performance variables, selecting mode of transport and carrier, negotiating rates and service levels, and evaluating carrier performance. No doubt, these are all important decisions for logistics managers. According to Özceylan, (2010), the selection of an optimal transportation mode and carrier is one of the most important factors in supply chain and logistic planning. Furthermore, the selection transportation mode is a complex, multi-criteria decision problem. The decision makers have to face and take attention with a lot of criteria; such as cost, quality, delivery time, safety, accessibility and etc. while choosing the best mode. Modal choice is process whereby the transport decision maker decides upon the mode or modes of transport and transport agents required for producing a transport service. The process normally consists in comparing every mode of transport's characteristics against the shipper's requirements. The transport solution yielding higher benefits per costs while fully fulfilling client's requirements is normally the chosen one. Not always, because humans being not entirely rational sometimes may choose for the non-optimal solution (Reis. V, 2009).

2.1.2. Modes of Transportation

Transport modes are the means by which people and freight achieve mobility domestically and internationally. They fall into one of three basic types, depending on what surface they travel over: land (road, rail and pipelines), water (shipping), and air. Each mode is characterized by a set of technical, operational and commercial characteristics. In shipping goods to warehouses, dealers, and customers, a company can choose among five main transportation modes. These are *road, rail, water, pipeline, and air.* The choice of transportation carriers affects the pricing of products, delivery performance, and condition of goods when they arrive-all of which affect customer satisfaction (Tagle, 2012). According to Özceylan (2010), there are six transportation modes, these are: motorway, railway, seaway, airway, pipeline, and intermodal transportation.

Motorway transportation: This is one of the common use transportation modes. Transportation is made mostly with trucks and articulated Lorries. In motorway transportation, fixed costs are low, but variable costs are high. One of the most advantages of motorway transportation is the availability to every point. It is a flexible transportation mode. Mostly, there is no need to another transportation mode to go to desired place. But, in motorway transportation accident rates are high

than the other transportation modes (Özceylan, 2010). Because of its flexibility, cost-effectiveness, and high level of service, truck is the mode of choice for many shippers and manufacturers. And because trucks have the flexibility to provide last-mile service, they often work closely with other modes to transport goods between the shipper or customer and ports, airports, distribution, transload, or intermodal facilities (Cambridge, 2013). Road transport excels by excellent access, the ability to deliver cargo "from door to door" without need for further transshipment and by high flexibility. The disadvantage is a lower amount of transmission capacity as well as higher transport costs over longer distances (Majercak et al., 2015).

Railway transportation: in railway transportation, goods that have low value but have big volume and are heavy carried. Fixed costs are high because of the installation and maintenance costs. On the other hand, variable costs are low. Because the goods are transported with high volume, the costs per unit are low, so it is a safe transportation mode. Transportation with railway is slow and transportation time is long. These are the disadvantages of this mode of transportation. Railway transport has advantages like high carrying capacity, lower influence by weather conditions, and lower energy consumption while disadvantages as high cost of essential facilities, difficult and expensive maintenance, lack of elasticity of urgent demands, and time consumption in organizing railway carriages (Özceylan., 2010). Among the advantages of rail transport belongs that it can carry relatively large quantities of goods, and the goods large and heavy, relatively low transport costs, environmental aspect and higher reliability compared to road transport, especially in poor weather conditions. The disadvantage is the need for transshipment for transportation "from house to house". Rail transport is suitable for the transport of bulk substrates to the medium to long distances (Cambridge, 2013).

Airway transportation: The most important advantage of this mode transportation is its speed. It is used when the speed is important, when the products are valuable and when products should be transported urgently. Its cost is much higher than the other transportation modes. But because of its speed; store costs will decrease. A disadvantage of this mode transportation is the accessibility problem. Mostly, only airway transportation is not enough to go to the desired point. Another transportation mode should be used with it. Air freight logistics is necessary for many industries and services to complete their supply chain and functions. It provides the delivery with speed, lower risk of damage, security, flexibility, and good frequency for regular destinations, yet the disadvantage is high delivery fee (Özceylan, 2010). Air carriers can be segmented into for-hire

carriers and private carriers. A private air carrier is a firm that transports company personnel or freight in planes to support its primary business. The preponderance of private air transportation is used to transport company personnel, although emergency freight is sometimes carried on private airplanes as well (Coyle et al, 2011).

According to Majerčák et al (2015), Air transport is mainly characterized by safety, high speed and high level of customer service, but its availability is limited. This fact alone may significantly extend transport "from door to door". Air transport is also considerably expensive. For these reasons, air transport is particularly suitable for transport of objects of high values for long distances. In this case, the higher cost is acceptable in view of the requirement for speed and reliability of the delivered consignments. The future tendencies of air freight development are integration with other transport modes and internationalization and alliance and merger between air transports companies. The future pattern of air freight logistics is cooperative with other transport modes, such as maritime and land transport, to provide a service base on Just-In-Time, and door-to-door (Tseng and Yue, 2005).

Seaway transportation: -Water transport is characterized especially by low-cost and high-capacity. Travel speed is in the case of water transport relatively low. The disadvantages of water transport include limited network of transport routes, as well as higher costs for loading, unloading and transshipment of goods. Water transport is suitable for the transport of consignments of large volume or large amounts of objects transported, especially over long distances, when the delivery time is not much important (Majercak et al, 2015). Products with large quantity (dry cargo, liquid, gas and goods with low value) and products in containers can be transported. It is the most used transportation mode all over the world. It is considered as most secure mode of transportation. But the speed of transport is low and distribution time is longer compared to other transportation modes.

Seaway transportation plays an important role in international freight. But its schedule is strongly affected by the weather factors. Loss and damage costs resulting from transporting by water are considered low relative to other modes because damage is not much of a concern with low valued bulk products, and losses due to delays are not serious (large inventories are often maintained by buyers). Claims involving transport of high valued goods, as in ocean service, are much higher. Substantial packaging is needed to protect goods, mainly against rough handling during the loading unloading operation (Özceylan, 2010).

Pipeline transportation: The most economically feasible products to move by pipeline are crude oil and refined petroleum products. The advantages of pipeline transport are high capacity, less effect by weather conditions, cheaper operation fee, and continuous conveyance; the disadvantages are expensive infrastructures, harder supervision, goods specialization, and regular maintenance (Özceylan, 2010).

Intermodal transportation: n today's world, intermodal transportation forms the backbone of the world trade. Contrary to conventional transportation system in which different mode of transportation operation in an independent manner, intermodal transportation aims at integrating various node and services of transportation to improve the efficiency of the whole distribution process (Bektas, 2007). According to Bierwirth (2012), Intermodal freight transport reflects the combination of two or more modes of transport (e.g., road, rail, water) within a single transport chain. Intermodal transport is the set of technologies that facilitates the transfer of loading units from one mode of transport to another. Intermodal transport is the set of technologies that facilitates the transfer of loading units from one mode of transport to another. Intermodal transfer allows end route change from a given transport mode (such as road transport) to another (such as train or ship) in order to carry larger volumes in one transport operation (Özceylan, 2010).

2.1.3. Mode and carrier selection Factors

A number of key factors are recurring in most of the articles. These are cost, transport quality and service, Product characteristics, Security, transport time, capacities and reliability. The scope and definitions of factors are varying, and are also not strictly defined in most of the papers. According to (Meixell and Norbis., 2008), Deregulation of the rail and trucking industries, implementation of innovative manufacturing strategies such as JIT, and increased emphasis on quality management have all made the transportation choice problem more complex. More factors/variables are involved in the decision, leading to the development of numerous approaches and models that not only involves multiple variables but also multiple objectives leading to compromise optimal solutions**.**

Cost

Given the recent economic downturn and slow recovery from the Great Recession, keeping costs at a minimum is still near the top of the list for many business's initiatives. This is a very important aspect of all areas within a business that will always gain a great deal of attention. Specific to

transportation, it has proven to be difficult given the current market conditions to continue reducing costs while adapting to growing volumes and shrinking capacity (Roberts, 2012). According to Floden et al. (2010), the most obvious factor that is mentioned in all articles is cost. Not surprisingly, cost is ranked very high. Cost is ranked as the most important factor in the most studies. The importance of cost is not surprising considering that the actors are commercial companies who must make a profit to survive.

The overall transportation cost includes transportation charge, loading and unloading charge and storage cost. The transportation charge is influenced by many factors. For example, if the fixed cost irrelative to the transportation volume occupies large portion in the transportation charge, the transportation frequency will influence the charge (Owuor, 2014). According to Reis, V(009), the costs of transport service include, besides the out of pocket costs, all others related with the fact of the goods are not used while the transport service takes place. These costs are for example: goods' depreciation costs, market opportunity costs or even transport risk costs. Generally, companies want to transport maximum loads with minimum costs. Cost of modes varies greatly from one type of transport service to another.

