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

Effect of Road Transport Infrastructure on Business Logistics performance The Case of East Africa Bottling Company

BY

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A thesis submitted to Addis Ababa University School of Commerce in partial fulfillment of the requirements for the Degree of Masters of Art in Logistics and Supply Chain Management.

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GRADUATE STUDIES

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Declaration

I, Eden Gurmessa, declare that this thesis is a result of my independent research work on the topic entitled “the effect of road transport on the performance of business logistics the case of East Africa Bottling Company.” in partial fulfillment of the requirements for the Degree of Masters of Art in Logistics and Supply Chain Management at Addis Ababa University School of commerce. This work is original in nature and has not been presented for a degree in any other University. All the references are also properly recognized.

Eden Gurmessa **Signature** **Date**

Confirmation

This is to certify that Eden Gurmessa has carried out this thesis on the topic entitled “the effect of road transport on the performance of business logistics the case of East Africa Bottling Company” under my supervision. Accordingly, I here assure that his work is appropriate and standard enough to be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management.

Fesseha Afewerk (Asst. Prof.) signature

Date

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Finally, I would also wish to express my greatest appreciation to all my family members and best friend for their support and encouragement throughout my study time.

Table of Contents

LIST OF TABLE

LIST OF FIGURE

Abstract

The ability to transport goods quickly, economically and reliably is vital to success of business and to a nation's prosperity & capacity to compete in globalized economy. The objective of this study was to analyze the road transport infrastructure effect on business logistics performance of EABC. Analysis of Road transport require determination of different dimension :consolidation, scheduling, accessibility, safety ,efficiency, route choice and degree of effect on road transport operation The problems of late delivery, high inventory level, longer time to settle back order and replaced deteriorated products on time and infrustructural problems were the critical factors that initiated this study for investigation. Both descriptive and an explanatory research design was employed with a sample of 101employees that was 80 of the response rate. A questionnaire was used as a research tool for collecting data. Available data on these factors was gathered, processed and checked for continuity and consistency. The road transport and business logistics performance data were in filled using the Five Point Likert-Scale while the Cronbach Alpha was used to check the data for reliability of measurement scale. The relationship between independent variables (road transport) and dependent variables (business logistics Performance) are also cross-checked from Pearson correlation matrix. To predict the effect of road transport on business logistics performance, single linear regression model was adopted. the independent variable was statistical significant with p-value of less than 0.05 The study concluded that achieved business logistics performance indicated that ;improved quality of road reduced lead times and inventory levels, and customer's requirement and order fulfillment haven't influenced firm performance. The overall assessment results of the model revealed that the model had satisfactory statistical power in predicting the research model. Generally, the study showed that the superior business logistics performance can be attained through quality of road improvedIt is recommended that To increase organizational business logistics performance and stockholders capital ,it is better for the organization to outsource the transport service.

Keywords: road transport, infrastructure, business logistics and performance

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The transport system is the life blood system of modern society. (Rikard Engström, 2016) Roads constitute both passenger and freight transports. The function of the road, from a freight perspective, is manifold. It is used for small shipments over short distances as well as their counterparts. Road freight is most often necessary in the beginning and in the end of the multimodal transport chain (first/last mile logistics).

The concept of logistics in early time was implemented predominately in military institutions in the way to ensure delivery of military supplies to war fronts. Bhat (2011) explains military logistics as the design and integration of all aspects of support for the operational capability of the military forces and their equipment to ensure readiness, reliability and efficiency. Through time the concept of logistics and logistics management had shown a tremendous improvement in its scope and quality of operational efficiency ultimately it has become the common concept in international manufacturing and service business activities. Currently logistics has many branches and it has been customized and used both in manufacturing and service businesses. Different books written at different times in the past put the meaning, principles and purposes of logistics and logistics management in different approaches.

However, all the principles, concepts and discussions raised have tried to convey a single message. All the efforts shown by the scholars so far have played their role for the developmental move of logistics and logistics management concepts.

The recent definitions of logistics is a process of moving and Handling goods and materials, from the beginning to the end of the production, sale process and waste disposal, to satisfy customers and add business competitiveness. It is ‘the processof anticipating customer needs and wants; acquiring the capital, materials, people, technology, and information necessary to meet those needs and wants; optimizing the goods- or service-producing network to fulfill customer requests; and utilizing the network to fulfill customer requests in a timely way’ (Tilanus, 1997)

Logistics is comprised of five interdependent activities: customer response, inventory planning and management, supply, transportation, and warehousing.

Transportation is one of the five interdependent activities of logistics. The objective of transportation is to link all pick-up and delivery -to points within the response time requirements of the customer service policy and the limitations of the transportation infrastructure at the lowest possible cost.

The ability to transport goods quickly, economically and reliably is vital to success of business and to a nation's prosperity and capacity to compete in globalized economy (Fekadu M. Debela, 2013). The economic growth of a country or a region is highly dependent on the availability of an efficient transport system.

Transport decisions directly affect the total logistics cost, costs in other functional areas of the firm, and costs within other logistics channel members. This may represent logistics management's major concern.

According to (Taylor 2005) without well-developed transportation systems; logistics could not bring its advantages into full play. Besides, a good transport system in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality. The improvement of transportation systems needs the effort from both public and private sectors. A well-operated logistics system could increase both the competitiveness of the government and enterprises.

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. 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. (Taylor 2005)

As we generalize Logistics is the process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet customers' requirements'.

In The 1950s and ‘60s, the military was the only organization using the term logistics. There was No true concept of logistics in private industry at that time. Instead departmental silos Including material handling, warehousing, machining, accounting, marketing are the norm. But now new field of integrated management practice, although coordinated logistics management that is business logistic it is the process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet customers’ requirements’. In the previous time, logistics activities have been carried out by individuals for many years. Businesses also have continually engaged in move-store (transportation-inventory) activities. The newness of the field results from the concept of coordinated management of the related activities, rather than the historical practice of managing them separately and the concept that logistics adds value to products or services that are essential to customer satisfaction and sales.

Different authors assess macro level analyses conducted to identify the road transport problems but no micro level analyses has ever been brought regarding road transport infrastructure with their undesirable consequences on the performance of manufacturing organizations with particular reference to East Africa Bottling Co.

So that such studies are very important to specific manufacturing companies like east African Bottling Co. The Coca-Cola Company was born On May 8, 1886 in Atlanta, Georgia .Coca-Cola was first bottled in Ethiopian‘s capital Addis Ababa in 1959 by the Ethiopian Bottling Share Company. In 1995, Coca-Cola bought shares in the business and in 1999 signed a joint venture agreement with the plants and in 2001 increased its share to 61% and the company changed its name to the East Africa Bottling Share Company (Nelson, Ishikawa & Geaneotes, 2009).

1.2 Statement of the problem

Transportation is the primary cost absorbing logistics activities. (Yung 2005) in his study expressed their cost will represent one-half to two-third of total logistics costs. Transport system makes goods and products movable and provides timely and regional efficacy to promote value-added under the least cost principle and is the most important economic activity among the components of business logistics systems

Transport affects the results of logistics activities and it influences production and sale in the logistics system, transportation cost could be regarded as a restriction of the objective market,

Value of transportation varies with different industries. For those products with small volume, low weight and high value, transportation cost simply occupies a very small part of sale and is less regarded; for that high volume, perishable, and low-valued products, transportation occupies a very big part of sale and affects profits more, and therefore it is more regarded.

Shijin Zhou(2011)in his study expressed Transportation adds place value to products and service. It is essential because no modern firm can operate without providing for the movement of its raw materials or its finished products. This importance is underscored by the financial strains placed on many firms by such disasters independent truckers; refusal to move goods because of rate disputes. In these circumstances, markets cannot be served, and products back up in the logistics to deteriorate or became obsolete.

As operation of East Africa bottling share Company is involved in collecting bottles back to the factory for refill. It can cause considerable cost; in such a case road transport have a great impact on other operation especially on the manufacturing activity of the company. it will hamper the whole logistics operation from end to end it will affect the stock which have an impact on holding cost, inventory management, production which results from shortage of raw material, unavailability and quality of bottles to be refilled, delivery capacity of finished goods will be affected. In the supply side the effectiveness of transportation activity will hamper the production process as production is mainly dependent on availability of raw material which in turn will affect the rest of logistics activity. If there is no efficient transportation service in the company, there will be shortage as well as excess stock available which will affect both the delivery service and also increase holding cost of the stock which finally will dissatisfy the distributer outlets as well as final consumer as the main aim of logistics is to satisfy the end customers by enhancing the logistics activity all over the chain. (Samuel, 2016)

According to (WHO,2013) report endorses a comprehensive approach to road safety, called the safe system approach, which recognizes that, as the human body is vulnerable to injury and humans will always make mistakes, the safety of all parts of the system (e.g. road users, vehicles and roads) must be improved to help minimize the impact of those mistakes. The aim of the safe system approach is to develop a road transport system that can better accommodate human error and take into consideration the vulnerability of the human body, rather than just maintaining a focus on human error.

The objective of road transport services is to form the traffic flow and road transport safe, secure, Fast, environmental friendly, orderly and regular, comfort and efficient, integrated with other Modes, accessible by all land region and support fair distribution, development and stability to Drive vehicles, to motor and to support national development with nearby cost by community.

When justify the research in which the road transport in a region or cities like Addis Ababa will affect the likely characteristics of a Cities' economy, social development, Accessibility, mobility, security and safety. Also it can give an understanding of spatial variations within a region. The research done in turkey by (Gavu Emmanuel,2012) mention that topological and geometrical complexities are involved in the navigation or movement in urban road transport . It also states that additional road connections may have complex impacts on accessibility on all locations in the network, So we have to evaluate and asses frequently the Performance of road transport in cities and when reviewed different documents there is no document which shows the performance of this road transport but in some other countries they do performance evaluation of the road transport (for example, Indonesia, Canada, Turkey) therefore a performance evaluation is needed which considers, Accessibility distribution, Safety, Efficiency, Effectiveness, and Reasonable cost and integrity with others transport mode by using those indicators the research try to evaluate the effect of the road transport on the performance of business logistics will be assessed.

Carlos G (2012); also expressed; the 21^{ST} century accepted business practices and the distribution channel structure used complete delivery. In fact, today's consumers want a wide range of options. The desires of customers have shifted from passive acceptance to active involvement in the design and delivery of specific products and services.

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)..

. Availability and Utilization of vehicles are the key characteristics of efficient and effective management of the transport system. Vehicles are very costly and ideally should be available for

95% of the time and used for paid work over 80% of this available time. But due to many factors such as delays through bad roads, border delays, weighbridge checks, customs delays at roadside and at destination, poor scheduling for loading and unloading, road accidents, single driver operation and congestion all reduce utilization (Elias W, 2011).

There is very high rate of traffic accident (first in the world) and congestion in cities and at city inlets/outlets to which freight vehicles contribute significantly. Efficient and effective logistics system needs to be put in place to solve these socio-economic problems. (*Fekadu M. Debela, 2013)*

The above listed authors assess macro level analyses conducted to identify the road transport problems and the requisite solutions aside, but no micro level analyses has ever been brought regarding effect of road transportation with their undesirable consequences on the performance of manufacturing organizations with particular reference to East Africa Bottling Co.

So that such studies are very important to specific manufacturing companies like east African Bottling Co. can identify the challenges pertinent to road transportation problems and make the required logistic choices in order to minimize the inconveniences and, thereby, improve its performance.

1.3 Research question

Based on the gaps identified in the statement of the problem part, the following research questions are identified.

1. What are effects of road transport infrastructure on business logistics performance of East Africa Bottling Co.?
2. What are the challenges posed to East Africa Bottling Co. with regard to transporting its produces via road?
3. Which performance evaluation of road transport factors has more impact on road transport operation?

1.4 Research objectives

1.4.1 General objectives

The objective of the study will be analyze the effect of road transport on the performance of business logistics

1.4.2 Specific objectives

1. To analyze the effect of road transport infrustructure on the performance of business logistics of east Africa bottling co.
2. To describe the challenges of east Africa bottling co. with regard to transporting its product via road.
3. To identify performance evaluation factor that have more impact on road transport operation.

1.5 significance of the study

This paper can help the enterprise to know the current challenges and how these challengesare affect the logistics operation. Once the enterprise knows thosechallenges, it can also apply the possible recommendations provided based on the findings obtained or formulate own actions to tackle the problems.

