Addis Ababa University College of Business and Economics School of Commerce

Assessment on Heavy Truck Freight Transport Management practices: The case of Ethiopian Ministry of National Defense Joint Logistics Main Department

BY: LEULSAGED BEKELE

A thesis submitted to Addis Ababa University School of Commerce, in partial Fulfillment of the Requirement for the Award of Master of Arts Degree in Logistics and Supply Chain Management

ADVISOR: BUSHA TEMESGEN (PHD)

July, 2021
Addis Ababa

ADDISABABA UNIVERSITY SCHOOL OF COMMERCE DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Assessment on Heavy Truck Freight Transport Management practices: The case of Ethiopian Ministry of National Defense Joint Logistics Main Department

By: Leulsaged Bekele Asegidew

Approved by: The Examiners and Advisor:

Dr. Busha Temesgen	_____	_____
Advisor	Signature	Date
Dr. Matiwos Ensermu	_____	_____
Internal Examiner	Signature	Date
Dr. Biniam Berhe	_____	_____
External Examiner	Signature	Date

Declaration

I, LEULSAGED BEKELE ASEGIDEW, declare that this thesis is my own original work on the topic entitled “Assessment on Heavy Truck Freight Transport Management practices in Ethiopian Ministry of National Defense Joint Logistics Main Department and that it has not been presented to any other University for similar or any other degree award. To this end, I acknowledged all sources of information that I used to produce the study appropriately and I would say perfectly.

Signature…….

Date…….....

Confirmation

This is to certify that **Leulsaged Bekele** has carried out this research work on the topic entitled **"**Assessment on Heavy Truck Freight Transport Management practices in Ethiopian Ministry of National Defense Joint Logistics Main Department **"** under my supervision, this is his original work and has not been presented to any other University for similar degree award and it can be submitted for the partial fulfillment of the requirements for the award of Masters of Art degree in Logistics and Supply Chain Management.

Busha Temesgen (**PhD**)

Signature_____

Date _____

ACKNOWLEDGEMENT

Above all, I would like to glorify the Almighty God for providing me the strength, courage, Wisdom and inspiration throughout the period of my study.

I would like to take the opportunity to acknowledge the support and help of my supervisor **Dr. Busha Temesgen** willingly accepted to supervise my work and guided me with patience, understanding and encouragement throughout the period of shaping this work. I also wish to thank the entire management of the University and my instructors without your imparted knowledge this would never been happen to me.

I would also like to extend my sincere appreciation to MoND Joint Logistics Transport Department management team and officers. This study would not have been successful without your direct or indirect involvement in the research process that resulted in its final realization. Lastly, I would like to appreciate my family, all friends and work colleagues who were in my side for every support while carrying out this investigation. Thank you all for your unreserved support whenever it counts most to me. I am rely and deeply in debt of your good deeds.

Thank you all time and again.

Table of Contents

List of Tables

List of Figures

List of Acronyms/abbreviation

ATRI's: American Transportation Research Institute

BPR: Business Process Re-engineering

C2: Command and Control

CPO: Common Operational Picture

CSS: Combat Service Support

DOD: Department of Defense

DTS: Defense Transportation System

EDI: Electronic data interchange

EU: European Union

HGV: Heavy Goods vehicle

ME: Margin Error

MoND: Ministry of national Defense

FDRE: Federal Democratic Republic of Ethiopia

FM: Field Manual

GIS: Geographic Information System

GPS: Global Positioning System

GTM: Global transportation management

HN: Host Nation

IBM: International Business Machine

ITS: Intelligent Transportation system

ITV: In-transit visibility

JFC: Joint force commander

NCO: Noncommissioned officer

NGO: Non-government organization

RFID: Radio frequency identification

SPSS: Statistical package for Social Science

TB: Transport Buyers

TP: Transport Provider

UPS: United Parcel Service

US: United state

Abstract

The objective of this study is critically to assess heavy truck freight transportation management practice and finding the major shortcomings of the transport services in MoND logistics main department Transport department. The study used descriptive research design in both quantitative and qualitative approach. Primary data were collected through questionnaire, interview as well as field observation. Purposive sampling technique for six interviewees and simple random sampling technique used for 128 respondents asked in the open and cloth ended questionnaire. In addition, secondary data, such as annuals evaluation reports, quarterly and monthly reports, plans, and other relevant documents of MoND-Logistics. Methodologically, this study is in accordance to the nature of the data required and designed to be descriptive. SPSS version 23 was applied to present data and to get the required analysis results for study. The researcher also presents the results by using descriptive statistics such as mean, standard deviation, charts, tables and other related statistical data presentation techniques. The major finding of the study indicates that, there are empty trips or underutilization of vehicles and none utilizing modern technologies such as global positioning system, radio frequency identification, and Electronic data interchange. The required professional competency of managers, unit heads, transport officers and drivers to carry out their duties and responsibilities is at low level. Since the department lacks comprehensive approaches on undertaking appropriate on the job training for both managers and subordinates and problem of establishing a liaison with governmental marketing organizations and other stakeholders in order to find market for those empty trips.