Quality of service

According Floden et al. (2010), Transport quality is a very wide factor that could include many things, such as time, reliability, frequency, risk of damage, etc. Some studies include a number of these factors separately, while other studies use the term transport quality as a single factor. Transport quality is ranked as most important by all studies that include it as a single factor. If the decision has been made to transport something, it is fair to assume that one of the basic requirements of the transport is that it should deliver the goods in a proper way. It is difficult to imagine any situation where a transport buyer would request a low transport quality for its transport.

The importance of these quality factors became so relevant for the success and competitiveness of companies that have in some cases overthrown the price of transport as the most relevant factor in the modal choice process. Modal choice process has therefore grown into a highly dynamic and non-linear process (Reis V, 2009). Quality and quality-related factors are also high on the list of importance. It appears that the transport choice is made in two steps. First, the transport quality is evaluated. If the quality is satisfactory, the transport choice is made almost solely based on price (Floden et al. 2010).

According to a supply chain expert, "The Internet, just-in-time operating procedures, and continuous replenishment of inventories have all contributed to customers expecting rapid processing of their requests, quick delivery, and a high degree of product availability. In regards to modal selection, service does have a very large role to play. If the mode does not meet a given level of service required by the company for a particular product, this mode simply will not be considered as an option. This, of course, is not always the case. When trying to determine whether cost or service takes precedence in carrier selection, it is a difficult decision to make. While many companies have a focus on costs, many of them take into account a carrier's service capabilities before even considering the cost (Roberts, 2012).

According to Majerčák et al, (2015), Services - currently are largely influencing decisions about the mode of transport. Complementary services include for example the exact position of items, delivery time, delays at the transport infrastructure, loading and unloading goods, the possibility of customs clearance, providing the necessary documentation, as well as various benefits provided to transporter for regular use of certain system.

Reliability and Transit time

Reliability refers to the consistency of transit times. Meeting pickup and delivery schedules enables shippers and receivers to optimize service levels and minimize stock out costs (Coyle et al., 2011). It can also be defined as on-time delivery. Reliability is ranked as one of the most important factors. The importance of reliability is different for different commodity groups and depending upon the delivery time that has been promised by the transport company Floden et al. (2010). Unreliable transit time requires the freight receiver to either increase inventory levels to guard against stock out conditions or incur stock out-related costs. Reliable service directly affects the level of modal and specific carrier demand; that is, a shipper may shift from an unreliable carrier to one that is more reliable and provides more consistent service. The customer may switch from a supplier who provides unreliable delivery service to one that is reliable, thereby impacting the transportation demand for specific carriers or specific traffic lanes (Coyle et al., 2011).

At the heart of logistics is the overriding importance of service reliability. Its success is based upon the ability to deliver freight on time with the least breakage or damage. Logistics providers often realize these objectives by utilizing the modes that are perceived as being most reliable. The least polluting modes are generally regarded as being the least reliable in terms of on-time delivery, lack

of breakage and safety. Ships and railways have inherited a reputation for poor customer satisfaction (Rodrigue et al, 2016).

The transit time is defined as the total time that elapses from when the consignor makes the goods available for dispatch until the carrier delivers the goods to the consignee. As the transit time determines the size of in-transit inventories and influences the amount of stock held by the consignee, the transit time can be expressed in terms of inventory carrying cost. Low transit time will reduce the cost of inventory in-transit and also the need to hold stock in distant markets (Owuor, 2014).

Transit time can affect the level of inventory held by both the shipper and the receiver as well as the associated carrying cost of holding that inventory. The longer the transit time, the higher the inventory levels required and the higher the carrying costs. Also, longer transit time increases the potential cost for stock outs (Coyle et al., 2011). Speed is assessed against the total time of the journey, including the periods necessary for the case of transshipments and waiting times in case of transportation "from door to door". Travel speed is currently often the most important for decision on the selection of transport mode (Majercak et al, 2015).

According to Floden et al. (2010), Transport time is considered one of the most important factors. The customer is not willing to pay more for reduced transit time, but willing to accept longer transit time for lower rates. There is also a lot of things which affect the distribution time from one point to another point. Especially, the weather, goods, roads, and the other things are directly related with the time.

Product characteristics

Transportation selection is looking at the actual physical characteristics of what is being shipped. This idea of looking at the physical characteristics and needs of a product is what creates the first threshold for modal selection, making it the primary factor taken into consideration. In terms of carrier selection, product characteristics also play an important part if the product has a special trait, such as temperature or special handling requirements. These product characteristics will automatically limit the pool of carriers the company has to select from (Roberts, 2012). Logistics and transport service providers are the most concerned with product-related attributes as they are usually in charge of the packaging, handling and the transportation of goods. The nature of the product will determine the type of packaging, the type of handling techniques and also the choice of transport mode that will be used. According to Roberts studied in USA 2012, found the primary

factors that influencing in the modal and carrier selection decision have been cost, service, product characteristics, relationships, and capacity. For *Modal Selection* the first level of choice depends on the nature of the product, it must make economic sense given product characteristics to ship on a given mode. If product characteristics allow a modal choice to exist, the decision is heavily weighted towards cost and capacity with firms being increasingly motivated, both by regulations and corporate citizenship, to factor in environmental concerns in their decision.

Security

Security is important issue that logistics managers face pertains to security in the supply chain, from the perspective of complying with new security measures put in place to reduce terrorist threats, and from the perspective of dealing with the aftermath of a terrorist attack that influences their business operation. Security factors are concerned with the safe arrival of the goods at the destination point (Owuor, 2014). It is concerned with the safety of the goods in transit. Shipments that are damaged or lost in transit can cause increased cost in the areas of inventory and/or stock outs. A damaged shipment will usually not be accepted and the buyer faces the possibility of losing a sale or stopping the production process. Increasing inventory levels to protect against stock out costs resulting from a damaged shipment causes increased inventory carrying costs (Coyle et al., 2011).

Capability

Based on the physical and marketing characteristics of the freight, shippers might have unique demands for transportation, facilities, and communication—for example, products requiring controlled temperature that necessitate the use of a refrigerated vehicle; time sensitive shipments which need state-of-the-art communications systems to monitor their exact location and arrival times; or even the cubic capacity for a large piece of equipment. Marketing considerations might dictate that the carriers provide freight consolidation and break-bulk facilities to lower freight costs and transit time. These are just a few of the many and varied demands placed on transportation service providers. Their capability to provide these required services are often instrumental in getting the business (Coyle et al., 2011). According to Roberts (2012), with costs rising and labor on the decline, shippers fear that capacity will become the most important issue in the coming years in terms of modal and carrier selection. This is why so many companies have turned towards the development of relationships to hopefully mitigate the risk of losing their much-needed capacity.

Information technology

Information technology is one of the most powerful enable the company rapidly change the way in operates. Each evolution step in technology from the telephone, to the fax and now the Internet has a major impact not just the company conduct in business, but the role of the company itself. Information technology often enhances customer value in ways that are not captured by performance measures such as improved delivery time and service. For the effective management of logistics processes, it is vital that the performance measurements report relevant and timely information, given the continuously increasing volume of information that logistics professionals must consider making decisions (Iankoulova, 2012).

According to Sauvage (2003) argued that in a highly competitive business characterized by time compression, technological effort becomes a critical variable and a significant tool for differentiation of logistics services. With real time communication and information sharing capabilities, track and trace capabilities and the electronic competent can approach the customer to use company services. Stough, 2001 state that this has forced third party logistics (3PLs) to look for accurate and real-time information on the status of the entire shipment process to increase planning capacity and to improve customer service levels. The use of specific technological capabilities may facilitate more effective integration across companies in the Information and communications technology supply chain. For 3PLs, Information and communications technology capabilities can assure the rapid customization of products and maintain competitive lead-times. 3PL must be flexible and able to provide a variety of services based on the customer's demand. The result is that competitive advantage in the 3PL industry will be based increasingly on creating value for customers as many value-added activities are directly or indirectly dependent on information and communication technology applications (Crowley, 1998).

2.2. Empirical Literature review

A study of factors influencing transport buyers choice of transport service in Europe by Floden,et, al (2010) finds that the important core factors in choosing transport services are cost, transport time, reliability and transport quality. After ensuring that the basic transport quality requirements are met (e.g. on-time deliveries, transport damages, transport times), most of the decisions are made based on

price. But the willingness to pay for lower environmental impact is low. The scope and definitions of factors are varying, and are also not strictly defined in most of the papers.