The research will be assist logistics managers, and transportation planners about relationships between logistics and road transport and effect of road transportation on their business logistics.And this study will contribute according to service quality how road transport can help the company to provide aproduct at right time even much more problems are still exist. Further this research paper can serve as a reference material either to students or researchers who want to undertakefurther researches on the same or related topics in future.

1.6 Delimitation/Scope of the Study

- Naturally the research topic is vast in its scope. Despite the time and budget constraint. The researcher will not address all East Africa bottling company branch found in Ethiopia.
- The geographical scope of the study focused in east Africa bottling company, Addis Ababa branch. Because the company is an international manufacturing company and

have different branches so the researcher will not address all East Africa bottling company branch found in Ethiopia .rather, the research covers located only at Addis Ababa branch.

- This study focused on effect of road transport on performance of business logistics. Not on other mods of transport. The reason for this is that road transport have different challenges and opportunity in our country Ethiopia in terms of physical distribution.

1.7 LIMITATION OF THE STUDY

The limitation of the study is the accessibility to the required data as employees in the Logistics department is too busy to provide the necessary information in felling the questionnaire .

1.8 **Organizations of the paper**

The research paper consists of five chapters. The first chapter is introduction chapter and contains statement of the problem, research questions, objective of the study, significance of the study and delimitation of the study. Literature reviews were presented in chapter two. The third chapter dealt with the methodology used in the research activity. Data analysis and interpretation of the research results were discussed in chapter four .the final chapter covered the discussion of result, conclusion and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The literature review part of this study has theoretical literature review, empirical Literature review and conceptual review parts. The theoretical part presents the summary of theories forwarded by Different scholars pertaining to the subject under study at different times. Whereas the empirical part contains summary of similar or related research findings obtained from other earlier research. .and conceptual review part is the sum total of both theoretical and empirical review parts.

2.1 Theoretical literature

2.1.1 Overview of logistics definitions

Council of Logistics Management (1991) defined that logistics is 'part of the supply chain process that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the Point of consumption in order to meet customers' requirements'. Johnson and Wood's Definition cited in (Tilanus, 1997) uses 'five important key terms', which are logistics, Inbound logistics, materials management, physical distribution, and supply-chain Management, to interpret. Logistics describes the entire process of materials and products moving into, though, and out of firm. Inbound logistics covers the movement of material received from suppliers. Materials management describes the movement of materials and components within a firm. Physical distribution refers to the movement of goods outward from the end of the assembly line to the customer. Finally, supply-chain management is somewhat larger than logistics, and it links logistics more directly with the user's total communications network and with the firm's engineering staff.

The commonality of the recent definitions is that logistics is a process of moving and handling goods and materials, from the beginning to the end of the production, sale process and waste disposal, to satisfy customers and add business competitiveness. It is 'the process of anticipating customer needs and wants; acquiring the capital, materials, people, technologies, and information necessary to meet those needs and wants; optimizing the goods- or service-producing network to fulfill customer requests; and utilizing the network to fulfill customer requests in a timely way' (Tilanus, 1997). Simply to say, 'logistics is customer-oriented operation management'.

2.1.2 Components of Logistics System

Logistics services, information systems and infrastructure/resources are the three components of this system and closely linked. Logistics services support the movement of materials and products from inputs through production to consumers, as well as associated waste disposal and reverse flows. They include activities undertaken in-house by the users of the services (e.g. storage or inventory control at a manufacturer's plant) and the operations of external service providers. Proceedings of the Eastern Asia Society for Transportation Studies, (2005)

Logistics services comprise physical activities (e.g. transport, storage) as well as non-physical Activities (e.g. supply chain design, selection of contractors, freightage negotiations). Most activities of logistics services are bi-direction. Information systems include modeling and Management of decision making, and more important issues are tracking and tracing. It provides essential data and consultation in each step of the interaction among logistics services and the target stations. Infrastructure comprises human resources, financial resources, packaging materials, warehouses, transport and communications. Most fixed capital is for building those infrastructures. They are concrete foundations and basements within logistics systems.

2.1.3 History and Advancement of Logistics

Logistics was initially a military activity concerned with getting soldiers and munitions to the Battle front in time for flight, but it is now seen as an integral part of the modern production process. The main background of its development is that the recession of America in the 1950s caused the industrial to place importance on goods circulations. The term, logistics,was initially developed in the context of military activities in the late 18th and early 19^{th} centuries and it launched from the military logistics of World War II. The probable origin of the term is the Greek *logistikos*, meaning 'skilled in calculating'. (BTRE, 2001) Military definitions typically incorporate the supply, movement and quartering of troops in a set. And now, a number of researches were taken and made logistics applications from military activities to business activities. Business logistics was not an academic subject until the 1960s. A key element of logistics, the trade-off between transport and inventory costs, was formally recognized in economics at least as early as the mid-1880s. (BTRE, 2001) Based on the American experience, the development of logistics could be divided into four periods (Chang, 1998), which are Dormant Years , Development Years ,Take-off Years and Logistics Alliance 3rd Party Logistics.

Before the 1950s, logistics was under the dormant condition. Production was the main part of the managers concerned, and industry logistics was once regarded as “necessary evil” in this period. During the 1950s to and 1960s, applying new ideas of administration on business was a tendency. Drucker (2001), who thought *Logistics,* was *The Economy’s Dark Continent*, Regarded the procedure of physical distribution after producing products as the most possible development area in American businesses but also the most neglected area. Lewis’s study (cited in Chang, 1998) in 1956 on the role of transportation in physical distribution was the application of “total cost concept” and it pointed out the notions of trade-off between inventory and transportation. From the 1970s onwards, more and more applications and researches of logistics appeared. Due to petroleum price rise in 1973, the effects of logistics activities on enterprises grew. Slow growth of market, pressure of high stagflation, release of Transportation control and competitions of the third world on products and materials all increased the significance of logistics system on planning and business at that time.

The further tendency of logistics in the early 21st century is logistics alliance, Third Party Logistics (TPL) and globalized logistics. Logistics circulation is an essential of business Activities and sustaining competitiveness, however, to conduct and manage a large company is Cost consuming and not economic. Therefore, alliance of international industries could save Working costs and cooperation with TPL could specialize in logistics area.

2.1.4 Forms Of Logistics Operation

Reverse Logistics

The concept of reverse logistics has been applied in promoting customer service and resources recycling. Concerning quality control, the defective components and finished products will be returned to their producers through reverse logistics systems. Now a day, reverse logistics has been developed rapidly for increasing industries’ competitiveness, promoting customer service level, and recycling the reusable material. Meanwhile, the demand of reverse logistics brings out a new market for the third-party logistics industries.

Rogers *et al.* (1998) defined reverse logistics as ‘the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal, the structure of logistics systems, which

includes forward logistics, backward logistics and information flow. The flow in black arrows presents the direction of reverse logistics, whose direction is counter to the ordinary logistics represented in hollow arrows. The information flow interlaces between different stakeholders within the system. Each stakeholder can communicate with the others directly to maximum their profitability. Reverse logistics will be adopted in various modes and applications in the future due to its efficiency and benefits in environment protection.

The two main reasons behind the rise of reverse logistics are the globalization of markets and Policy for environment protection. A successful reverse logistics could help to increase the service level of companies and reduce the costs of producing processes. More and more companies want to build their reverse logistics system; however the system needs professional knowledge in logistics management and particular facilities. Thus the third-party logistics service provides another option for small to middle size companies to have their reverse logistics system. Proceedings of the Eastern Asia Society for Transportation Studies,(2005).

Green Logistics Agenda

(Richard W, 2011) in his paper expressed the consideration of environmental costs is essentially changing the transportation policy in developed countries, especially those within the European Union. The new environmental sensitivity in today's societies and governments has urged European Governments to develop new instruments to incorporate externalities and environmental costs in transport management accounting. Therefore, environmental concerns have highlighted the importance of sustainable transport design. These trends indicate that, despite technological advances, the environmental impacts of transport will grow unless action is taken at all levels - by government, business and individuals. There is a continuing need to reduce the environmental impacts of some forms of transport – particularly road and air travel - and promote more environmentally friendly transport options such as cycling, public transport and walking.

Road transport services account for 1.6% of the European GDP and give jobs to 4.5 million people in the EU. The whole economy and society depends heavily on efficient road transport, 44% of the goods are moved by trucks and 85% of the persons by cars, buses or coaches. the aim of the Community's land transport policy is to promote sustainable mobility that is efficient, safe and with reduced negative effects on the environment.

The objectives for road transport are therefore to promote efficient road freight and passengers transport services, to create fair conditions for competition, to promote and harmonize safer and more environmental friendly technical standards, to ensure a minimum fiscal and social harmonization and to make sure that the rules in road transport are effectively applied without bad ecological impact.

2.1.5 LOGISTICS INFRASTRUCTURE

Logistics infrastructure in macro level requires long-term sustained efforts of regional. And national governments (Feng , 2012; Arvis et al., 2014). Thus, it is natural that Building regional and national logistics as dependable linkage mechanisms becomes oneof top industrial policy priorities (Alliance for European Logistics, 2011; Faber, 2014; Research Office Information Services, 2015). Domestic and global logistics requires efficient network design to deliver products and services to customers in a timely manner. For this, strategic infrastructure development defines long-term plans to improve capable intermodal transportation network including integration between maritime, land, and air transportation for overall economic growth and societal development (Bai et al., 2004; Blyde and Molina, 2015). Countries with well-organized logistics systems have excellent maritime transportation systems, road systems, waterways, and rail systems (Zuraimiet al., 2013; Bookbinder and Tan, 2003; Panova, 2011). Such complex logistics infrastructure facilitates the movement flows of information, products, services and cash through value chain (Kim, 1996; Schoenherr, 2009; Zuraimi et al., 2013). Furthermore, it's instrumental to attract potential investors to set up new business activities or expand existing ones (Zuraimi et al., 2013).

The importance of logistics, trade facilitation and other non-policy barriers has increased in significance mainly because trade policy barriers have increasingly accounted for a smaller proportion of overall trade costs (Anderson and Van Win coop, 2004). More recently, logistics, trade facilitation and infrastructure have been found to be significant determinants of trade and there are a number of papers that have examined the influence of these factors on trade volume and costs. The main motivation has been to find answers to the obvious question of why countries like China and India have seen tremendous growth in trade, whereas developing

countries mainly in Africa have had limited trade growth in this era of globalization (Festus E Turkson, 2006).

Bougheas et al (1999) argued that differences in the quality and volume of infrastructure across countries could be responsible for the differences in trade competitiveness of countries. The authors showed that improvements in infrastructure through its impact on transportation cost impacts positively on trade. Using evidence from European countries, the authors were able to confirm their theoretical findings that by extending the Dornbusch-Fisher-Samuelson (DSF) Richard a trade model it was possible to show a positive relationship between the level of infrastructure and trade volumes for pairs of countries for which it is optimal to invest in infrastructure.

2.1.6 The Definitions and Concepts of Transportation

A lot has been said about the definitions and concepts of transportation by different scholars in different ways at different times. Transportation is the act of moving people or goods from one place to another (Encyclopedia, 2001). The book further explains that transportation takes people where they need or want to go, and it brings the goods they need or want.

As per Kveiborg (2005) transportation is a consequence of economic activities taking place at different geographic locations. According to this definition any economic activity 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 perspective as the movement of product from one location to another as it makes its way from 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.

Road Transportation

Road transport has become the dominant land transport system today. Automobiles, buses and trucks require a road bed. Such infrastructures are moderately expensive to provide, but there is a wide divergence of costs, from a gravel road to a multi-lane urban expressway.Because vehicles have the means to climb moderate slopes, physical obstacles are less important than for some

other land modes. Most roads are provided as a public good by governments, while the vast majority of vehicles are owned privately. The capital costs, therefore, are shared, and do not fall as heavily on one source as is the case for other modes. All road transport modes have limited abilities to achieve scale economies (Rodrigue, *et al*.,2006).

According to Kazimierz J**; (2008)** Road safety has been studied, analyzed and improved for more than a hundred years. Therefore, number of theories are produced which are mainly causal, Epidemiologic, systemic and behavioral theories.

Causal theories are used to analyze recognizable causes of accidents and the relations are determined between the number and effects of accidents and a set of important factors (social, economic, road, traffic and others). The objective is to avoid or limit the most significant causes and circumstances of road accidents.

Epidemiologic theories and models are used to analyze the "carriers" and hidden relations that affect the consequences of accidents. The objective is to build protective barriers and identify public health indicators.