Keywords: *Freight Transport Management practice, Modern technology*

CHAPTER ONE
INTRODUCTION

1.1. Background of the Study

The growth of globalization, over the past decades, has caused an expansion of demand for trade. This in turn has caused logistic issues to become an important topic. For, improvements in logistics have enormously been contributing towards increased profits for companies by allowing them to maintain their competitive advantage (Owuor, 2014). Among its constituents, transportation system, which links the separated activities, is identified to be the key element in a logistics Management.

In early period, the trade expansion, human interaction and other environmental changes have accelerated the transport system. Expanded trade and political pressures have created for the improvements of transport, and the transport developments associated with the expansion of empires in the world.

In Ethiopia, transport was officially started in the 18th century during the reign of Emperor Tewodros, although the technology was primitive. Prior to Italian occupation, Emperor Menilik was constructed a road from Eritrea to Addis Ababa and Addis Alem in 1903.It was the first asphalt appear in Ethiopia (Authority, 2017).The political, economic, the social, competition and globalization has an impact on the development of transport system in Ethiopian.

Military transportation includes sub-categories and articles about roles, techniques and technologies of moving military forces and their resources strategically, operationally and tactically. Transportation in army is essential to effective and efficient force generation and sustainment and it provides vital support to the military force and joint forces across the strategic, operational, and tactical levels of war US Army (2013).

The future military will have a new array of modern technologies for better planning and execution, a wide array of new equipment designed for easier deployment and support. Whereas throughput capabilities to load and off-load ships and aircraft at origin and destination are being improved, much remains to be done.

To increase efficient and effective truck freight transport practice in Army operations, applying modern intelligent transportation system (ITS) played a great role to enhance good visibility and reliability of transportation management. Applications of ITS in transport systems are widespread. The most common techniques include Global Positioning System (GPS), Geographic Information Systems (GIS) and advanced information systems. GPS provides the service of vehicles positioning. It could help the control centers to monitor and dispatch trucks. GIS provides the basic geographic database for the deliverers to enable to organize their routes easier and faster. Advanced information systems provide the real-time information for both managers and deliverymen to adjust their paths as new demands occur. The integration of GPS, GIS and advanced information systems provides a high maneuverability of transport systems and its benefits of the integrations are better service quality, reduced unnecessary trips, and increased loading rate (Michael et al, 2005).

In the field of military, the advantage of intelligent transportation systems (ITS) has lead to in the speedy and widespread adoption of a wide range of technologies to aid transportation. They include the use of wireless communications, radar, sophisticated computer-aided video detectors, and on-board computer and vehicle navigation systems, all leading to the evolution of an integrated and multimodal transportation concept enabled by technology. According to Ranaiefar (2012) the aim of ITS is to integrate individual transportation elements and join them through use of information and communication technologies into a single system. ITS provide the opportunity to increase the use of existing transportation system and generate additional capacity from the existing physical infrastructure. Other benefits of freight ITS Increase safety and security, decrease negative environmental impacts of freight transportation.

The adoption and implementation of information and communication technologies in freight transport, such as EDI (electronic data interchange) and web EDI, GPS, RFID (radio-frequency identification) etc., and the development of new method of organizing logistics, information and Transport flows transform logistic processes in general and freight transport services in particular.

Transportation as a whole and freight transportation in particular is a costly and time consuming component of supply chain management system, in Africa. Among others this is attributed to

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

Freight transport operations have become more and more complex and differentiated over the past 30 years. Beyond shipping and handling goods, they more and more often include operations such as the treatment of information flows, the differentiation of goods for the final customer etc. The conceptual representation of freight transport exclusively in terms of flows of goods thus becomes less and less relevant to the realities of the freight transport sector and its performance issues.

Fleet transport management has become necessary for transport service delivery systems whether in the public or private sector. It can be seen as observing and increasing how efficient one can perceive transportation fleet (Gitahi & Ogollah, 2014). It includes the management of vehicles like vans, cars, ships and trucks. A lot of functions are considered when it comes to fleet management including financing vehicles, maintenance of vehicles, vehicle telematics, driver shifting and roistering, tracking of assets, management of speed, fuel management as well as health and safety management. The primary aim of fleet management is to significantly decrease the risks associated with vehicle operation, efficiency, productivity and minimizing the transportation and staff cost entirely. Accordingly, Besiou et al., (2012) claim that a strategy that ensures sustainable fleet management is one that seeks to minimize environmental effect.