According to Roberts, (2012), the primary factors that influencing in the modal and carrier selection decision have been cost, service, product characteristics, relationships, and capacity. Roberts prioritized the factor for mode and carrier selection. For *Modal Selection* the first level of choice depends on the nature of the product, it must make economic sense given product characteristics to ship on a given mode. If product characteristics allow a modal choice to exist, the decision is heavily weighted towards cost and capacity with firms being increasingly motivated, both by regulations and corporate citizenship, to factor in environmental concerns in their decision. For *Carrier Selection*, the primary deciding factor tends to be service, with many shippers limiting the pool of carriers they can choose from based on a set service level threshold. The issue of contracting capacity is a major factor that will play a part in the future of carrier selection. A prevalent yet unexpected trend is for shippers to form strong relationships with carriers in an effort to mitigate the ill effects of a volatile, highly competitive globalizing market. These relationships are often seen to take precedence over the all-important factor of cost.

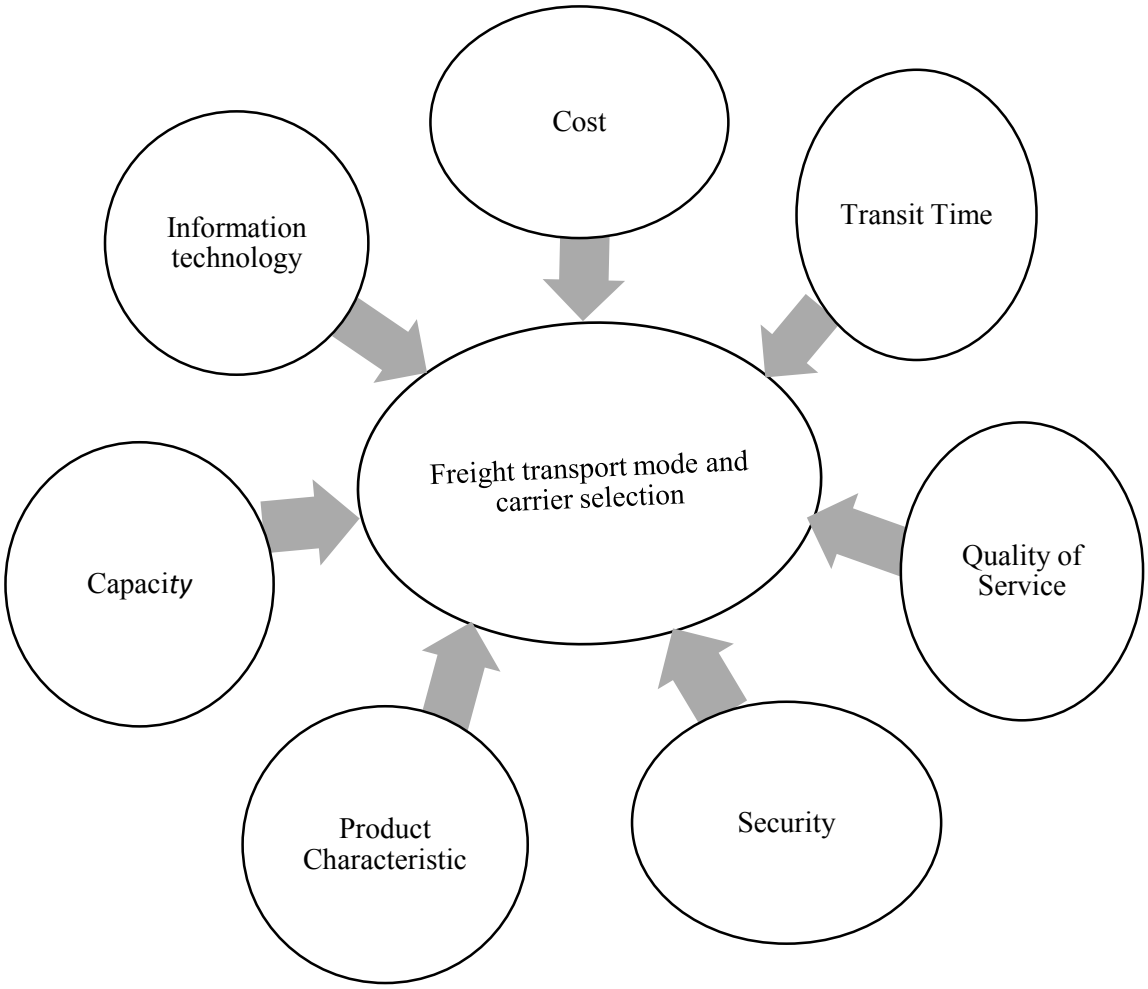
Another study conducted by Özceylan, in Turkey (2010), recognizes that when an organization is confronted with choosing the best transportation mode to deliver or supply a good or service, the decision can often be very complex. Transportation mode selection problems are multi-objective problems which have many qualitative and quantitative concerns in logistics. In general, because decision-makers fail to rank correctly the relative accuracy of elicitation methods, there seems to be a need to direct decision-makers toward better choice of techniques. In cost criteria, the most suitable transportation mode is found seaway (0.42), and respectively, pipeline, railway, intermodal, motorway and airway, in traveling time criteria, airway is the best option of selecting the best transportation mode with a priority of 0.46. Pipeline is also a major factor with an importance priority of 0.20. Seaway is the most unsuitable option with a priority of 0.032. And in safety criteria, motorway is the safest option for selecting the best transportation mode with a priority of 0.43. Airway is also a major factor with an importance priority of 0.24. Railway is the most unsuitable option with a priority of 0.039

2.3. Conceptual Framework and operationalization of variables

Based on the reviewed literatures the conceptual framework for the factors influencing transportation mode and carrier selection decision is developed. The framework comprises the six factors required for assessing the factors that influence transportation mode and carrier selection decision: cost, transit time, quality of service, security, product characteristics, and capacity. These variables are going to be used in the analysis and discussion of the research findings.

The independent variables are factors which influence freight transportation mode and carrier selection decision. The dependent variable is freight transportation mode and carrier selection decision and the independent variables are cost; Transit time; quality of service; Security; Product characteristics and Capacity.

Figer2.1. Conceptual Framework



Source : Majercak et al, (2015)

Chapter Three: Research Design and Methodology

3.1. Study area

The study conducted in Addis Ababa which is the capital city of Ethiopia, seat of African Union and Economic Commission for Africa. It is located in the geographic center of the country and covers a landmass of 540 sq. km. The city is divided, administratively, into 10 sub cities and 116 woredas (Fekadu, 2013). According to central statistical agency 2012 report the city has an estimated population of 3,146,999. According to the latest Ministry of Trade and Industry (MOTI) data, there are about 53 licensed freight forwarding firms and 21 Goods-Transit and shipping agents that are members of the Association of Ethiopian Forwarding Businesses, which basically serve the international trade traffic. The study area was selected for the following reasons. Firstly, the city has more Logistics facilities than any other cities in the country. Secondly, The Addis Ababa-Djibouti railway (781 km old line of nonstandard gauge of 1067mm) is the only railway that the country owns with Djibouti (Fekadu, 2013). Finally, the poor functioning of the system in such area. For these reasons the study focused on the city government of Addis Ababa.

3.2. Research Approach and Design

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According to Kothari (2004), research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. The general objective of this research is to assessing factors influencing freight transport mode and carrier selection in case of Packtra PLC.

A descriptive design was used in this study. Descriptive research design is a scientific method which involves observing and describing the behavior of a subject without influencing it in any way (Shuttleworth, 2008). It results in a description of the state of affairs as it exists. This design was selected because the researcher wished to collect information on people's attitudes and opinions in relation to the factors that influence freight transport mode and carrier selection in the organization, with an aim to determine if these factors influence the selection process of fright transport mode and carrier on the organization.

3.3. Unit of Analysis

Unit of analysis describes the level at which the research is performed and which objects are researched (William, 2008). In this respect, people or individuals are common units of analysis. Other units of analysis are: organizations, divisions, departments, etc. The unit of analysis have an impact on sample selection, data collection, and type of conclusion that can be drawn from the research. Design consistency is achieved by matching the sample and data collection strategies to the unit of analysis (William, 2008). This study conducted by selecting organizations as a unit and the study conducted at organization level.

3.4. Population of the Study

Target population in statistics is the specific population about which information is desired. According to Ngechu (2004), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. This research sought to gain information from people involved in freight transport mode and carrier selection decision process Packtra PLC. This included manager, operation management staff, transportation management staff and air cargo and liaison department staff within the organization. The target population was the 70 staff in the organization who were directly or indirectly involved in on the freight transport and management operation. Table 3.1 shows the distribution of the target population

Table 3.1: Target Population

Category	**Target Number**	**Percentage**
Managers	5	7%
Operation management	23	33%
Transportation management	32	46%
Air Cargo and Liaison	10	14%
Total	70	100%

Source: Packtra PLC, 2017

3.5. Sample and Sampling Technique

A sample is a smaller group obtained from the accessible population to represent the whole population while sampling is the process of selecting the individuals for the study from the population (Mugenda and Mugenda, 2003). For this research a census of the whole population was done. The total number of people in the target population was significantly small. A census therefore enabled the researcher to collect a wide variety of views and hence promote reliability and validity of the data collected. The sample population is presented in Table 3.2.