Systemic theories and models are used to identify all dependencies and relations that have an effect on accidents (so called factors transferred in time and space) and factors that occur at the time and place of a road accident in order to build a system of safety measures and a system for Monitoring and control of the dependencies and relations.

Behavioral theories and models are used to establish the effects of behavior of individuals on accidents and the ability to convince the public and politicians about the need for programmers and evaluating their effectiveness. all theory that could be used as a basis for identifying all causes of accidents.

According to M. Vrtic (et al., 2008) for the evaluation of different road pricing schemes, transport models have to include road pricing as an element of the generalized cost of travel. Previous experiences abroad indicate that the Changes in route, mode and departure time choice are predominant effect.

According to T. ARETHUN, B. P. BHATTA,(2012)expression Provision or improvement of transport services results in reduction of transport cost and/or travel time which in turn lead to increased production. Improved transport, therefore, promotes social and economic development by improving physical access to resources and markets.

Governments of developing countries, multilateral organizations such as the World Bank, the Asian Development Bank (ADB) and the International Fund for Agricultural Development (IFAD) emphasize the role of road transport to increase access to- and participation in markets because markets contribute to division of labor and product specialization. Distance to markets and the lack of roads is a central concern for rural communities throughout the developing world. on the other hand improved transport reduces the physical costs of access to resources and markets. Governments and donors, therefore, favor building new roads which allow easier transportation of all products from the rural and remote ports and markets within and beyond country frontiers.

The Asian Development Bank postulates that road accessibility provides access to markets, integrates markets in different areas, mitigates the risks to which the poor are often more exposed and improves social welfare due to the increased accessibility to basic social services. Providing extensive road access to markets would confer substantial benefits. (T. ARETHUN, B. P. BHATTA, 2012)

2.1.7 Interrelationships Between Transportation And Logistics

Without well-developed transportation systems, logistics could not bring its advantages into Full play. (Yung et al. 2005), argued in his study, besides, a good transport system in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality. The improvement of transportation systems needs the effort from both public and private sectors. A well-operated logistics system could increase both the competitiveness of the government and enterprises.

2.1.8 The Effects of Transportation on Logistics Activities

Transportation plays a connective role among the several steps that result in the conversion of resources into useful goods in the name of the ultimate consumer. It is the planning of all these functions and sub-functions into a system of goods movement in order to minimize cost

Maximize service to the customers that constitutes the concept of business logistics. The system, once put in place, must be effectively managed. (Fair *et al.*, 1981)

2.1.9 The Role of Transportation in Service Quality

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. By means of well-handled transport system, goods could be sent to the right place at right time in Order to satisfy customers demand. 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

2.1.10 ISSUES OF SUSTAINABILITY

According to (Baltimore, 2004) the concept of sustainability has a powerful grip on people. Few could disagree that attainment of a sustainable transportation system is desirable; however, many challenges lie along the path to achieving such a system.

The nation's transportation system has enhanced quality of life through increased access to health care, education, employment, recreation, and a wide range of consumer goods. These benefits have not been achieved without costs. The negative impacts of the transportation system include congestion; fatalities and injuries; noise, air, and water pollution; greenhouse gas emissions; diminishing energy resources; and biological and ecosystem damage. The challenge of a sustainable transportation system lies in minimizing these costs while offering strong transportation benefits.

2.1.11 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).

2.2Empirical literature

2.2.1 Logistics Performance: On China, Japan And Korea

David W. Hwang (2017) on his study identified four major factors that affect logistics performance at the countrylevel. First, the major factors identified in those paper are (industrial policy priorities, strategic infrastructure development,public-private logistics market growth, and communication network configurations) are essential for assessing a macro-level logistics performance.

The research provides a lens to examine the critical roles that logistics have on a nation's economic growth.

Second, the study compares the logistics systems of the three Northeast AsianCountries (China, Japan, and Korea). All three countries have made noteworthy progress in developing logistics capabilities to achieve rapid industrialization and economic growth (Speece and Kawahara, 1995; Johnson, 1982; Amsden, 1989; Li, 2014). In viewof the enormous volumes of raw materials and products that Chinese ports handle, its inland transportation systems and structure require further development. Rail road system needs careful attention beyond the coastal areas. Especially, the vast enhance the international competitiveness and sustain high economic growth, it is also necessary for China to have effective information management and government support for development of infrastructure and green initiatives. Japan currently has the most efficient logistics sector and good infrastructural system among the three countries, but the sluggish economic growth inrecent decades has had a dampening effect on the logistics system. Japan needs astrategic move that supports the renewal of the logistics system through government initiatives including further deregulation of the logistics sector. In Korea, the logisticssector is growing rapidly. Its road system is relatively efficient. The KoreanGovernment has promoted policies to support the global market activities of its growth engine industries. However, its market remains relatively small and needs to expandfurther to utilize the economies of scale in the globalised environment. It is also desirablefor Korea to pursue a policy to further expand the 3PL providers in order to reduce the inefficiency of the in-house logistics operations and to further the global logistics activities by its firms.

Given its substantial share of economic activities in the world, the Northeastern Asian region is a very attractive market for logistics in general and contract logistics inParticularPerformance in East Asia**.**

2.2.2 Logistics performance index (LPI)

According to World Bank Country Score Card: Ethiopia 2016 LPI is a global bench marking indicator for comparison of key areas related to logistics capacity.The LPI is used by companies to identify challenges andopportunities related to a country's transport infrastructure and logistics competence, for efficient management of their supply chains. LPI uses six key dimensions to displays the derived overall index.

1, Efficiency of the clearance process the customs clearance component of the LPI measures the efficiency and effectiveness of customs dispatch procedures in terms of speed, simplicity and predictability. Improvements in customs clearance performance are tied to overall trade environment.

Customs performance basically covers**:** efficient risk management, optimal use of information and communications technology**,** effective partnership with the private sector including programs to improve compliance, increased cooperation with other border control agencies, transparency through information on laws, regulations, and administrative guidelines.

Simple, transparent, and harmonized trade policies reduce administrative complexities, increase predictability, and reduce the incentives for market-distorting behavior and corruption.
Globally, customs efficiency is one of the two lagging components of the LPI in 2014, especially in low-income and lower middle-income countries, even after they have made the fastest progress in this dimension (Arvis, et al., 2014)

2) **Quality of trade and transport related infrastructure** development is essential for assuring basic connectivity and access to gateways. A low overall LPI performance often results from poor scores for infrastructure. Poor transport infrastructure isolates countries and thus inhibits their participation in global production networks.
The average landlocked country has transport costs 50% higher than the average coastal economy. However, improving the infrastructure of the landlocked economy to the top quintile

reduces this disadvantage by 12%; and improving the infrastructure of the transit economy reduces the disadvantage by a further 7% (Limao & Venables, 2001).

Improvements in infrastructure are particularly trade-enhancing for exporters (Martí, et al., 2014).

The infrastructure dimension of the LPI covers both physical and telecommunications infrastructure. However, perceived differences in the quality of infrastructure are strongly linked to the quality of the roads facilities, which are the modes of freight transport. There exists a strong positive relationbetween at country's LPI score and the quality of their freight transport related infrastructure, particularly the road quality (Celebi, et al., 2014).

Keeping transport infrastructure in good condition and providing the framework to develop physical infrastructure are core responsibilities of governments. Superior transport infrastructure also supports intermodal transport systems, including access roads to terminals and seaport channels. Most intermodalfacilities operate with low overall utilization rates, but tend to suffer from occasional capacity constraints due to highly variable transport demand. Flexible systems, better resource allocation, peak flow managementand higher utilization of existing physical infrastructure all provide avenues for improving the transportinfrastructure related logistics performance.

3) Ease of arranging competitively priced shipments;

This dimension gives an estimate of the performance in arranging shipments at competitive prices.

Availability of competitively arranged shipments is a significant factor in sourcing decisions and in turn has an impact on national competitiveness. In addition to constructing, operating, and maintaining infrastructure, governments regulate various aspects of the freight transportation sector. Governments also impose rules relating to safety, environmental and economic performance across all modes of transport, as well as regulating the sector in general (e.g. access to markets and mergers and acquisitions must be done in accordance with competition legislation)

4) **Competence and quality of logistics services** relating to competence and quality of logistics services measures the overall competenceof the logistics services provided by parties within the

logistics system. Achieving logistics excellence requires continuous improvement in reliability, responsiveness and well-functioning support services. The dedicated investments in logistics operations and adoption of continuous monitoring and recognized quality standards are mainly done by the private sector. Quality of logistics services plays an important role in facilitating the transport of international trade in goods.

The LPI results reveal that the quality of services indicator drives logistics performance in both emerging and developed economies (Arvis, et al., 2014). Analysis of the impacts of trade logistics in a given country's trade by income category indicates that competence seems to impact trade flows by a similar magnitude regardless of the country's level of development. Improving logistics services (like third-party logistics.

Various government actions can help the private sector develop its logistics competencies. These include increasing managerial capacity, setting quality standards developed by professional organizations, regulatingbusiness certification and ensuring standardization of operations. Moreover, increasing logistics competence requires new labor force skill sets and more highly educated employees. Improved human resources are akey factor when it comes to LPI performance in the competence and quality of logistics services. Humanresource development in logistics is often both a public and a private sector responsibility. To secure an adequate workforce to meet future labor needs in the logistics industry, decisive political efforts are necessary in the logistics industry (International Transport Forum, 2014).

5 **Ability to track and trace consignments**; The development of information and communications technologies (ICT) provides a convenient way of improving LPI tracking and traceability performance by enabling cost-efficient gathering, organization and distribution of information at a global level. This includes information on products, services and trade regulations. Several companies use the Internet as an exchange mechanism for planning the supply chain with their partners. Major freight transport service providers provide information on their services, schedules and rates that can be easily accessed by their clients.

However, adequate traceability of shipments is still a major problem in most developing countries. This is partially due to a lack of understanding of how to manage new technology and adjust logistics procedures. though it is clear that information sharing create benefit to the supply chain as a whole.

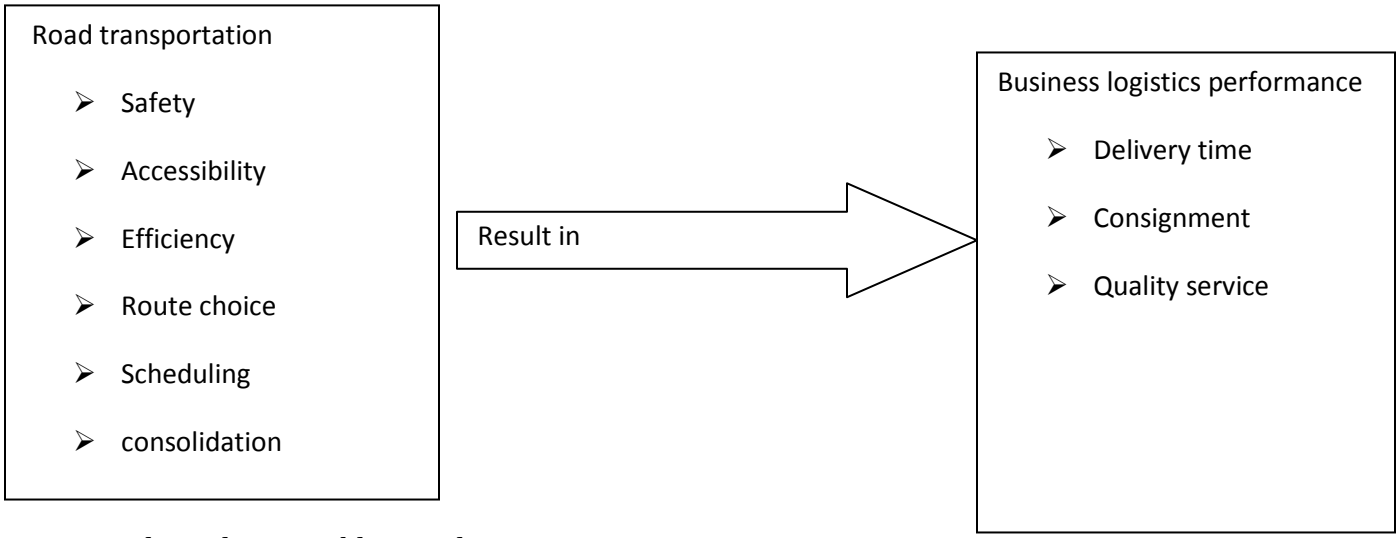
6) **Timeliness of shipments in reaching destination within the scheduled or expected delivery time.** The timeliness of shipments in reaching destination measures the reliability of shipment delivery times. Delivery times depend on the nature of the product, planning and supply chain management, logisticsservices, and distance to customers and suppliers. Long lead time is not a problem if delivery is predictableand demand is stable. However, if there is uncertainty about future demand, long lead time is costly, even if the customer knows exactly when the merchandise will arrive. The time spent at the border and the cost of getting containers across borders has a strong impact on trade.While the length of the lead time affects trade volumes, time variability mainly affects the efficiency of logistics systems. There is ample evidence that appropriately designed liberalization and introduction of competition in these sectors can improve efficiency (including timeliness), reduce costs and expand service access to users (OECD, 2006).