Ethiopian ministry of national defense (MoND) transport department is organized under the joint logistics main department. The FDRE ministry of defense has been prepared to create and develop the defense forces combat capability, and to use the existing combat power in any moment and leading modern transport leadership system. In the concern of the defense logistics policy defines that “The function of transport is moving the force, equipment, and supply from the initial location to its destination and back to the initial location.” during the operation, it also engages in supporting the movement of the force by providing transportation and carrying out

the transport activity. It plays the force multiplier role and ensures effective utilization of force by moving the force to the needed place with in short period of time (Robert, 2012).

The MoND, basically use different types and modes of transportation. Among those, heavy truck transportation has the greatest share and it has a major responsibility of transporting enormous amount of military equipment, goods, and service as well as man power from their point of origin to the destination. The department affords this service to East Command, West Command, South command, North Command, Central Command, Air Force, training centers and other main departments.

The FDRE MoND transport Department heavy truck freight management practice is not at the standard level due to lack of various transporting activities. These are work flow of the departments are not well organized, there is no organized efficiency measurement of trucks activities, tracks have no organized data for their life cycle, there is high empty runs, service user of the tracks didn't give their needs on time prior to their activity, there is no fact-based system to give their transport need in the organization and there is no fleet management system to control and manage the department activities as a whole. The above drawback indicates that the practice of heavy truck freight transport not at the required level to give active and on time services to support FDRE Ministry of Defense in mission accomplishment.

Therefore I attempts to study the overall practices of heavy truck freight transportation service provided under the Ethiopian national defense transport department with a view to point out strengths and weaknesses of the services for further improving it.

1.2. Statement of the Problem

Transportation in general usually represents the most important single element in logistics cost for most firms. Freight movement has been observed to absorb between one-third and two-thirds of the total logistics costs. Thus, the logistician needs to have a good understanding of transportation matters (Özceylan, 2010).

The freight transport management of the department is lack of allocating routes, high empty runs, dispatching fleet, administration and costing of the transport of materials, maintenance

scheduling, observed speed limits and track efficiency management. To increase efficient and effective heavy truck freight transport practice in army operations, applying modern intelligent transportation system played a great role to enhance good visibility and reliability of transportation management. The vehicle information management system in the Ethiopian defense transport in general is traditional and not supported by modern technology like Global Positioning System (GPS), geographic identification system (GIS), Radio frequency Identification (RFID) and advanced information systems. The integration of GPS, RFID and advanced information systems provides a high maneuverability of transport systems and its benefits of the integrations are bringing better service quality, reduced unnecessary trips, minimize empty runs and increased loading rate (Michael et al, 2005).

FDRE defense transport department has been equipped with different types of heavy trucks which are used to mobilize human and material resources from their point of origin to the point of end users to provide the army needs at all corners of the country. Although establishing a transportation department is an important development in providing the required transportation services to the armed forced deployed in all corners of the country (Transport Department, 2019).

It is worth mentioning that the above-mentioned factors are of the universal challenges of freight transport management and they are not focused on the military transport management. Therefore, this research try to identify the practice of heavy truck freight transport management in mobilizing the resource required to accomplish the mission of FDRE Ministry of Defense.

1.3. Research questions

1. What are the major methods and procedures that use for the practice of heavy truck freight transport services across the Defense?
2. What are the essential professional competencies level of department and sub-department heads and employees to carry out their duties and responsibilities?
3. Is defense transport management supported by modern technology?

1.4. Objectives of the Study

1.4.1. General Objective

The general objective of the study was to assess Heavy Truck freight transportation management practices of Ethiopian National defense Joint Logistics main department of transport Department at Kality.

1.4.2. Specific Objectives:

The specific objectives of the study were listed as follows**:-**

1. Identify and clarify the specific principal methods and procedures in the practice of Defense Heavy truck freight Transport Management in the department.
2. To inspect the required professional competencies level of department and sub-department heads and employees to carry their duties and responsibilities.
3. Investigate the practice of managing and controlling the freight transport system using modern technology;

1.5. Significance of the study

The study would have provide the following significance:

- It can serve as feedback for the managers to redesign or revise the current practice of heavy truck freight transport management system of the department.
- It will help for managers and top executives of Defense Transport Department for their awareness how to manage the challenges of freight transport managements in the department.
- The FDRE MoND joint logistics take as feedback this research to give guidelines and principles for the real application of freight transport management system using modern technology in the transport department.
- The research used as a ground to study further as replication for other researcher for future purpose.