Table 3.2: Sample Population

Category	**Sample number**	**Percentage**
Managers	5	7%
Operation management	23	33%
Transportation management	32	46%
Air Cargo and Liaison	10	14%
Total	70	100%

Source: Packtra PLC, 2017

3.6. Source of Data and Collection Techniques

In an attempt to assessing factors influencing freight transport mode and carrier selection decision, the researcher relied on both primary and secondary sources of data for information. Primary data was obtained through the use of structured questionnaire method of data collection. A standardized questionnaire was adapted from Banomyong, (2001) with a little modification.

All items of the questionnaires were formatted to generate close ended responses. A structured questionnaire with a 5 point Likert's scale with a probable response alternatives of (1) = not important 2= slightly important 3= moderately important 4 = very important 5=one of the most important was distributed so as to get first hand data from the respondent. The first part related to socio-demographic and economic variables which is commonly called general information, whereas the second part encompasses attributes of freight transport mode and carrier choice variables which was the basic research questions. Experts who have an experience regarding freight transport mode and carrier choice were checked.

3.7. Method of Data Analysis and Presentation

Both qualitative and quantitative data was collected, organized, classified, analyzed and interpreted in the chapter four of this paper to arrive at conclusions using the descriptive analysis method. Each question in the questionnaires were categorized based on the study's research objectives and the basis of common characteristic. The data was interpreted and analyzed through Statistical Packages for Social Studies (SPSS) version 20 and used frequency, percentages, means and standard deviation as a case deemed necessary. The findings were presented using tables and chart. The justification for the choices of these programs was that, these techniques facilitated word processing and data analysis very easy and enable for accurate pictorial presentations.

3.8. Validity and Reliability of Instruments

Validity refers to the extent to which an instrument measures what is supposed to measure (Brinkl993). Data need not only to be reliable but also true and accurate. If a measurement is valid, it is also reliable (Joppe 2000). In an attempt to ensure content validity, the questionnaires were developed on the basis of a thorough review of the existing literature concerning the area of inquiry with a little modification. In addition, the same set of questions was administered to respondents so that responses would be similar to facilitate comparison.

Reliability refers to the consistency or dependability of a measurement technique, and it is concerned with the consistency or stability of the score obtained from a measure or assessment over time and across settings or conditions. If the measurement is reliable, then there is less chance that the obtained score is due to random factors and measurement error (Geoffrey et al, 2005).

To ensure reliability, it is important to have an appropriately sized sample to achieve statistically significant and reliable results. The researcher therefore conducted a census of expert staff in the organization to ensure that the data collected was reliable. The total population was 70 people. This was deemed to be too small to subdivide further. A census of all the expert staff would also provide different perspectives to the research questions and allow the researcher to compare responses and draw more reliable conclusions. Cronbach's alpha is a coefficient of reliability that gives an unbiased estimate of data generalization. As per the result found from the collected data the overall Cronbach's alpha is 0.827 which is above the standard threshold level 0.7. An alpha coefficient of 0.7 or higher indicates that the gathered data are reliable as they have a relatively

high internal consistency and can be generalized to reflect opinions of all respondents in the target population (Zinbarg2005).

3.9. Ethical Consideration

Respondents were approached and informed about the intent of the research. Furthermore the respondent were informed that their response will be kept confidential and will be used for academic purpose only, in verbal communication and in writing. After getting the consent of the respondents, they were provided with a self-administered questionnaire designed for the purpose of this study, so that they complete and return it back. The researcher did not force customers to participate without their willing.

Chapter Four

Data analysis and Finding

This chapter deals with analyzing and presenting the fact collected by questionnaires concerning factors influencing freight transportation mode and carrier selection. The analysis of the study is structured and conducted to answer the research questions by addressing the objective of the research. The data collected via questionnaires are summarized, organized and analyzed using statistical software called Statistical package for Social Science/SPSS. Accordingly, reliability test, response rate, demographic information of respondents, findings of the survey with its detail interpretation and discussion is presented. Therefore, this section of the study contains facts and information about the factors of freight transport mode and carrier choice.

4.1. Reliability test

Reliability test has been done to check whether the scale used on the Questionnaire consistently reflect what it intends to measure or not. For the test of reliability Cronbach's alpha is used as a measure of internal scale consistency using SPSS (Statistical package for social science studies).

As per the result found from the collected data the overall Cronbach's alpha is 0.834 which is above the standard threshold level 0.7(Nunnally, 1978). This shows that the data extracted from the Questionnaire is reliable.

Table4.1 Reliability Statistics

Cronbach's Alpha	N of Items
.834	39

Source: SPSS Output (2017)

4.2. Response rate and demographic characteristics of respondents

4.2.1. Response rate

From the 70 questionnaires distributed only 61 (87.14 percent) questionnaires are filled and returned back to the researcher. The total number of questions included in the questionnaire is 46. Out of those questions 39 of them are designed in Likert five scale formats. However, the other seven questions are profile related. As argued by Sekaran (2003) a 30% response rate is considered acceptable. Therefore, the response rate, 87.14%, for this research is acceptable.

4.2.2. Demographic characteristics of respondents

Data related to their profile was collected and analyzed to know the respondent's sex, age, level of education, work experience and their income status. A percentage and frequency characteristic of the respondents is presented in the following subsequent figures and tables.

Table 4.2: Demographic characteristics of respondents

Item	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	44	72.1	72.1	72.1
	Female	17	27.9	27.9	100.0
Age Group	18 -30 years	31	50.8	50.8	50.8
	31 – 40 years	25	41.0	41.0	91.8
	41 years – 50 years	3	4.9	4.9	96.7
	above 50 years	2	3.3	3.3	100.0
Educational Level	College diploma	10	16.4	16.4	16.4
	University level	46	75.4	75.4	91.8
	Master's degree	5	8.2	8.2	100.0
Work experience	0-2	9	14.8	14.8	14.8
	3-5	33	54.1	54.1	68.9
	6-8	19	31.1	31.1	100.0
Monthly salary	Below &5000	32	52.5	52.5	52.5
	5001-10000	24	39.3	39.3	91.8
	10001-20000	5	8.2	8.2	100.0

Source: *SPSS Output (2017)*

As depicted in the above table 72.1 percent of the respondents were male and the remaining 27.9 percent were female. This implies that the study consists of more male than female respondents.
Most of the respondents' age is ranged between 18-30 years of age. As shown above 50.8% of the respondents are in the age group between 18-30 years, while 41% are between 31- 40 and the remaining 4.9% and 3.3% are between 41-50 and above 50 years of age respectively. This according to figure 4.2. Constitute a frequency of 31, 25, 3, and 2 in the respective age grouping. This indicates that most of the respondents are relatively young. 50.8% of the respondents are in the age group between 18-30 years, while 41% are between 31- 40 and the remaining 4.9% and 3.3% are group between 41- 50 and above 50 years of age respectively. This indicates that most of the respondents are relatively young.
The majority of the respondents, i.e. 16.4% and 75.4%, are diploma and degree holders respectively. This shows that around 91.8% of the sample respondents are a diploma or first degree holders. The remaining around 8.2% of the respondents are at MA\MSC degree level of education. This indicated that most of the respondents are able to understand and clearly identifies the existing situations of freight mode and carrier choice decisions making processes and its challenges. This is believed to increase the validity of the findings. Around 14.8% of the respondents have less or equal to 2 years of experience in the company, around 54.1% of them have experience ranging from 3-5 years and around 31.1% of them have experience ranging from 6-8 years. The data shows that there are no respondents who have above 9 years working experience. The result indicated that more than 80% of the respondents were above 2 years of working experience. Around 31 of respondents earn below & 5000 monthly salary, while around 25 respondents earn between 5001-10000, and the remaining (61-56) which is 5 respondents earn between10001-20000 and no respondents earned a monthly income more than 200001 birr. The result implies that majority of the respondents earn below &5000birr.

4.3. Freight transport mode and carrier choice factors

Based on the conceptual frame work of the literature factors are categorized as cost related factor, time and reliability criteria, safety and security, capacity related factor, service factors, product characteristics, information technology and decision related factors. These categories have been adapted for the purpose of this research from Banomyong, (2001) study. The respondents were asked

to consider the importance of various factors relating to the transport of their products on a five-point Likert type scale as 'one of the most important' (5), and 'very important' (4), 'moderately important' (3), 'slightly important' (2), 'not important' (1) in order from highest importance to lowest importance during freight mode choice decision making. A ranking of the most important factors in each category is also presented in the following subsequent tables.