2.3 Research Gap

From empirical literature review of previous studies have shown that in the current complex business environment, the competition faced by business organizations is no longer mere inter-firm competition, but also inter-channel competition caused by adapting to industry globalization. Considering this trend, this study discusses and focuses on the effect of road transport in the performance of business logistics. This study employs East Africa bottling company as the research subject. Many studies on distribution channel were conducted in various places of different culture, political and economic systems, therefore, it is important to conduct another study in order to understand the effects of road transport on the performance trend especially on business logistics.

2.4 Conceptual frame work

The researcher measured road transport practice in terms of safety, accessibility, efficiency, route choice, scheduling and consolidation. On the other hand business logistics performance measured using indicator of delivery time, consignment and service quality From the above literature gathered, the researcher come up with those conceptual frame work .



Independent variable: Road transport

Dependent variable; Business logistics performance

SOURCE researchers own observation

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This section presents an overview of the methods that would be used in the study. Areas covered including the research approach and design, population and sample, data sources and types, ethical consideration, and data analysis.

3.1 DESCRIPTION OF THE STUDY AREA

The methodology that was applied in the study has been chosen in order to get information and convert to conclusion about the effect of road transport infrastructure on the performance of business logistic in east Africa bottling company.

3.2 RESEARCH APPROACH AND DESIGN

The main objective of this research was to investigate the effect of road transport on business logistics performance considering the purpose of the research and the nature of the phenomenon, both quantitative and qualitative approach was used according to (Eisenhard) states that qualitative methods have the ability to indicate relationships that would not otherwise be observable to the quantitative researcher method and quantitative research approach is helpful to quantify the respondents' evaluation by generating numerical data on that data can be transformed in to useable statistics. This triangulated approach to research can create better assurances.

The purpose of such studies is to determine whether the variables under study have some kind of association or not. Variables being studied may have positive or negative relationship or they may not have relationship at all (Experiment Resources, 2008). To show its association with something else or certain variables explanatory(causal) design was used; and explaining and describing the characteristics of particular individual, or of a group or phenomena of substantive interest and describe the research finding using major statistical measures such as mean and standard deviation descriptive design also used.

3.3 POPULATION AND SAMPLE DESIGN

The study would have a population group of east Africa bottling company Addis Ababa branch logistic department workers. The total numbers of population were 320. Due to constraint such as time and budget, it was not be possible to collect data for the entire population. Therefore samples were drawn from the population groups. For quantitative and qualitative data collection, Addis Ababa branch logistic department workers would be sampled and data were collected.

3.4 SAMPLING TECHNIQUES AND SAMPLING PROCEDURES

Collected and analyzed of data from the entire population found to be costly to the researcher in terms of money, time and energy demand. Due to this fact the researcher were determined the sample group who represent the total population. Those are workers of east Africa bottling

company Addis Ababa branch staff. Therefore, sample frame had been also determined those are the list of all staff of the organization which sample group would be taken. For quantitative and qualitative data collection simple random sampling techniques would be used to determine the actual sample.

3.5 SAMPLE SIZE

(Kothari CR 11th edition) provides a simplified formula for determining sample size in case of finite population n

$$n = \frac{z^2.p.q.N}{e2\ (N-1) + z^2.P.q}$$

Where *n* = size of sample

N = size of population

e = acceptable error 5%

Z=value of standard variate at given confidence level=1.96 for 95%confidence level

P=sample proportion, $q_{=1-p}$

Source Kothari (2004)

Based on the above formula the sample size can be

$$n = \frac{(1.96)^2.320.5*.5}{(.05)^2\ (320-1) + (1.96)^2*0.5*0.5}$$

n=101

3.6 DATA SOURCE AND TYPE

In order to achieve the objective of this research, both primary and secondary sources of data would be used. In order to gather adequate information for the primary data which helps to measure the variables structured questionnaires would be employed. Similarly, secondary data would be gathered from the organization profiles, reports, brochure, books, articles and journals. Finally, those data were interpret and analyzed to assess the effect of road transport for the performance of business logistics.

3.7 Method of Data Analysis

The data was obtained through the questionnaires and first checked for completeness. Whether the questionnaire found correctly filled and fitted for analysis, coded. All the data entered into statistical package for social sciences, and analyzed based on descriptive and inferential statistics. The descriptive statistics used included the frequencies, mean scores, standard deviation, and then presented using tables for easier interpretation. The Reliability Analysis will be made using Cronbach's alpha (α) for the measure of internal and scale consistency (reliability).

A single linear regression model was done .To establish the relationship, a regression analysis was established. From the relationship, the model was generated to determine the relationship using simple linear regression analysis assumptions, such as the relationship between Y and X is linear, multi-collinearity and normality distribution. The simple regression equation assumed the following form: $\hat{Y} = a + bxi$

Where:

Y is organizational performance;

Xi-road transport infrastructure

3.8 DATA COLLECTION INSTRUMENTS

Mainly the data collection tool the study would be used was standard questioners because it is more appropriate and easy for respondents to fill and forward their feeling and responses for questions and it is economical internes of time; cost and effort than other methods.and it helps to gather standardized responses. (Bhattacherjee ;2012).

3.9 Reliability and Validity Tests

Reliability

Indicates the extents to which a variable or a set of variables is consistent in what it is intended to measure. Reliability analysis used to measure the consistency of items of a questionnaire. There are different methods of reliability test, for this study Cronbach‘s alpha was considered to be suitable. Cronbach‘s alpha is also the most common measure of reliability.

Table 3.1 Reliability Statistics test Cronbach's Alpha for employee

DIMENSION	Cronbach's Alpha	N of items
CONSOLIDATION	0.792	4

SCHEDULING	0.865	6
ACCESSIBILITY	0.718	5
SAFETY	0.709	6
EFFICIENCY	0.706	6
ROUTE CHOICE	0.750	6
DEGREE OF EFFECT ON ROAD TRANSPORTATION OPERATION	0.737	5
BUSINESS LOGISTICS PERFORMANCE	0.713	9
The overall Cronbach's Alpha	0.923	47

Thus, to test the reliability of the instrument, Cronbach alpha relating to all dimensions was computed. It is recommended that the value of Cronbach's alpha greater than 0.7 is good. The alpha values in this study are around 0.792 for consolidation,0.865for scheduling,0.718 for accessibility,0.709 for safety,0.706 for efficiency,0.75for route choice,0.737for degree of effect on road,0.713 for business logistics performance and the overall alpha values in the study is 0.923 Thus, the internal consistency of the instrument is sustained.

Validity

Validity indicates the degree to which instruments measure what they are supposed to measure (Kothari, 2004). Content validity was most relevant for our present study. This was because it was concerned with how well the content of the instrument samples the kinds of things about which conclusions were to be drawn. Joppe (2000) further argues that content validity refers to the extent to which a measure represents all facets of a given social construct. To establish content Validity of the instruments, researcher internal examiner was examined the content of the instruments and advised the researcher on the content validity. This feedback was used to revise the instruments.

3.10 Ethical consideration

According to Saunders, Lewis and thorn hill(2001) "ethics refers to the appropriateness of your behavior in relation to the rights of those who become the subject of your work, or are affected by it" .the data were collected from the sample respondent through questioner; the respondents were not required to write their name. The result of the study was used for academic purpose

only and responses of participant were fully confidential. The information that the respondent gave was analyzed without any change by the researcher. Furthermore, the work that has been used in this research as a base for this study were cited appropriately as the researcher respect the work of previous studies.

Research involving people will be ethically developed; particularly this includes the responsibility of the researcher to protect the privacy of individuals that would be participated in the study. This privacy was included to all people, regardless of age, race and religion.

CHAPTER FOUR
DATA PRESENTATION, INTERPRETATION AND ANALYSIS

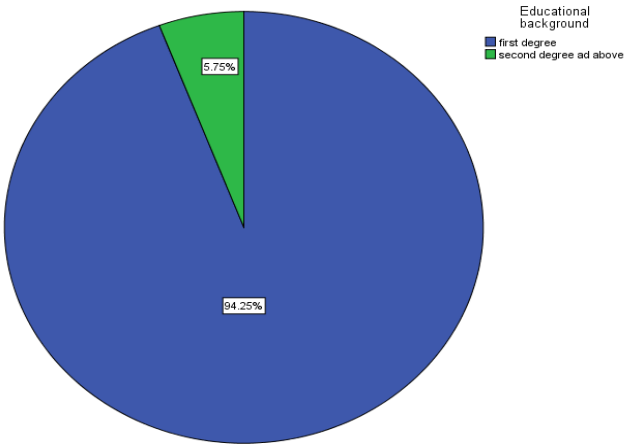
4.1 Introduction

This chapter deals with data presentation, interpretation and analysis of the study. In order to address the research questions, there were a key questions presented to employees of EABC in form of five linkert scale question. From the total 100 question papers distributed to the respondents, the researcher could collect 89/100. The rest 11 not collected on the time of analysis. Thus, 89 responses were effectively used for analysis since it shows the response rate of 89%. Finally, the data was analyzed using Statistical Package for Social Science (SPSS v.20).

4.2 Demographic information

The researcher considers the background information of the respondents to be very useful in understanding the logic of the responses issued by the respondents in the questionnaire.

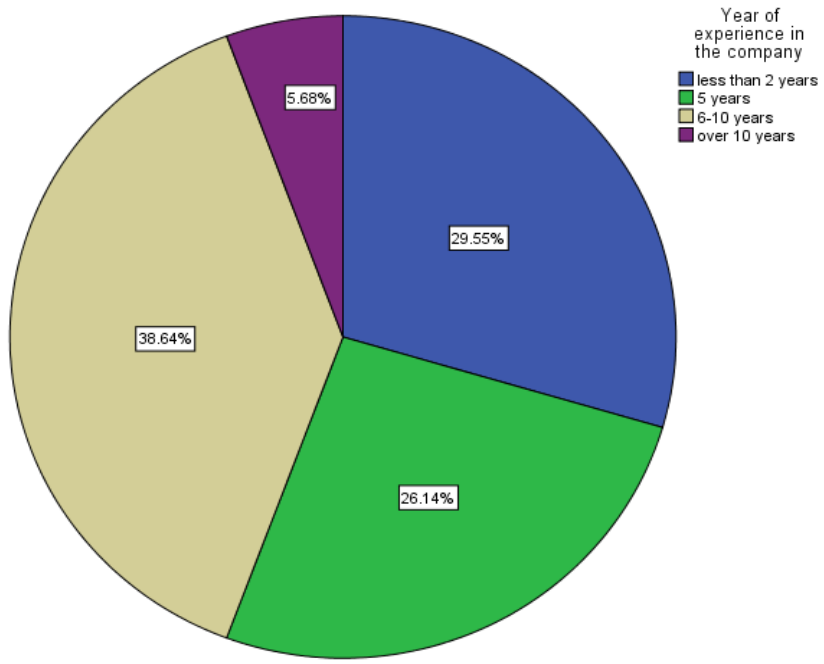
Figure 4.1 **Educational background**



Source: Own survey Data, 2019

The above figure 4.1shows about (5.75 %) of sampled respondents had second degree and above in their educational qualification and (94.25%) also had first degree. this indicate that all of respondent are educated from this, it can be concluded that the respondents have good knowledge to give relevant information regarding the topic under study

Figure4.2 year of experience in the year



Source: Own survey Data, 2019

The above figure 4.2 shows from sampled respondents less than 2 years' work experience take the share of(29.55%) ,2 up to 5 years work experience take the share of(26.14%) , 6 up to 10 years work experience take the share of (38.64%) and over 10 year work experience take the share of (5.68%) of total year of experience respectively. The result shows that majority of the respondents are energetic.

Table4.1 *Frequency Table for position in the organization distribution*

Job title				
		Frequency	Percent	Valid Percent
	Manager	9	6.3	10.6
	Supervisor	35	24.5	41.2
	Officer	13	9.1	15.3
	Other	28	19.6	32.9
	Total	85	59.4	100.0

Source: Own survey Data, 2019

According to the above table 4.1 result 9(6.3 %), 35(24.5%), 13(9.1 %) and 28(19.6 %),employee of sampled respondents was manager, supervisor, officer and others respectively in their current position in the organization from this it can be concluded that the respondents have good knowledge to give relevant information regarding the topic under study.

4.3 Analysis and Discussion on measurement item of road transport and business logistics performance

In this part of the study's report, analysis conducted on data gathered to describe the road transport factors based on different dimensions respondents were asked to indicate their level of Agreement on a five point Likert scale response format ranging from 1(very low) to 5(very High). Statements present frequency in percent per statement and analysis was done accordingly.

4.3.1 CONSOLIDATION

Table4.2 *Descriptive Statistics for consolidation*

EABC provide arrival notification to its customer	**strongly disagree**	**Frequency**	**Percent**	**Mean**	**standard deviation**
	Disagree	4	2.8	3.79	1.143
	Neutral	11	7.7		
	Agree	12	8.4		

	strongly agree	35	24.5		
do you have Computerized billing and tracing service	strongly disagree	7	4.9	3.57	1.296
	Disagree	17	11.9		
	Neutral	8	5.6		
	Agree	32	22.4		
	strongly agree	25	17.5		
Product distribution practice of EABC do not have electronic product interchange	Disagree	3	2.1	3.85	0.732
	Neutral	22	15.4		
	Agree	49	34.3		
	strongly agree	15	10.5		
Road transport service is supported by improved computerized system	strongly disagree	4	2.8	3.46	1.197
	Disagree	22	15.4		
	Neutral	10	7.0		
	Agree	35	24.5		
	strongly agree	18	12.6		

Source: Own survey Data, 2019

According to (table 4.2) above, 4 (2.8%) of employees are disagree but 12(8.4%) are agree and 35(24.5%) of them are strongly agree on EABC provide arrival notification to the customer. As can be seen the mean and standard deviation scores 3.79 and 1.143 respectively which shows that the organization provide arrival notification to the customer. In Computerized billing and tracing service 7(4.9%) are strongly disagree, 17(11.9%) disagree, 32(22.4%) agree and 25(17.5%) are strongly agree as can be seen the mean and standard deviation scores 3.57 and 1.296 respectively. the standard deviation scores shows that there is a variation in the respondent's response but the result indicated that there are Computerized billing and tracing service the company have. in terms of electronic product interchange practice 3(2.1%) of respondent disagreed,49(34.3%) agreed and10.5(15%)of respondents are strongly agree As can be seen the mean and standard deviation scores 3.85 and 0.732respectively which shows that product distribution practice of the company does not be supported by electronic product interchange system.

In terms of road transport service supported by improved computerized system `4(2.8%) are strongly disagree,22(15.4%) dissagre,35(24.5%) are agree and 18(12.6%) are strongly agree as can be seen the mean and standard deviation scores 3.46 and 1.197 respectively. which shows that the organization transportation service is supported by computerized system. literature

indicated that (Alliance for European Logistics, 2011; Faber, 2014; Research Office Information Services, 2015). Domestic and global logistics requires efficient network design to deliver products and services to customers therefore it can be summarized that; the organization is suffer due to road means of transportation due to the initial stage of computerized system that have in the requirement of global and domestic logistics efficient network design to deliver products through online market . that have impact on product movement in terms of accident may occur, exposed to theft and also product and truck damage because of road condition and increase expense of the company for maintenance of damaged truck and glass.

4.3.2 SCHEDULING

Table4.3 Descriptive Statistics for Scheduling

		Frequency	Percent	mean	standard deviation
Your company's Product arrived the designed place	strongly disagree	4	2.8	3.76	1.045
	Disagree	7	4.9		
	Neutral	16	11.2		
	Agree	41	28.7		
	strongly agree	21	14.7		
Your company's Product handling time is short and provided easily with acceptable waiting time	strongly disagree	4	2.8	3.73	0.974
	Disagree	8	5.6		
	Neutral	9	6.3		
	Agree	55	38.5		
	strongly agree	13	9.1		
The customer received the product within designed place	Disagree	13	9.1	3.67	0.889
	Neutral	15	10.5		
	Agree	49	34.3		
	strongly agree	12	8.4		
Your company's road	strongly disagree	2	1.4	3.67	0.997

transport service schedule for delivery place is meet its plan	Disagree	10	7		
	Neutral	21	14.7		
	Agree	38	26.6		
	strongly agree	18	12.6		
Your company's Road transport service delivery time dissatisfy the customer	strongly disagree	6	4.2	3.46	1.056
	Disagree	8	5.6		
	Neutral	26	18.2		
	Agree	37	25.9		
	strongly agree	12	8.4		
Road transport service is competitive in terms of rendering delivery service	strongly disagree	6	4.2	3.71	1.12
	Disagree	10	7		
	Neutral	4	2.8		
	Agree	50	35		
	strongly agree	17	11.9		

Source: Own survey Data, 2019

As per the above (Table 4.3), on company's Product arrived the designed place. 4(2.8%) of employees were strongly disagree, 7(4.9%) were disagree, 16(11.2%) were neutral, 41(28.7%) were agree and 21(14.7%) were strongly agreed as can be seen the mean and standard deviation scores 3.76 and 1.043 respectively This indicate that the company have a capacity to distribute a product for specific place. and should have given great Attention for distribution.

On company's Product handling time 4(2.8%) were strongly disagree,8(5.6%) were disagree,9(6.3%) were neutral ,55(38.5%) were agreed and 13(9.1%) were strongly agreed. as can be seen the mean and standard deviation scores3.73 and 0.974respectivly this indicated that the company's product handling time is short and acceptable in the time of production. On customer received the product related to place 13(9.1%) were disagreed,15(10.5%) were neutral ,49(34.3%) were agreed and 12(8.4%) were strongly agreed as can be seen the mean and standard deviation scores 3.67 and 0.889 respectively this indicated that the company can distribute the product on customers needed place. On company's plan and delivery place 2(1.4%) were strongly disagreed, 10(7%) were disagree, 21(14.7%) were neutral,38(26.6%)were agreed and 18(12.6%) were strongly agreed as can be seen the mean and standard deviation scores 3.67 and 0.997 respectively this indicated that the company's usually meet its plan related with delivery place .on customers dissatisfaction with road transport service delivery time 6(4.2%) were strongly dissagre,8(5.6%) were dissagre,26(18.2%) were neutral, 37(25.9%) were agreed

and 12(8.4%) were strongly agreed as can be seen the mean and standard deviation scores 3.46 and 1.056 respectively this indicated that even if the customer response rate have some variance, customers are not satisfied with the delivery time of a product. on service competitive in terms of rendering delivery service 6(4.2%) were strongly dissagre,10(7%) were dissagred,4(2.8%) were neutral,50(35%0 were agreed and 17(11.9%) were strongly agreed. as can be seen the mean and standard deviation scores 3.71 and 1.12 respectively this indicated that even if the customer response rate have some variance, road transport service is competitive in terms of delivery.

The whole result under scheduling indicated that the companies are able to provide or distribute the product on designed place but not a designed time. These also affect customer satisfaction level due to infrastructural problem throughout the country. This supported by different literatures that (Alliance for European Logistics, 2011; Faber, 2014; Research Office Information Services, 2015). Domestic and global logistics requires efficient network design to deliver products and services to customers in a timely manner. Countries with well-organized logistics systems have excellent maritime transportation systems, road systems, waterways, and rail systems (Zuraimiet al., 2013; Bookbinder and Tan, 2003; Panova, 2011). Such complex logistics infrastructure facilitates the movement flows of information, products, services and cash through value chain.

4.3.3 ACESSIBILITY

Table 4.4 Descriptive Statistics for accessibility

Item	level of agreement	Frequency	Percent	Mean	standard deviation
Products are delivered with minimum process time from company to customer				4.02	0.80
	Disagree	22	15.4		
	Neutral	29	20.3		
	Agree	21	14.7		
	strongly agree	8	5.6		
	Total	89	62.2		
EABC have capacity to provide the product when the pick time of product needed	strongly disagree	2	1.4	2.97	0.12
	Disagree	2	1.4		
	Neutral	9	6.3		
	Agree	55	38.5		
	strongly agree	21	14.7		
	Total	89	62.2		
road transport service can provide quality service with	strongly disagree	9	6.3	2.97	1.12

designed delivery time	Disagree	22	15.4		
	Neutral	29	20.3		
	Agree	21	14.7		
	strongly agree	8	5.6		
	Total	89	62.2		
your customers have complain due to shortage of product	strongly disagree	9	6.3	2.97	1.123
	Disagree	22	15.4		
	Neutral	29	20.3		
	Agree	21	14.7		
	strongly agree	8	5.6		
	Total	89	62.2		

Source: Own survey Data, 2019

As per the above (Table 4.4), 22(15.4%) of employees were disagree,29(20.3%) were neutral,21(14.7%) were agree and 8(5.6%) were strongly agreed on company's Product delivery with minimum process time from company to customer as can be seen the mean and standard deviation scores 3.67 and 0.876 respectively This indicate that the process time of the product is minimum.in the case of provide the product in the pick time of product needed 4(2.8%) were disagree,2(1.4%) were disagree 9(6.3%) were neutral,54(37.8%) were agree and 20(14%) were strongly agreed as can be seen the mean and standard deviation scores 3.94 and 0.909 respectively this indicated that there is no capacity problem to provide the product in the pick time of product need. On road transport service with designed delivery time 9(6.3%) were strongly disagree,22(15.4%) were disagree 29(20.3%) were neutral,21(14.7%) were agree and 8(5.6%) were strongly agreed as can be seen the mean and standard deviation scores 3.63 and 1.01 respectively this indicated that there is a problem in road transport service and designed service delivery time. On customers complain due to shortage of product 4(2.8%) were strongly disagree,19(13.3%) were disagree 9(6.3%) were neutral,40(28%) were agree and 17(11.9%) were strongly agreed as can be seen the mean and standard deviation scores 3.10 and 1.088respectively this indicated that customers have complain in the late delivery of product due to road transport problem.

The whole result under accessibility indicated that EABC have capacity to provide the product even in the pick time of product need, but those products are not delivered to a customer on a designed delivery time due to road problem, and customers also have complain due to shortage of product. literatures indicated that multilateral organizations such as the World Bank, the Asian

Development Bank (ADB) and the International Fund for Agricultural Development (IFAD) emphasize the role of road transport to increase access to- and participation in markets because markets contribute to division of labor and product specialization. Distance to markets and the lack of roads is a central concern for rural communities throughout the developing world. On the other hand improved transport reduces the physical costs of access to resources and markets. Governments and donors, therefore, favor building new roads which allow easier transportation of all products from the rural and remote ports and markets within and beyond country frontiers.

4.3.4 SAFETY

Table 4.5 Descriptive Statistics for safety

Item		Frequency	Percent	MEAN	STANDARD DEVIATION
Road transport service exposed to damage	strongly disagree	2	1.4	3.75	0.933
	Disagree	9	6.3		
	Neutral	13	9.1		
	Agree	50	35.0		
	strongly agree	15	10.5		
Do you think that there is infrastructural problem that affect a customer	strongly disagree	4	2.8	3.64	0.835
	Disagree	4	2.8		
	Neutral	15	10.5		
	Agree	60	42.0		
	strongly agree	4	2.8		
Deteriorated products will be replaced on time	strongly disagree	11	7.7	2.64	0.976
	Disagree	26	18.2		
	Neutral	36	25.2		
	Agree	11	7.7		
	strongly agree	3	2.1		
EABC takes long time to settle back order	strongly disagree	2	1.4	3.75	0.933
	Disagree	9	6.3		

	Neutral	13	9.1		
	Agree	50	35.0		
	strongly agree	15	10.5		
EABC provides information supported by improved computerized system	strongly disagree	2	1.4	3.70	1.049
	Disagree	12	8.4		
	Neutral	18	12.6		
	Agree	36	25.2		
	strongly agree	21	14.7		
EABC provide arrival notification to its customer	strongly disagree	2	1.4	3.79	0.935
	Disagree	5	3.5		
	Neutral	23	16.1		
	Agree	39	27.3		
	strongly agree	20	14.0		

Source: Own survey Data, 2019

As per the above (Table 4.5), road transport and damage 2(1.4%) were strongly disagree, 9(6.3%) were dissagre,13(9.1%) were neutral,50(35%) were agree and 15(10.5%) were strongly agree as can be seen the mean and standard deviation score 3.75 and 0.933 respectively This indicated that road transport service is exposed to damage.