4.3.1. Cost related factors

Table 4.3: Cost related factors

Item	1		2		3		4		5		Mean	Std. Deviation
	F	%	F	%	F	%	F	%	F	%		
Transportation Price	-	-	-	-	6	9.8	26	42.6	29	47.5	4.38	.662
Offering more flexible rates.	2	3.3	2	3.3	8	13.1	28	45.9	21	34.4	4.05	.956
Accurate shipping document	2	3.3	-	-	4	6.6	35	57.4	20	32.8	3.67	.820
Discount programs offered	4	6.6	4	6.6	20	32.8	25	41.0	8	13.1	3.48	1.026
Average Mean											3.895	0.866

Source: SPSS output (2017)

The table 4.3 above shows that in line to "transportation Price" ($\bar{x}$=4.38), 47.5% (29) of the respondents rated as 'one of the most important', 42.6% (26) ranked 'very important' and 9.8 % (6) ranked 'moderately important'. This indicates that most respondent ranked 'one of the most important'. Hence, Transportation price offered by carriers should be considered as determinants factor of freight transport mode and carrier selection.

"Offering more flexible rate" mean value ($\bar{x}$ =3.61); 18.0% (11) rated as 'one of the most important', 41.0% (25) as 'very important', 27.9% (17) as 'moderately important', 9.8% (6) as 'slightly important' and 3.3% (2) as 'no important' The results indicated that most of the respondents were ranked 'the most important' 59% (36). And accuracy of shipping documents average value score ($\bar{x}$=3.85); 32.8% (20) rated as 'one of the most important', 57.4% (35) 'very important', 6.6% (4) 'moderately important', and 3.3% (2) as 'no important'. The result of data analysis shows that 'Issuing accurate document' ranked as the important cost factor for the company.

"Discount programs offered" ($\bar{x}$=3.48), 13.1% (8) of the respondents rated as 'one of most the important', 41.0% (25) ranked 'very important'32.8 %(20) ranked 'moderately important', 6.6% (4) ranked as 'slightly important' and 6.6% (4) ranked as 'no important'. This indicates that most respondent ranked 'very important'. Hence, discount programs offered by carriers should be considered as determinants of freight transport mode and carrier choice. From the given importance rank alternatives most of the respondents rated 'one of the most important' and very important', this implies that the attributes of cost related factors are important to companies of Packtra.

4.3.2. Time and reliability criteria.

Table 4.4: Time and reliability criteria

Item	1		2		3		4		5		Mean	Std. Deviation
	F	%	F	%	F	%	F	%	F	%		
Reliability of on-time delivery	-	-	-	-	2	3.3	11	18.0	48	78.7	4.75	.505
Reliability of on-time pickup	2	3.3	3	4.9	1	1.6	27	44.3	28	45.9	4.25	.960
Total transit/lead time for the shipment	3	4.9	4	6.6	16	26.2	24	39.3	14	23.0	3.69	1.057
Handling expedited shipments	-	-	6	9.8	13	21.3	27	44.3	15	24.6	3.84	.916
Average mean											4.2525	0.68475

Source: *SPSS result (2017)*

In Table above 4.4 it found that the calculated mean value to reliability of on time delivery ($\bar{x}$ =4.75). The percentage /frequency value of importance rated to reliability of on time delivery is 78.7 %(48) as 'one of the most important', 18.0% (11) as 'very important', 3.3 %(2) as moderately important, and non-of respondent rated as slightly important and no important. Reliability of on time pickup ($\bar{x}$=4.25), 'one of the most important' 45.9% (28), 'very important' 44.3% (27), 'moderately important' 1.6 % (1) 'slightly important' 4.9% (3), 'not important' 3.3% (2). Lead time /total transit time for shipment ($\bar{x}$=3.69), 'one of the most important' 23.0% (14), 'very

important' 39.3% (24), 'moderately important' 26.2%(16), 'slightly important' 6.6% (4), 'not important' 4.9% (3).And handling expedite shipment ($\bar{x}$=3.84), 'one of the most important' 24.6 %(15), 'very important' 44.3% (27), 'moderately important' 21.3%(6)and 'not important' 9.8% (6).96.7% (59) of respondents were rated reliability of on time delivery as most determinant factor. The results indicated that 'reliability of on time delivery', 'reliability of on time pickup' and 'lead time/total transit time for shipment' considered being one of the most determinant factors.

4.3.3. Safety and Security Related Factor

Table 4.5: Safety and Security Related Factor

Item	1		2		3		4		5		Mean	Std. Deviation
	F	%	F	%	F	%	F	%	F	%		
Freight damage experience	11	18.0	9	14.8	21	34.4	17	27.9	3	4.9	2.87	1.162
Loss/damage claims settlement	5	8.2	13	21.3	24	39.3	16	26.2	3	4.9	2.98	1.008
Infrastructure availability	3	4.9	11	18.0	32	52.5	10	16.4	5	8.2	3.05	.939
Average mean											2.96667	1..36333

Source: *SPSS result (2017).*

In the table 4.5 above it found that "freight damage experience" ($\bar{x}$ = 2.87), "loss/damage claims settlement" ($\bar{x}$= 2.98) and "infrastructure availability" ($\bar{x}$= 3.05) were considered as "moderately important" factors for freight transport mode and carrier selection. Only32.8 %(20) of respondents were rated "freight damage experience" as very important factor and 67.2 %(41) rated least important. 31.1 %(19) of respondents were determined "Loss/damage claims settlement" as very important factor. But 68.9 %(42) rated as least important. 24.6 % (15) respondents were rated "infrastructure availability" as very important factor and 75.4 (46) ranked least important. From the given importance rank alternatives most of the respondents rated 'moderately important', this implies that the attributes of safety and security related factors are not considered as very important attributes to companies of Packtra.

4.3.4. Capacity related factor

Table 4.6: Capacity related factor

Item	1		2		3		4		5		Mean	Std. Deviation
	F	%	F	%	F	%	F	%	F	%		
Equipment availability	-	-	-	-	3	4.9	36	59.0	22	36.1	4.31	.564
Transportation equipment designed to facilitate easy and fast loading and unloading	-	-	-	-	14	23.0	24	39.3	23	37.7	4.15	.771
Ability to handle special products	-	-	2	3.3	14	23.0	34	55.7	11	18.0	3.89	.733
Geographic coverage	-	-	3	4.9	24	39.3	19	31.1	15	24.6	3.75	.888
Capacity Of Shipment	-	-	-	-	2	3.3	30	49.2	29	47.5	4.44	.563
Average mean											4.108	0.7038

Source: *SPSS output (2017)*

Table 4.6 presents the respondents' views on how capacity related factors influenced mode and carrier selection. The data analyzed showed that 'equipment availability' ($\bar{x}$=4.31), 95.1 %(58) of respondents were rated as 'one of the most important' determinants of carrier choice, while the remaining 4.9% (3) ranked as least important. 'Transportation equipment designed to facilitate easy and fast loading and unloading' ($\bar{x}$=4.15), 77 % (47) of respondents were rated as 'very important' determinant factor. The other 23% (14) ranked as 'moderately important'. 'ability to handle special products' ($\bar{x}$=3.89), 66.7 %(45) of respondents were rated as 'one of the most important' determinants of carrier choice, while the remaining 26.3% (16) ranked as least important. 'Geographic coverage' ($\bar{x}$=3.75), 55.7 % (34) of respondents were rated as 'very important' determinant factor. The other 44.3% (26) ranked as least important. And 'capacity of shipment' ($\bar{x}$=3.89), 96.7% (59) of respondents were rated as 'very important' determinant factor, while the remaining 3.3% (2) ranked as least important. This indicated that respondents were relatively considered the importance of "equipment availability' and 'capacity of shipment'. Hence, it considered as one of the important determinants factor.