On related to infrastructural problem and level of effect on customers 4(2.8%) were strongly dissagry,4(2.8%) were disagree,15(10.5%) were neutral,60(42%) were agree and 4(2.8%) were strongly agreed as can be seen the mean and standard deviation scores 3.64 and 0.835 respectively This indicated that there is high level of infrastructural problem that affect customers.

On related to time to settle back order 2(1.4%) were strongly dissagry,9(6.3%) were disagree,13(9.1%) were neutral,50(35%) were agree and 15(10.5%) were strongly agreed as can be seen the mean and standard deviation scores 3.75 and 0.933 respectively This indicated that EABC takes long time to settle back order.

On deteriorated products and replaced time 11(7.7%) were strongly dissagry,26(18.2%) were disagree,36(25.2%) were neutral,11(7.7%) were agree and 3(2.1%) were strongly agreed as can be seen the mean and standard deviation scores 2.64 and 0.976 respectively This indicated that the time between deteriorated products collected back takes a long time.

On related to the company provides information supported by improved computerized system 2(1.4%) were strongly dissagry,12(8.4%) were disagree,18(12.6%) were neutral,36(25.2%) were agree and 21(14.7%) were strongly agreed as can be seen the mean and standard deviation scores 3.7 and 1.049 respectively This indicated that even if the customers opinion have some level of difference but the result indicated that the company is highly interconnected with improved computerized system.

On arrival notification to the customer 2(1.4%) were strongly dissagry,5(3.5%) were disagree,23(16.1%) were neutral,39(27.3%) were agree and 20(14%) were strongly agreed as can be seen the mean and standard deviation scores 3.79and 0.935 respectively This indicated that the company can provide a service that have arrival notification by the help of 'GPS'.

The whole result that the researcher was gathered under safety indicated that road transport service is by infrastructure; it causes a company takes long time to settle back order and replaced deteriorated products on time even if they provide information supported by improved computerized system and provide arrival notification. According to Kazimierz J**; (2008)** Road safety has been studied, analyzed and improved for more than a hundred years. Therefore, number of theories are produced which are mainly causal, Epidemiologic, systemic and behavioral theories.

Causal theories are used to analyze recognizable causes of accidents and the relations are determined between the number and effects of accidents and a set of important factors (social, economic, road, traffic and others). The objective is to avoid or limit the most significant causes and circumstances of road accidents. This means road means of transport are not free from accident by nature

4.3.5 EFFICIENCY

Table 4.6Descriptive Statistics for efficiency

item		Frequency	Percent	Mean	standard deviation
The road transport infrastructure affect Companies product movement	strongly disagree	5	3.5	3.45	1.234
	Disagree	22	15.4		
	Neutral	9	6.3		
	Agree	34	23.8		
	strongly agree	19	13.3		
Your company's road transportation is efficient in moving materials	strongly disagree	2	1.4	3.70	0.860
	Disagree	8	5.6		
	Neutral	13	9.1		
	Agree	56	39.2		
	strongly agree	9	6.3		
companies are well equipped with the necessary equipment	Disagree	11	7.7	3.65	0.894
	Neutral	19	13.3		
	Agree	40	28.0		
	strongly agree	12	8.4		
companies have enough space to accommodate all products	strongly disagree	2	1.4	3.11	0.962
	Disagree	24	16.8		
	Neutral	21	14.7		

	Agree	31	21.7		
	strongly agree	3	2.1		
companies have enough number of trucks to render transportation service	strongly disagree	2	1.4	3.26	0.923
	Disagree	20	14.0		
	Neutral	20	14.0		
	Agree	42	29.4		
	strongly agree	2	1.4		
company's road transportation service is cost efficient	strongly disagree	2	1.4	3.45	0.863
	Disagree	9	6.3		
	Neutral	29	20.3		
	Agree	40	28.0		
	strongly agree	6	4.2		

Source: Own survey Data, 2019

As per the above Table 4.6 effect of road transport infrastructure on companies product movement 5(3.5%) were strongly disagree, 22(15.4%) were dissagre,9(6.3%) were neutral,34(23.8%) were agree and 19(13.3%)%) were strongly agree as can be seen the mean and standard deviation score 3.45and 1.234 respectively This indicated that opinion difference on the respondent but the result approached to the road transport infrastructure affected companies product movement.

In related to efficiency of road transport in moving material 2(1.4%) were strongly disagree, 8(5.6%) were dissagre,13(9.1%) were neutral,56(39.2%) were agree and 9(6.3%) were strongly agree as can be seen the mean and standard deviation score 3.7and 0.860 respectively This indicated that EABC road transport is efficient for moving materials.

In related to equipment, 11(7.7%) were disagree, 19(13.3%) were neutral,40(28%) were agree and 12(8.4%) were strongly agree as can be seen the mean and standard deviation score 3.65 and 0.894 respectively This indicated that the company are well equipped with the necessary equipment.

In related to space to accommodate the product 2(1.4%) were strongly disagree, 24(16.8%) were disagree, 21(14.7%) were neutral, 31(21.7%) were agree and 3(2.1%) were strongly agree as can be seen the mean and standard deviation score 3.11 and 0.962 respectively this indicated that EABC have space to accommodate the products.

In related to number of trucks and transportation service 2(1.4%) were strongly disagree, 20(14%) were disagree, 20(14%) were neutral, 42(29.4%) were agree and 2(1.4%) were strongly agree as can be seen the mean and standard deviation score 3.26 and 0.923 respectively this indicated that companies have their own trucks to render transport service.

In related to cost efficiency and road transport 2(1.4%) were strongly disagree, 9(6.3%) were disagree, 29(20.3%) were neutral, 40(28%) were agree and 6(4.2%) were strongly agree as can be seen the mean and standard deviation score 3.45 and 0.863 respectively this indicated that almost all company's truck are cost efficient.

All the above results under efficiency indicated that road transport are the only means of transport for the company in moving materials; that are cost efficient and companies owned truck ;but those means of transport is highly affected by road transport infrastructure. Literature indicated that according to (Baltimore, 2004)The nation's transportation system has enhanced quality of life through increased access to health care, education, employment, recreation, and a wide range of consumer goods. These benefits have not been achieved without costs. The negative impacts of the transportation system include congestion; fatalities and injuries; noise, air, and water pollution; greenhouse gas emissions; diminishing energy resources; and biological and ecosystem damage. The challenge of a sustainable transportation system lies in minimizing these costs while offering strong transportation benefits

4.3.6 ROUTE CHOICE

Table 4.7Descriptive Statistics for route choice

Item		Frequency	Percent	mean	standard deviation
EABC road transportation service is cost efficient	Disagree	7	4.9	3.56	0.738
	Neutral	31	21.7		
	Agree	45	31.5		
	strongly agree	6	4.2		
EABC have fixed routes that always uses to distribute the product	strongly disagree	10	7.0	3.25	1.213
	Disagree	15	10.5		
	Neutral	15	10.5		
	Agree	37	25.9		
	strongly agree	10	7.0		
do you think that product delivery time of the company satisfied the customer	strongly disagree	40	28.0	2.45	0.905
	Disagree	7	4.9		
	Neutral	32	22.4		
	Agree	4	2.8		

	strongly agree	6	4.2		
The company always deliver the product early in the morning	strongly disagree	10	7.0	2.61	1.049
	Disagree	38	26.6		
	Neutral	18	12.6		
	Agree	18	12.6		
	strongly agree	3	2.1		
Late delivery occurs frequently	strongly disagree	10	7.0	3.02	1.178
	Disagree	23	16.1		
	Neutral	13	9.1		
	Agree	35	24.5		
	strongly agree	5	3.5		
Do you think that transportation service of a company is flexible	strongly disagree	2	1.4	3.86	0.778
	Disagree	2	1.4		
	Neutral	14	9.8		
	Agree	54	37.8		
	strongly agree	12	8.4		

Source: Own survey Data, 2019

As per the above Table 4.7 about the routes that always uses to distribute the product indicated 10(7%) were strongly disagree, 15(10.5%) were dissagre,15(10.5%) were neutral,37(25.9%) were agree and 10(7%) were strongly agree as can be seen the mean and standard deviation score 3.25and 1.213 respectively This indicated that the company have fixed routes that uses to distribute the product.

On related to delivery time and customer satisfaction 40(28%) were strongly disagree, 7(4.9%) were dissagre,32(22.4%) were neutral, 4(2.8%) were agree and 6(4.2%) were strongly agree as can be seen the mean and standard deviation score 2.45 and 0.905 respectively This indicated that delivery time of the product is highly affected customers satisfaction this means due to late delivery the customers are highly dissatisfied.

On related to delivery time of the product and morning time 10(7%) were strongly disagree, 38(26.6%) were dissagre,18(12.6%) were neutral,18(12.6%) were agree and 3(2.1%) were strongly agree as can be seen the mean and standard deviation score 2.61 and 1.049 respectively This indicated that the product of the company doesn't reached early in the morning due to transport authority obligation of the country didn't allow to move heavy trucks before 4:00 o'clock local time.

On related to late delivery 10(7%) were strongly disagree, 23(16.1%) were dissagre,13(9.1%) were neutral,35(24.5%) were agree and 5(3.5%) were strongly agree as can be seen the mean and standard deviation score 3.02 and 1.178 respectively This indicated that late delivery always occur on product distribution time.

On related to flexibility 2(1.4%) were strongly disagree, 2(1.4%) were dissagre,14(9.8%) were neutral,54(37.8%) were agree and 12(8.4%) were strongly agree as can be seen the mean and standard deviation score 3.86 and 0.778 respectively This indicated that company's transport service is flexible that means even if the company have fixed routes that always uses to distribute the product but the driver have a right to use other routes .

All the above results under route choice indicated that the product delivery time is affected customer satisfaction because product didn't reach early in the morning, late delivery frequently occur and there is lack of alternative routes.

4.3.7 DEGREE OF EFFECT

Table 4.8Descriptive Statistics for degree of effect on road transportation operation

Item		Frequency	Percent	mean	standard deviation
Infrastructure problem	Disagree	4	2.8	4.18	0.724
	Neutral	4	2.8		
	Agree	51	35.7		
	strongly agree	28	19.6		
traffic jam in cities	Disagree	4	2.8	4.140	0.70
	Neutral	4	2.8		
	Agree	55	38.5		
	strongly agree	24	16.8		
Policy of transport authority about truck movement in morning time	Disagree	6	4.2	3.67	0.77
	Neutral	27	18.9		
	Agree	46	32.2		
	strongly agree	10	7.0		
Lack of modern equipment	strongly disagree	2	1.4	3.52	1.149
	disagree	23	16.1		
	Neutral	9	6.3		
	Agree	37	25.9		

	strongly agree	18	12.6		
High rate of fuel	strongly disagree	2	1.4	3.40	1.041
	disagree	20	14.0		
	Neutral	18	12.6		
	Agree	38	26.6		
	strongly agree	11	7.7		

Source: Own survey Data, 2019

As per the above Table 4.8 infrastructural problem degree of effect on road transport operation of the companies,4(2.8%) were dissagre,4(2.8%) were neutral,51(35.7%) were agree and 28(19.6%) were strongly agree as can be seen the mean and standard deviation score 4.18 and 0.724 respectively This indicated that there is high infrastructural problem on road transport operation.

On traffic jam degree of effect on road transport operation 4(2.8%) were dissagre,4(2.8%) were neutral,55(38.5%) were agree and 24(16.8%)%) were strongly agree as can be seen the mean and standard deviation score 4.14 and 0.70 respectively This indicated that traffic jam affect road transport operation.

On policy of transport effect on road transport operation 6(4.2%) were dissagre,27(18.9%) were neutral,46(32.2%) were agree and 10(7%) were strongly agree as can be seen the mean and standard deviation score 3.67 and 0.77 respectively This indicated that policy of transport authority in the movement of heavy truck on the morning time affect road transport operation.