4.3.5. Service Related factors

Table 4.7: Service Related factors

Item	1		2		3		4		5		Mean	Std. Deviation
	F	%	F	%	F	%	F	%	F	%		
Door- to –door service	-	-	-	-	4	6.6	18	29.5	39	63.9	4.57	.618
Flexibility of service	-	-	-	-	4	6.6	21	34.4	36	59.0	4.52	.622
Reputations for dependability	5	8.2	4	6.6	32	52.5	17	27.9	3	4.9	3.15	.928
Urgency Of the Product	-	-	-	-	8	13.1	33	54.1	20	32.8	4.20	.654
Monitoring goods in transit	-	-	-	-	2	3.3	44	72.1	15	24.6	4.21	.487
Provision of additional services	-	-	5	8.2	35	57.4	13	21.3	8	13.1	3.39	.822
Shipment frequency	2	3.3	1	1.6	23	37.7	22	36.1	13	21.3	3.70	.937
Distance of Shipment / long haul services.	2	3.3	3	4.9	20	32.8	23	37.7	13	21.3	3.69	.975
Multimodal and unimodal transport service	2	3.3	3	4.9	4	6.6	25	41.0	27	44.3	4.18	.992
Average mean											3.956667	0.781667

Source: *SPSS result (2017)*

The table 4.6 above it shows that respondents viewed most service oriented criteria to be important. Door- to –door service ($\bar{x}$=4.57), 93.4 % (57) of respondents were rated as 'one of the most important' determinants of carrier choice, while the remaining 6.6% (4) ranked as least important. Flexibility of service ($\bar{x}$=4.15), 93.4 % (57) of respondents were rated as 'one of the most important' determinants of carrier choice, while the remaining 6.6% (4) ranked as least important. Urgency of the product ($\bar{x}$=4.20), 86.9 % (53) of respondents were rated as 'one of the most important' determinants of carrier choice, while the remaining 13.1% (8) ranked as least important factor. Monitoring goods in transit ($\bar{x}$=4.21), 96.7 % (59) of respondents were rated as 'one of the most important' determinants of carrier choice, while the remaining 3.3% (2) ranked as least important factor. Distance of Shipment / long haul services ($\bar{x}$=3.69), 59 % (36) of respondents were rated as 'one of the most important' determinants of carrier choice, while the

remaining 41% (25) ranked as least important. And multimodal and unimodal transport service ($\bar{x}$=4.18), 85.3 % (52) of respondents were rated as 'one of the most important' determinants of carrier choice, while the remaining 14.8% (9) ranked as least important. While ease of 'reputations for dependability' ($\bar{x}$=3.15), and 'shipment frequency' ($\bar{x}$ =3.70) rated as least important factors. This indicated that majority of the respondents were not considered the importance of dependability and shipment frequency' in freight transport mode and carrier selection practice.

4.3.6. Product Characteristics Related Factors

Table 4.8: Product characteristics related factors

Item	1		2		3		4		5		Mean	Std. Deviation
	F	%	F	%	F	%	F	%	F	%		
Special handling characteristics	2	3.3	-	-	3	4.9	34	55.7	22	36.1	4.21	.819
Package characteristics	2	3.3	-	-	1	1.6	37	60.7	21	34.4	4.23	.783
Value of the Product	4	6.6	-	-	-	-	17	27.9	40	65.6	4.46	1.026
Consignment weight	4	6.6	1	1.6	10	16.4	34	55.7	12	19.7	3.80	.997
Perishability of the Product	8	13.1	2	3.3	1	1.6	16	26.2	34	55.7	4.08	1.382
Average mean											4.156	1.0014

***Source**: SPSS output (2017)*

In the table 4.8 above it is found that "special handling characteristics" ($\bar{x}$ = 4.21), "package characteristics" ($\bar{x}$ = 4.23), "value of the product" ($\bar{x}$= 4.46), 'consignment weight' ($\bar{x}$ = 3.80), and 'perishability of the product' ($\bar{x}$ = 3.80), were considered as very important factors for freight transport mode and carrier selection. 91.8 %(58) of respondents were rated "special handling characteristics" as very important factor and 8.2 %(5) rated least important. 95.1 %(58) of respondents were determined "package characteristic" as very important factor. But 4.9 %(3) rated as least important. 93.4 % (57) respondents were rated "value of the product" as very important factor and 6.6% (4) ranked least important. 75.4 % (46) respondents were rated "consignment weight" as very important factor and 24.6% (15) ranked least important. And 81.9 % (50) respondents were rated "perishability of the product'" as very important factor and 18.1%

(11) ranked least important. From the given importance rank alternatives most of the respondents rated 'very important', this implies that the attributes of product characteristics related factors are considered as a highly rated factors to companies of Packtra. Logistics and transport service providers are the mostly concerned with product-related attributes as they are usually in charge of the packaging, handling and the transportation of goods.

4.3.7. Information Technology Related Factors.

Table 4.9: Information Technology Related Factors

Item	1		2		3		4		5		Mean	Std. Deviation
	F	%	F	%	F	%	F	%	F	%		
Computerized billing and tracing services	-	-	1	1.6	6	9.8	37	60.7	17	27.9	4.15	.654
Web Enhanced Electronic Data Interchange (EDI)	-	-	-	-	29	47.5	18	29.5	14	23.0	3.75	.809
Controllability /traceability	-	-	4	6.6	20	32.8	25	41.0	12	19.7	3.74	.854
Average mean											3.88	0.772333

***Source**: SPSS output (2017*)

The table 4.9 above it illustrates that 'computerized billing and tracing services' ($\bar{x}$=4.15) and 'controllability/ traceability' ($\bar{x}$=3.74) considered as very important determinants of mode and carrier choice factor. But 'Web enhanced electronic data interchange (EDI)' ($\bar{x}$=3.75) was rated relatively least important by respondents. This implies that majority of the respondents were neither understood the importance of EDI nor little aware about the importance of the EDI service.

4.3.8. Decision related factors

Table 4.10: Decision related factors

Item	1		2		3		4		5		Mean	Std. Deviation
	F	%	F	%	F	%	F	%	F	%		
Marketing strategy	5	8.2	13	21.3	37	60.7	6	9.8	-	-	2.72	.756
Stockholding policy/ Inventory	11	18.0	14	23.0	21	34.4	14	23.0	-	-	2.69	1.119
Size of firm	15	24.6	18	29.5	21	34.4	6	9.8	1	1.6	2.34	1.015
Management/organization structure	5	8.2	23	37.7	19	31.1	14	23.0	-	-	2.69	.923
Purchasing Contract	-	-	4	6.6	-	-	35	57.4	22	36.1	4.23	.761
Average mean											2.934	0.9148

Source: *SPSS output (2017)*

In the Table 4.10: it found that "marketing strategy" ($\bar{x}$=2.72), "stockholding policy/ inventory" ($\bar{x}$=2.69), "size of firm" ($\bar{x}$=2.34), and "management/organization structure" ($\bar{x}$=2.69) are considered least preferred determinants factor based on mean score value. The mean score value indicated that "purchasing contract" considered as very important factor.

4.4 The relative importance of factors

From the results of descriptive statistics the relative importance of factors for freight transport mode and carrier selection is described in below table.

Table 4.11: average mean of factors

Factors	Average mean
Time and reliability criteria.	4.2525
Product Characteristics Related Factors	4.156
Capacity related factor	4.108
Service Related factors	3.956667
Cost related factors	3.895
Information Technology Related Factors.	3.88
Safety and Security Related Factor	2.96667
Decision related factors	2.934

Source: *SPSS output (2017)*

The above table indicate that time and reliability criteria, product characteristics and capacity related factor are the three major factors with mean score value 4.2525, 4.156, 4.108 respectively are the highly determinants of freight transport mode and carrier selection decision making process. Service related factors, cost related factors and information technology related factors with mean score value 3.956667, 3.895 and 3.88 respectively also considered as important factor. But safety and security related factors with mean score value 2.96667 and decision related factors with mean score value 2.934 are ranked relatively less important to freight transport mode and carrier selection.

4.5 Discussion of the findings

The result of this study showed that transport price and offering more flexible rate are considered as important factors. Similarly, accuracy of shipping documentation is considered to be of importance along with clearing of goods in customs. If, there are discrepancies within the documents, the importer may not be able to clear customs and the logistics service provider may not be able to handle the goods for its clients, which means it has implication on delivery delays and high transport costs. However, accuracy of documentation is relatively less considered as important factor than other cost related factor. It is observed that majority of the respondent felt that the attributes of cost related factors are important to freight transport mode and carrier selection process. This, accords with (Floden et al. 2010), claims that the most obvious factor that is mentioned in all articles is cost. Not surprisingly, cost is ranked very high. Cost is ranked as the most important factor in the most studies.

The result of this study also revealed that, the three most important attribute in Packtra relating to reliability and timeliness of service are reliability of on time delivery, reliability of on time pickup, and total transit time/lead time for shipments. This study finding is similar with (Flodenet al, 2010) reliability and transport time rated as the top factors in this regard. Reliability of on time delivery, reliability of on time pickup, lead time/ total transit time for shipment rated by respondents were generated mean score value $\bar{x}$=4.75, $\bar{x}$=4.49, $\bar{x}$=3.93 respectively. Handling expedite shipment is also considered as important factors. This indicate that majority of respondents believed that reliability of transit time is the most important variable influencing freight transport.

Alongside the security related factor freight damage experience, Loss/damage claims settlement and infrastructure availability is considered as determinant factor. The data analyzed found that security issues are on average less considered as determinant factor. The study conducted by Owuor, (2014) showed that security factors are concerned with the safe arrival of the goods at the destination point. Shipments that are damaged or lost in transit can cause increased cost in the areas of inventory and/or stock outs. However security related factors being considered least preferred determinants factors of freight mode and carrier choice factor in Packtra.

The result of this study also revealed that, The three most important attribute in Packtra relating to capacity are equipment availability, transportation equipment designed to facilitate easy and fast loading and unloading and capacity of shipment are considered as important factors. While geographic coverage and ability to handle special products are considered as relatively least important factors. The issue of contracting capacity is a major factor that will play a part in the future of carrier selection. According to Roberts (2012), with costs rising and labor on the decline, shippers fear that capacity will become the most important issue in the coming years in terms of modal and carrier selection. This is why so many companies have turned towards the development of relationships to hopefully mitigate the risk of losing their much-needed capacity.

The respondents' presents their views on how service related factors influenced mode and carrier selection. The data analyzed showed that door- to –door service, flexibility of service, urgency of the product, monitoring goods in transit, distance of Shipment / long haul services and multimodal and unimodal transport service are the most preferred service related determinants factors of freight transport mode and carrier choice factor. But reputations for dependability and shipment frequency were least preferred determinants of freight transport mode and carrier choice factor. Interestingly, transport service quality is ranked as most important by all studies including those that considered it as a single factor. As in (Floden et al. 2010) if the decision has been made to transport something, it is fair to assume that one of the basic requirements of the transport is that it should deliver the goods in a proper way.

The majority of the respondents rated product characteristics related factor as one of the most important factor to freight transport mode and carrier selection process. Logistics and transport service providers are the most concerned with product-related attributes as they are usually in charge of the packaging, handling and the transportation of goods. The study conducted by

(Roberts, 2012) showed transportation selection is looking at the actual physical characteristics of what is being shipped. This idea of looking at the physical characteristics and needs of a product is what creates the first threshold for modal selection, making it the primary factor taken into consideration. In terms of carrier selection, product characteristics also play an important part if the product has a special trait, such as temperature or special handling requirements. Computerized billing and tracing service rated as important factors of freight transport mode and carrier choice. However controllability/ traceability and Web enhanced electronic data interchange (EDI being considered least preferred determinants factors of freight mode and carrier choice factor. This finding is also similar with Banomyong, (2001).

The data analyzed showed that marketing strategy, stockholding policy/ Inventory, size of firm and management/ organization structure being considered least preferred determinants of freight mode and carrier choice factor. But purchasing Contract rated as determinant factors. Marketing considerations might dictate that the carriers provide freight consolidation and break-bulk facilities to lower freight costs and transit time. These are just a few of the many and varied demands placed on transportation service providers. However marketing strategy and stockholding policy/ Inventory being considered least preferred determinants factors of freight mode and carrier choice factor. The study conducted by Banomyong, (2001) showed that marketing strategy is seen as the most important factor with a mean of 3.66 and Stockholding policy is the second most important attribute.

The rank of the factors based on average mean of importance to freight transport mode and carrier selection indicate that time and reliability criteria, product characteristics and capacity related factor are ranked first, second and third respectively. Service related factors, cost related factors and information technology related factors also considered as important factor. But safety and security related and decision related factors are ranked relatively less important to freight transport mode and carrier selection.

CHAPTER FIVE:

Summary of Finding, Conclusion and Recommendation

5.1 Summary of the findings

Based on the report provided under the chapter four, the summaries of findings are given to the readers know and reach about the key results of this study. For this study, data were collected from permanent employee of Packtra Plc based on the questionnaires distributed to 70 respondents. Out of the 70 respondents, 61 had returned the questionnaires. Consequently, descriptive statistics were used to analyze the data collected from the respondents. Frequencies, percentages, mean and cumulative scores were used to analyze the data. The study used the categorized factors to assess the factors influencing freight transport mode and carrier selection process at Packtra. These were factors cost related factor, time and reliability criteria, safety and security, capacity related factor, service factors, product characteristics, information technology and decision related factors.

The attributes of time and reliability related and product characteristics related factors are considered as a highly rated factors to companies of Packtra. Transport price and offering more flexible rate are considered as important factors. However, Accuracy of documentation is relatively less considered as important factor than other cost related factor. In Packtra relating to capacity attributes are equipment availability, transportation equipment designed to facilitate easy and fast loading and unloading and capacity of shipment are considered as important factors. Freight damage experience, Loss/damage claims settlement and infrastructure availability are less considered as determinant factor by respondent.

Door - to - door service, flexibility of service, urgency of the product, monitoring goods in transit, distance of Shipment / long haul services and multimodal and unimodal transport service are the most preferred service related determinants factors of freight transport mode and carrier choice factor. But reputations for dependability and shipment frequency were least preferred determinants of freight transport mode and carrier choice factor. Security and safety, decision related factors and controllability or traceability of freight transport determinant criteria was less confederation in organization.

5.2. Conclusion

According to the respondents, this report describing factor influencing freight transport mode and carrier choice with a particular emphasis on Packtra Plc. There are a number of factors that organization take into consideration when making freight transport modal and carrier selection decision. Among this the primary factors that have stood out during this research have been that reliability and transit time, capacity, product characteristics, transportation price and purchasing contract. Multimodal freight transport mode is one of the dominant modes of transportation in the case of Packtra Plc.

This report confirms that reliability of on time delivery, reliability of on time pickup, total transit shipment /lead time of shipment, capacity and product characteristics related factors are most important determinants factors to freight transport mode and carrier selection in Packtra. Respondents were given more weight to service criteria rather than direct transport costs. The importance of security and safety, decision related factors and controllability or traceability of freight transport determinant criteria was less.

5.3. Recommendations

Packtra Plc managers and freight transport service selection decision makers need to understand how cost effective and efficient movement of given product is relevant for the successfulness of an industries or companies. Based on the assessment made on factors influencing freight transport mode and carrier choice, the following points were pointed out to need attention:

The issues of security are very important for the reliability and safe arrivals of goods and services. It is concerned with the wellbeing of the goods in transit. Shipments that are damaged or lost in transit can cause increased cost in the areas of inventory and/or stock outs. A damaged shipment will usually not be accepted and the buyer faces the possibility of losing a sale or stopping the production process. Increasing inventory levels to protect against stock out costs resulting from a damaged shipment causes increased inventory carrying costs. Companies should consider the issues of security seriously.

Multimodal transport services are very important by reducing transit time and unnecessary costs. Hence, enterprises should consider multimodal transport service at time of freight mode and carrier selecting processes.

The issue of contracting capacity is a major factor that will play a part in the future of carrier selection. Without the availability of transport equipment selecting a given mode or carrier is irrelevant. Consequently, the organizations should consider as one of the most determinant factor.
Computerized billing and tracing service rated as important factors of freight transport mode and carrier choice. Controllability/ traceability of the service should be considered during freight carrier and mode choice. Information technology is significant not only for freight transportation but also to overall supply chain. Therefore, companies should consider the importance of information technology. Accuracy of documentation' is considered to be of importance along with clearing of goods in customs. If, there are discrepancies within the documents, the importer may not be able to clear customs and the logistics service provider may not be able to handle the goods for its clients, which means it has implication on delivery delays and high transport costs. The detailed freight transport mode and carrier choice determinants criteria should be compiled and ranked in order to further assess and quantify relevant mode and carrier choice criteria.

5.4. Suggestions of the study

There is need for further research on the problems experienced by organizations as they deal with the freight transportation service. This information will enable other organizations plan for and think about how to mitigate similar problems. There is also need to investigate the practices adopted by organizations in a view to determine their effectiveness in the process. This will facilitate improvement of processes and hence and improvement in the operational efficiency and effectiveness of organizations.

Reference

Banomyong, R. (2001). International Freight Transport Choices for Lao PDR: The Dilemma of a less- Developed and Land-Locked Country.

Bektas, T. and Gabriel. C.T. (2007). A Brief Overview of International Transportation. Interunviversity Research Center on Enterprise Networks, Logistics and Transpoetation (CIRRELT).

Bierwirth, C., Kirschstein. T. and Meisel, F., (2012). On Transport Service Selection in intermodal Rail/Road Distribution Networks. Official Open Access Journal of VHB, Vol 5, Issue 2, pp 198-219

Cambrige, Systematics, (2013). Freight Transportation Modal Shares: Scenarios for a low-Carbon Future. Transportation Energy Futures Series.

Coyle, J., Novack. R. A., Gibson. B. J., and Edward J. Bardi. E. J., (2011). Transportation: A Supply Chain Perspective, Seventh edition. South-Western Cengage Learning.

Chopra, S. and Meindl, P. (2001). Supply Chain Management: Strategy, Planning and Operation. (3rd edn.). Upper Saddle River, New-Jersey: Pearson Education Inc.