On lack of modern equipment 2(1.4%) were strongly disagree,23(16.1%) were dissagre,9(6.3%) were neutral,37(25.9%) were agree and 18(12.6%) were strongly agree as can be seen the mean and standard deviation score 3.52 and 1.149 respectively This indicated that lack of modern equipment affect road transport operation.

On rate of fuel effect on road transport operation 2(1.4%) were strongly disagree,20(14%) were dissagre,18(12.6%) were neutral,38(26.6%) were agree and 11(7.7%) were strongly agree as can be seen the mean and standard deviation score 3.4 and 0.041 respectively This indicated that high rate of fuel affect road transport operation.

All the above result under degree of effect on road transport operation indicated that infrastructural problem is the first one that affects the road transport operation, then the second one is traffic jam, and then police of transport, then lack of modern equipment the last one is rate of fuel according to its mean value.

4.4 *Descriptive Statistics for business logistics*

4.4.1 Delivery time

Table 4.9Descriptive Statistics for business logistics performance on delivery time

Item		Frequency	Percent	mean	standard deviation
your transportation suffer due to deliver input at the right time	strongly disagree	4	2.8	3.73	0.974
	disagree	8	5.6		
	neutral	9	6.3		
	Agree	55	38.5		
	strongly agree	13	9.1		
Your transportation service suffer to deliver products to customers on time	strongly disagree	4	2.8	3.76	1.045
	disagree	7	4.9		
	neutral	16	11.2		
	agree	41	28.7		
	strongly agree	21	14.7		
Lead time(time between order and delivery) takes long time	strongly disagree	4	2.8	3.00	1.108
	disagree	34	23.8		
	neutral	17	11.9		
	agree	26	18.2		
	strongly agree	8	5.6		

Source: Own survey Data, 2019

As per the above Table 4.9 *business logistics performance on delivery time as* transportation deliver input at the right time, (2.8%) were strongly dissagre,8(5.6%) were dissagre,9(6.3%) were neutral,55(38.5%) were agree and 13(9.1%) were strongly agree as can be seen the mean and standard deviation score 3.73 and 0.974 respectively.. As transportation service deliver products to customers on time 4(2.8%) were strongly dissagre,7(4.9%) were dissagre,16(11.2%) were neutral,41(28.7%) were agree and 21(41.7%) were strongly agree as can be seen the mean and standard deviation score 3.76 and 1.045 respectively. As lead time (time between order and delivery) 4(2.8%) were strongly dissagre,34(23.8%) were dissagre,17(11.9%) were neutral,26(18.2%) were agree and 8(5.6%) were strongly agree as can be seen the mean and standard deviation score 3. and 1.108 respectively. The result under delivery time indicates that business logistics performance were low due to product and row materials delivery time and time between order and deliver takes long time.

4.4.2 Consolidation

Table 4.10Descriptive Statistics for business logistics performance on consolidation

Item		Frequency	Percent	mean	standard deviation
EABC benefited from road means of transportation	strongly disagree	10	7.0	3.25	1.213

	disagree	15	10.5		
	Neutral	15	10.5		
	Agree	37	25.9		
	strongly agree	10	7.0		
Road transportation are the only means of distribution	strongly disagree	2	1.4	3.65	1.067
	disagree	15	10.5		
	Neutral	14	9.8		
	Agree	39	27.3		
	strongly agree	19	13.3		
In the pick time of product demand Road transportation are the only means of distribution	strongly disagree	4	2.8	3.64	0.835
	disagree	4	2.8		
	Neutral	15	10.5		
	Agree	60	42.0		
	strongly agree	4	2.8		

Source: Own survey Data, 2019

As per the above Table 4.10 *business logistics performance on consolidation*, as company benefit and road means of transport 10(7%) were strongly dissagre,15(10.5%) were dissagre,15(10.5%) were neutral,37(25.9%) were agree and 10(7%) were strongly agree as can be seen the mean and standard deviation score 3.25 and 1.213 respectively.as road transport and the means of distribution2(1.4%) were strongly dissagre,15(10.5%) were dissagre,14(9.8%) were neutral,39(27.3%) were agree and 19(13.3%) were strongly agree as can be seen the mean and standard deviation score 3.65 and 1.067 respectively.as the pick time of product and transportation means 4(2.8%) were strongly dissagre,4(2.8%) were dissagre,15(10.5%) were neutral,60(42%) were agree and 4(2.8%) were strongly agree as can be seen the mean and standard deviation score 3.64 and 0.835 respectively. The result under consolidation indicated that business logistics performance under consolidation were relatively good.

4.4.3 *Quality service*

Table 4.11Descriptive Statistics for business logistics performance on quality service

Item		Frequency	Percent	Mean	standard deviation
Road mode of transportation exposed for	strongly disagree	4	2.8	3.45	0.905
	Disagree	6	4.2		
	Neutral	32	22.4		

damage	Agree	40	28.0		
	strongly agree	7	4.9		
Number of order shipped on time	strongly disagree	3	2.1	3.71	1.011
	Disagree	22	15.4		
	Neutral	15	10.5		
	Agree	46	53.1		
	strongly agree	27	18.9		
Your transportation service deliver products to the right place needed	Disagree	2	1.4	4.22	0.655
	Neutral	5	3.5		
	Agree	52	36.4		
	strongly agree	28	19.6		

Source: Own survey Data, 2019

As per the above Table 4.11 *business logistics performance on service quality*, as road mode of transportation exposed for damage 4(2.8%) were strongly dissagre,6(4.2%) were dissagre,32(22.4%) were neutral,40(28%) were agree and 7(4.9%) were strongly agree as can be seen the mean and standard deviation score 3.45and 0.905 respectively.as number of shipped order on time 3(2.1%) were strongly dissagre22(15.4%) were dissagre,15(10.5%) were neutral,46(53.1%) were agree and 27(18.9%) were strongly agree as can be seen the mean and standard deviation score 3.71 and 1.011 respectively as transportation deliver products to the right place needed ,2(1.4%) were dissagre,5(3.5%) were neutral,52(36.4%) were agree and 28(19.6%) were strongly agree as can be seen the mean and standard deviation score 4.22 and 0.655 respectively the above result under quality service indicated that business logistics performance are affected due to road mode of transport exposed to damage .

4.5 Correlation Analysis

The second objective of the study is to determine the relationship between road transport and business logistics performance.

Correlation analysis is used to describe the strength and direction of the linear relationship between two variables. The correlation is used for the purpose of a relationship allows predictions to be made of one behavior from another; to demonstrate a test scale validity by showing a significant relationship between it and another accepted scale for a related construct; to show reliability consistency of measurement on two occasions, to show internal consistency of scale items, and for theory verification use to support hypotheses that predict the relationships

between variables. Pearson's Product-Moment Correlation is the best known correlation and the most used for interval data *(Beech, 2006).*

Table 4.12

Correlations			
		Performance of Business Logistics	Mean of total transport
Performance of Business Logistics	Pearson Correlation	1	.740**
	Sig. (2-tailed)		.000
	N	89	89
Mean of total transport	Pearson Correlation	.740**	1
	Sig. (2-tailed)	.000	
	N	89	143
****. Correlation is significant at the 0.01 level (2-tailed).**			

. Source own survey data (2019)

The variable is significantly correlated

There was very high, and positive correlation between road transport and business logistics performance variables [r=–.740, n=89, p<.001], and statistically significant.

It can be concluded that road transport and business logistics performance has very high and positive relation based on Pearson correlation coefficient.

4.6 Regression Analysis

4.6.1Linear Regression Assumptions

Linearity assumption states that the residuals should be linear relationship with the predicted dependent variables scores, linear relationship between independent and dependent variables.

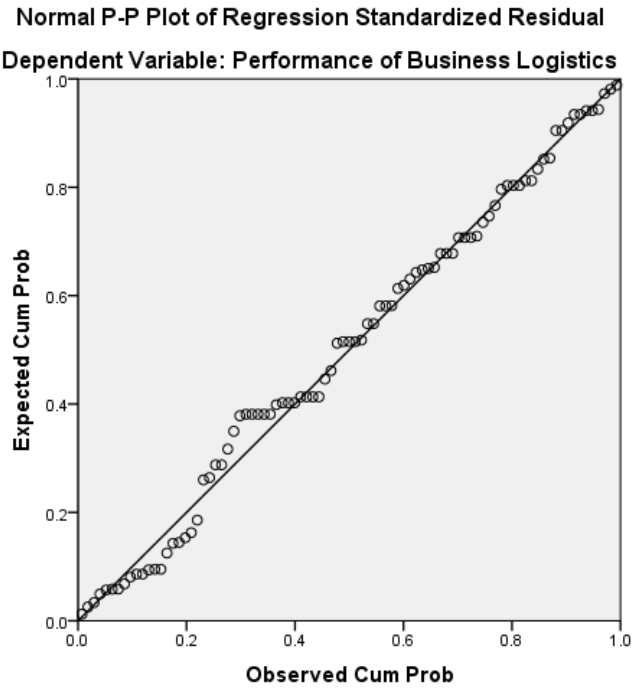
This set of assumption can be examined to a fairly satisfactory extent simply by plotting scatterplots of the relationship between each explanatory variable and the outcome variable. It is important to check that each scatterplot is exhibiting a linear relationship between variables (perhaps adding a regression line to help you with this). Alternatively, you can just check the scatterplot of the actual outcome variable against the predicted outcome. The term residual considered is the difference between outliers and influential cases a bit further *(J, 2010).*

The simple outlier influences the line to a far lesser degree but will have a very large residual (distance to the regression line). The influential case outlier dramatically alters the regression

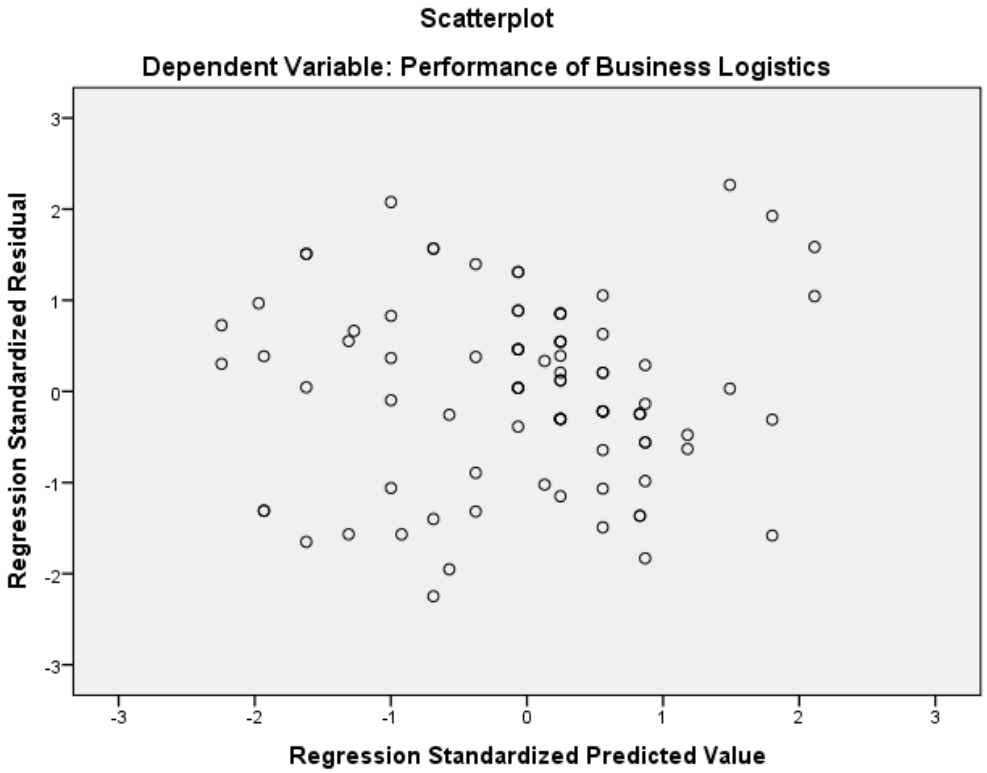
line but might be harder to spot as the residual is small - smaller than most of the other more representative points in fact. To examine the scatterplot, you can also use *influence statistics* (such as the Cook's distance statistic) to identify points that may unduly influence the model *(Wang, Rosner and Goodman, 2016).*

If it is looked at the p plot below figure 4.3, the plot of the below graph indicates that the residuals are normally distributed. Non-normal if points substantially deviate from the diagonal line. Therefore the assumption of linear regration has met

Figure 4.3 Linear Regression Assumptions



Source: *Survey Data, 2019*



Normally distributed residuals

A histogram of the residuals (errors) in a model can be used to check that the residuals are normally distributed about the predicted dependent variables scores. However, it is often good to tell if the distribution is normal from just a histogram, and additionally, a P-P plot should be used as shown above figure 4.3.