Chinniah, A and Kalimuthu. K (2014). A Study on Problems and Prospects of Transport in Ethiopia- Special Reference with Auto Rickshaw's (Bajaj) in Hawassa City, SNNPRS,

Crowley, A.G. (1998), "Virtual logistics: transport in the marketspace", International Journal of Physical Distribution & Logistics Management, Vol. 28, No. 7, pp. 547-574.

EastAfrica. IFSMRC AIJRM Vol-02, Issue-03 Creswell. J, (2009). Research Design Qualitative, quantitative and Mixed Method Approaches (3rd Edition). UNIVERSITY OF NEBRASKA-LINCOLN, SAGE Publications

Fekadu, M. Debela (2013). Logistics Practices in Ethiopia. Independent thesis SUAS, Swedish University of Agricultural Sciences, 1654-9392, Uppsala

FLODEN, J., BÄRTHEL.F and SORKINA.E, (2010). Factors influencing transport buyersChoice of transport service - A European literature review. Lisbon, Portugal

Joppe, G. (2000). Testing reliability and validity of research instruments. Journalof American academy of Business Cambridge. Vol. 4. No.1/2, pp.49-54.

Kothari, C.R, (2004), Research Methodology Methods and Techniques. New Age International (P) Ltd.

Kumar, R. (2011). Research methodology (3rd Ed). Research Methodology: a step-by-step guide for beginners. SAGE Publications Ltd,

Kveiborg, O. (2005). Linking international trade and transport: What are the determining? Factors? A paper presented at the 45th ERSA Conference. Amsterdam: Danish Transport Research Institute.

Iankoulova, l, (2012). Measuring the performance of a transportation network sharing cooperation between logistics companies. Master of Science in Business Information Technology School of Management and Governance University of Twente, Enschede,The Netherlands

Majercak, J, Kudlac. S, and Panak M, (2015). Choosing the Right Mode of Transportation in Freight Transportation. Department of Railway Transport, University of Zilina, Vol X, Iss 4

Marczyk, G, DeMatteo. D and Festinger. D (2005). Essentials of Research Design and Methodology. John Wiley and Sons, Inc. Hoboken, New Jersey, Canada

Meixell, M. J and Norbis. M, (2008). A review of the transportation mode choice and carrier selection literature. The International Journal of Logistics Management Vol. 19, pp. 183-211

Mugenda, O. M. &Mugenda, A. G. (2008). Research methodology (2nd Ed). Research Methods; Quantitative and Qualitative Approaches. Nairobi Acts Press.

Nunnally, J.C., (1978). Psychometric Theory,2nd ed., New York: McGraw-Hill.

Owuor, S.O. (2014). Determinants of Choice of Transportation Mode for White Petroleum by Oil Marketing Companies in Kenya. IOSRJournal of Business and Management, Vol 16, Iss 2, PP 135-148

Özceylan, E. (2010). A Decision Support System to compare the Transportation Modes in logistics. Lean Thinking, Vol 1, Iss 1.

Pereira, D., Geraldo.V. J, Eduardo A. J and Silva.R, Elisangela, (2015). Assessing carriers' logistical performance indicator by shippers in the São Paulo Metropolitan Area. Journal of transport Literature.

Rancourt, M. E, Bellavance. F and Goentzel. J, (2013). Market A nalysis and transportation Procurment for Food aid in Ethiopia. Interunviversity Research Center on Enterprise Networks, Logistics and Transpoetation (CIRRELT).

Reis, V. (2009). Modal Choice of Freight Transport Services. Development of cargo business in combination airlines: strategy and instrument. PhD Thesis, submitted.

Roberts, K (2012). Key Factorsand Trends in Transportation Mode and Carrier Selection.University of Tennessee Honors Thesis Projects.

Sathaye, N., Yuwei. Li, Horvath. A and Madanat. S, (2006). The Environmental Impacts of logistics Systems and Options for Mitigation. Working Paper.

Sauvage, T. (2003). The relationship between technology and logistics third-party providers, International Journal of Physical Distribution & Logistics Management, Vol. 33 Issue.

Stough, R.R. (2001), "New technologies in logistics management," Brewer et al. (eds.) Handbook of Logistics and Supply Chain Management, Elsevier Science Ltd., p. 517.

Tashakkori, A & Teddlie. C. (2003). Handbook of mixed methods in social & behavioral research. Thousand Oaks, CA: Sage.

Temesgen, A, (2006). The role of the transportation sector in Ethiopia's Economic development. Economic Focus. Vol. 9 No. 4,

Tseng, Y, Yue. Y. L and Taylor M.A, (2005). The role of Transportation in Logistics Chain. Proceedings of the Eastern Asia Society for Transportation Studies. Vol. 5, pp. 1657 - 1672

Tagel. G.K, (2014). The Practices and challenges of Multimodal Transportation Operation in Ethiopia Shipping and logistics Service Enterprise. ST. Mary's University School of Graduate Students Faculty of Business.

United Nations Conference on Trade and Development (2003). Challenges and Opportunities for Fruther Improving the Transit Systems and landlocked and Transit Developing Countries. United Nations, New York and Geneva.

Uma, Sekaran (2003). Research method for business: A skill building approach, 4th edition, John Wiley & Sons.

William, M.K, (2008). Unit of Analysis. Research methods knowledge base. *www.socialresearchmethods.net/kb/**unit**anal.php*

Zinbarg, M. (2005), Research methods. (1st Edition). New Jersey: Pearson Publishers. NewJersy.

Appendix

ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE GRADUATE STUDIES DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Dear Respondent;

My name is AtitegebAyele a graduate student of Addis Ababa University School of Commerce in Department of Logistics and Supply Chain Management. I am doing my MA thesis on assessing factors influencing freight transport mode and carrier selection in partial fulfilment of the requirements for the award of the degree of master of logistics and supply chain management. The purpose of this questionnaire is to gather data for the study, and hence you are kindly requested to assist the successful completion of the study by providing the necessary information.

Your participation is entirely voluntary and the questionnaire is completely anonymous. I confirm you that the information you share will stay confidential and only used for aforementioned academic purpose and not affects you in any way. So, your genuine, frank and timely response is necessary for the success of the study.

I would like to thank you in advance for your kind cooperation and dedication of your precious time to fill this questionnaire.

For any further inquiry you can contact me via – 0913649284; E-mail- aynew12@gmail.com.

Questionnaire

General direction

After carefully reading each Question, indicate your response by ticking (√) the box which is relevant for you.

I. General information Questionnaires

1. Gender

Male☐Female ☐

2. Age

18 -30 years ☐31 – 40 years' ☐41 years – 50 years ☐above 50 years ☐

3. Marital Status

Single ☐Married ☐Divorce ☐Separated ☐Widowed☐

4. Monthly salary:

Below &5000 ☐5001-10000☐10001-20000 ☐20001-30000☐30001-

40000☐40001&above ☐

5. Highest Level of education

Attained Primary School ☐Secondary School ☐College diploma ☐

University level ☐Master's degree ☐PhD ☐

6. Work experience in current company.

0-2 ☐ 3-5 ☐ 6-8 ☐ 9 and above ☐

II. In Relation to Freight Mode and Carrier Selection Decisions, please indicate the degree/scale of importance of the factors listed below by ticking (√) in the appropriate response column.

Hint:

1 = not important
2 = slightly important
3 = moderately important
4 = very important
5 =one of the most important

	Mode and Carrier choice factors	1	2	3	4	5
Cost related factor						
1	Transportation Price					
2	Offering more flexible rates.					
3	Accurate shipping document					
4	Discount programs offered					
Time and reliability criteria						
5	Reliability of on-time delivery					
6	Reliability of on-time pickup					
7	Total transit/lead time for the shipment					
8	Handling expedited shipments					
Safety and Security Factors						
9	Freight damage experience					
10	Loss/damage claims settlement					
11	Infrastructure availability					
	Capacity related Factor					
12	Equipment availability					
13	Transportation equipment designed to facilitate easy and fast loading and unloading					
14	Ability to handle special products					
15	Geographic coverage					
16	Capacity					
	Service factors					
17	Door- to –door service					
18	Ease of claim settlement (loss or damage)					
19	Flexibility of service					

20	Reputations for dependability					
21	Urgency					
22	Monitoring goods in transit					
23	Provision of additional services					
24	Shipment frequency					
25	Distance of Shipment / long haul services.					
26	Multimodal and unimodal transport service					
	Product characteristics					
27	Special handling characteristics					
28	Package characteristics					
29	value of the Product					
30	Consignment weight					
31	Perishability					
	Information Technology					
32	Computerized billing and tracing services					
33	Web Enhanced Electronic Data Interchange (EDI)					
34	Controllability /traceability					
	Decision related factors					
35	Marketing strategy					
36	Stockholding policy/ Inventory					
37	Size of firm					
38	Management/organization structure					
39	Purchasing Contract					