As it could have been seen from the figure, the expected and observed cumulative probabilities are matched perfectly. This suggests that the residuals are seamlessly normally distributed. So in this survey result, the assumption of normality is not violated.

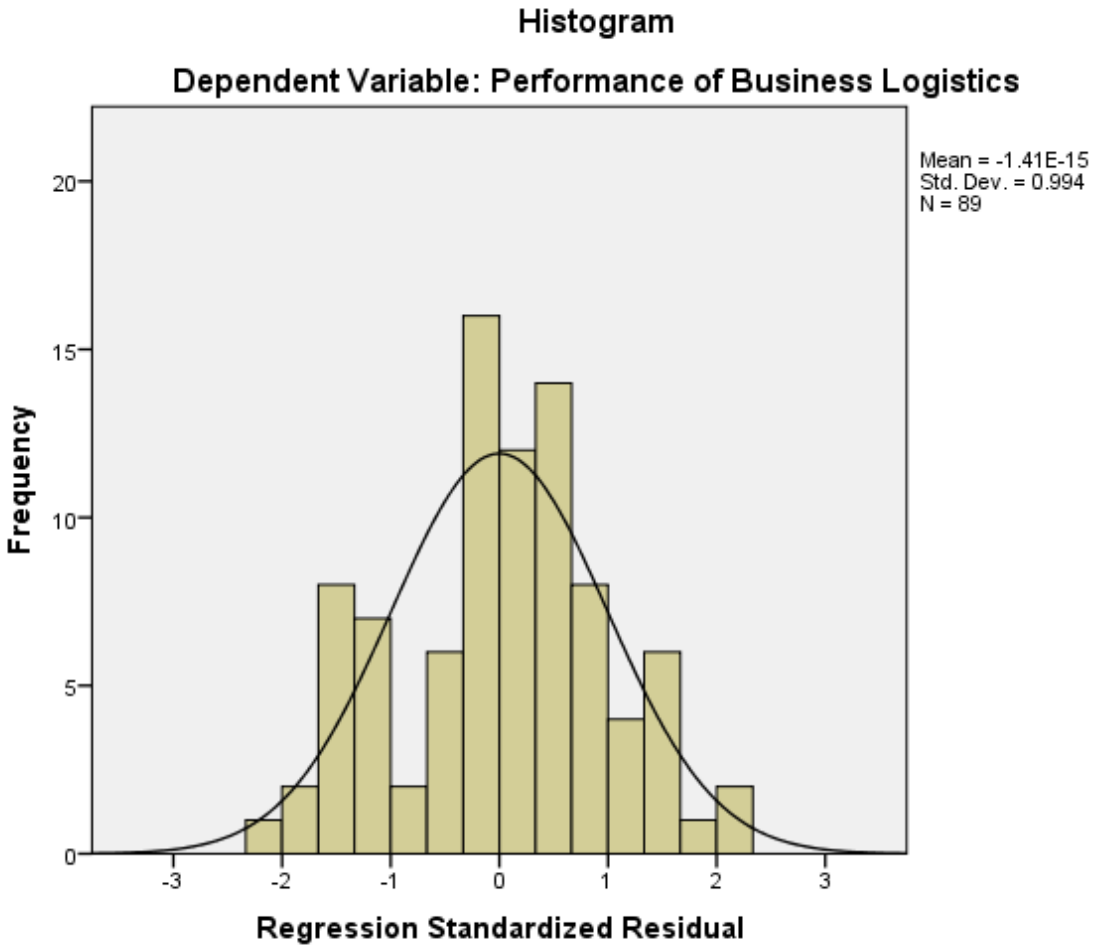


Table4.13

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F Change	Sig. F Change
1	.740[a]	.548	.543	.19658	105.401	.000

a. Predictors: (Constant), road transport

b. Dependent Variable: Performance of Business Logistics

The finding shows that, the independent variables (road transport) that were studied, explain only 54.8 % business logistics performance of the organization, in case of east Africa bottling company as represented by the R2. Therefore, this means that another factors not studied in this research contribute 45.2% of the organizational performance. Therefore, further research should be conducted to investigate other road transport

factors (45.2%) that have effect for business logistics performance of the organization.

Table4.14

ANOVA [a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.073	1	4.073	105.401	.000[b]
	Residual	3.362	87	.039		
	Total	7.435	88			

a. Dependent Variable: Performance of Business Logistics
b. Predictors: (Constant), road transport

The findings of the above table 4.14 indicated that the significance value of the model is p< .0005; which is less than the significance level of 0.05 at a confidence level of 95%, thus the model is statistically significant in predicting how road transport affect business logistics performance of the organization. this shows that the overall model is significant.

Table4.15

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.350	.211		6.396	.000	.930	1.770
	Road	.603	.059	.740	10.266	.000	.486	.719

	transport							

a. Dependent Variable: Performance of Business Logistics

The regression coefficient is the independent variable associated with it is contributing significance to the variance accounted for in the dependent variable. From the findings in the above table the regression equation is: $\hat{Y} = 1.350 + 0.603xi$.

Where:-

Y is Performance of business logistics

X1= road transport

According to the finding it was found that business logistics performance would be increased by 1.350 constant. A unit increase in road transport quality will increase business logistics performance of an organization to a 0.603. This clearly indicates that there existed a positive relationship between road transport practices and organizational business logistics performance.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

The study examined the effect of road transport on the performance of business logistics taking the case of east Africa bottling company. The specific objectives included to analyze the effect of road transport on the performance of business logistics of east Africa bottling co, To describe the challenges of east Africa bottling co. with regard to transporting its product via road, To identify factor that have more impact on road transport operation.

- Regarding to respondents educational qualification, the majority (94.25%) who participated in this study had first degree and the majority (94.33%) had less than 10 years' experience within the company, And finally majority of the respondents (41.2%) were supervisor who had direct connection with operation of the organization.

- Majority respondents (64%) of them on consolidation agreed that Product distribution practice of EABC do not have electronic product interchange, which shows that product distribution practice of the company does not be supported by electronic product interchange system. That exposed to use road means of transport and late delivery.
- Majority respondents (49%) of them on scheduling agreed that company's Road transport service delivery time cannot be satisfy the customer due to infrastructural problem throughout the country.
- Majority respondents (76%) of them on accessibility agreed that EABC have capacity to provide the product even in the pick time of product need, but those products are not delivered to a customer on a designed delivery time due to road problem, and customers also have complain due to shortage of product
- Majority respondents (65%) of them on safety dimension agreed that product of a company are exposed to damage, it takes long time to settle back order and replaced deteriorated products on time due to road problem.
- Majority of them on efficiency agreed that road transport are the only means of transport for the company in moving materials; that are companies owned truck; but those means of transport is highly affected by road transport infrastructure.

- On level of effect on road transport Majority of them (79%) agreed that infrastructural problem is the first one that affects the road transport operation, then the second one is traffic jam, and then police of transport, then lack of modern equipment the last one is rate of fuel on the company's perspective.
- In this study revealed that the independent variable (road transport) had a strong positive correlation with the dependent variable (business logistics performance).
- The independent variables (road transport) that were studied, explain only 54.8 % business logistics performance of the organization, in case of east Africa bottling company. this means that another factors not studied in this research contribute 45.2% of the organizational performance
- According to the finding a unit increase in road transport quality will increase business logistics performance of an organization to a 0.603. This clearly indicates that there existed a positive relationship between road transport practices and organizational business logistics performance.

5.2 Conclusion

- The overall assessment result of consolidation indicated that Product distribution practice of a company does not be supported by electronic product interchange system. That also affects business logistics of a company in regarding to late delivery.
- The overall assessment result under efficiency indicated that road transport are the only means of transport for the company in moving materials; that are cost efficient and companies owned truck ;but those means of transport is highly affected by road transport infrastructure. This also affect business logistics of accompany by creating late delivery.
- The overall assessment result of scheduling and accessibility indicated that companies have a capacity to provide or distribute the product on designed place but not a designed time. These also affect business logistics of a company on customer satisfaction level due to road condition throughout the country, exposed to weather condition, theft and also product and truck damage.
- Achieved business logistics performance indicated that improved quality of road; reduced lead times and inventory levels, and customer's requirement and order fulfillment haven't

influenced firm performance. The overall assessment results of the model revealed that the model had satisfactory statistical power in predicting the research model. Generally, the study showed that the superior business logistics performance can be attained through quality of road improved.

5.3 Recommendation

- To increase organizational Business logistics performance and stockholders capital ,it is better for the organization to outsource the transport service
- EABC management should be in position to continuously observe other alternatives from application of distribution.
- The company should prefer best time to distribute their products to their customers.

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ANNEXES

Part I: respondents profile

1. Educational background :

College diploma ☐ first degree ☐ second degree and above ☐

2. Your Job title

Manager ☐ supervisor ☐ officer ☐ other ☐

3. 1

Less than 2 years ☐ 3-5 years ☐ 6-10 years ☐ 10 years ☐

PART II dimension of road transport measure

Indicate your level of agreement with regard to road transport practice of your company, please tick the appropriate number to indicate the extent to which you agree or disagree with each statement .scales are five –point rating scale with

Key: 1=STRONGLY DISAGREE, 2= DISAGREE, 3= NEUTRAL, 4= AGREE, 5= STRONGLY AGREE

N.B EABC =East Africa Bottling Company

Measurement item of road transport stated below are believed to affect road transportation operation. Please show their degree of effect on transportation operation of your company

Consolidation		Level of agreement				
		1	2	3	4	5
1	EABC provide arrival notification to its customer					
2	do you have Computerized billing and tracing service					
3	Product distribution practice of EABC do not have electronic product interchange					
4	Road transport service is supported by improved computerized system					
▪ **Scheduling**						
		1	2	3	4	5
1	Your company's Product arrived the designed place					
2	Your company's Product handling time is short and provided easily with acceptable waiting time					
3	The customer received the product within designed place					
4	Your company's road transport service schedule for delivery place is meet its plan					
5	Your company's Road transport service delivery time dissatisfy the customer					
6	Road transport service is competitive in terms of rendering delivery service					

Accessibility		Level of agreement				
		1	2	3	4	5
1	Products are delivered with minimum process time from company to customer					
2	EABC have capacity to provide the product when the pick time of product needed					
3	road transport service can provide quality service with designed delivery time					
4	your customers have complain due to shortage of product					

	SAFETY	Level of agreement				
		1	2	3	4	5
1	Road transport service exposed to damage					
2	Do you think that there is infrastructural problem that affect a customer					
3	Deteriorated products will be replaced on time					
4	EABC takes long time to settle back order					
5	EABC provides information supported by improved computerized system					
6	EABC provide arrival notification to its customer					

EFFICIENCY	Level of agreement				
	1	2	3	4	5
The road transport infrastructure affect Companies product movement					
Your company's road transportation is efficient in moving materials					
companies are well equipped with the necessary equipment					
companies have enough space to accommodate all products					
companies have enough number of trucks to render transportation service					
company's road transportation service is cost efficient					

ROUTE CHOICE	Level of agreement				
	1	2	3	4	5
EABC road transportation service is cost efficient					
EABC have fixed routes that always uses to distribute the product					
do you think that product delivery time of the company satisfied the customer					
The company always deliver the product early in the morning					
Late delivery occurs frequently					
Do you think that transportation service OF A company is flexible					

	Level of agreement				
degree of effect on road transportation operation	1	2	3	4	5
Infrastructure problem					
traffic jam in cities					
Lack of modern equipment					
Policy of transport authority about truck movement in morning time					
traffic jam in cities					
High rate of fuel					

III Questions related to business logistics performance

The under listed items are meant to measure logistics performance of the company. Therefore Please put the sign to show your answer √

Business logistics performance	Level of agreement				
	1	2	3	4	5
1,**delivery time**					
your transportation suffer due to deliver input at the right time					
Your transportation service suffer to deliver products to customers on time					
Lead time(time between order and delivery) takes long time					
2,CONSOLIDATION					
EABC benefited from road means of transportation					
Road transportation are the only means of distribution					
In the pick time of product demand Road transportation are the only means of distribution					
3,on quality service					
Road mode of transportation exposed for damage					
Number of order shipped on time					
Your transportation service deliver products to the right place needed					