1.6. Scope of the study

The geographical scope of the study, the transport management derived thereof, is confined towards examining the practical framework of Joint logistics transport department in the study

time starting from 2003 E. c when ministry of Defense began to implement Business Process Reengineering (B.P.R) in the ministry in general and transport department in particular.

This study mainly focused on the practice of heavy truck management system in Ethiopian ministry of defense joint logistics main department. Furthermore, the study used five consecutive years annual report starting from 2016 up to 2020, because, it was useful for the study to conclude reliable solution in changing environment.

1.7. Limitation of the study

Even though the study is very significant, there were some missing questioners because most of the participants are busy with their work. The other limitation of the study was lack of reference materials and previously conducted research on similar topic in Ethiopian Army contexts and the study tried to address only the side of MoND transport department. In addition to this, the respondent's willingness to give their response on time and return back was cause of a problem. To overcome limitation of primary data collection, the researcher closely communicated with those respondents until the required data were collected.

1.8. Organization of the study

This research study was organized in to five chapters. The first chapter were introduction which included background of the study, statement of the problem which focuses on major findings, research questions, objectives of the study, scope of the study, limitations of the study, significance of the research, and organization of the study. The second chapter presents related literature review which focuses on theoretical framework and conceptual issues of warehouse management. The third chapter contained research methodology which is incorporated study area description , study design; data collection methods and instruments; study population, sample size and sampling, methods of data analysis used, and ethical considerations. Chapter four were findings of the study including data presentation and analysis of the findings. Finally chapter five presents discussion, implication and conclusion of the study and recommendations of the study based on their relevancy priority.

1.9. Definition of terms

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

Freight Transport: - refers to the movement or transporting different goods from place of origination to the place of consumer, using any mode of transport available or preferred (Taylor, 2001).

Intelligent Transportation: - Intelligent transportation system is the application of sensing, analysis, and control by modern technologies to ground transportation in order to improve safety, mobility and efficiency (Tsegaye, 2016).

Radio frequency identification (RFID): is a wireless communication technology for precisely identifying objects. It uses radio-frequency waves to identifying information between tagged objects and readers without line of sight, thus enabling automatic tracking and tracing. Passive RFID can track products in supply chains from the supplier to the distribution center, warehouse, and point of sale (Turcu, 2010).

Global positioning system (GPS): It determining the location of nearly available object on the surface of the earth which is a relatively simple and straightforward exercise. (Jonathan & Michael, 2015).

A geographic information system (GIS): is a computer-based tool for the input, storage, management, retrieval, update, analysis and output of information. The information in a GIS relates to the characteristics of geographic locations or areas. In other words, a GIS allows us to answer questions about where things are or about what is located at a given location (Jonathan & Michael, 2015).

Transportation: is the movement of people, animals and goods from one location to another using different type of transport such as air, rail, road, water, cable, pipeline and space (John J. L., 2012).

Transport Management: is a complete solution for the processing of transportation processes as a logistics service provider or shipper. It offers all inclusive functions for quotation and order management, transportation planning, posting, route determination and subcontracting to service providers or internal organizations (Randolpha, 1999).

CHAPTER TWO
REVIEW OF THE RELATED LITERATURE

2.1. Introduction

Under this chapter the researcher broadly discussed about the definition of transport specifically focused on Heavy truck freight transport management practice that affect logistics effectiveness and efficiency. And also it consisted by theoretical and empirical studies conducted by different researchers on Heavy Truck freight transport management practices and its impact on national defense force transport performance.

2.2. The Concept of Transport

Transport is vital for everyday life of people. It enables people to perform every day in making journey from home to work, school and shop. Transport provides essential means of access to health care and other social services and other individual and group works and it is vital instrument for organization in doing their business and to facilitate services to government, private and NGO institutions (Headicar, 2009). Transport is defined as the scientific discipline that transcends transportation technology and methods (Randolpha, 1999).

Transport generally comprises the essential elements vehicles, guideways, and terminals operating under some control policy. The vehicles comprise the mobile resources that accompany by persons or shipments as they travel from one place to the other. Guideways, on the other hand, are stationary resources that define feasible paths of travel and provide the physical infrastructure to support vehicles and shipments. They add to safety by restricting movements by defining paths and provide an efficient surface for movement (Randolpha, 1999). Terminals are stationary resources that reside at discrete location. They provide capabilities to sort vehicles, persons and objects among incoming and outgoing transportation routes. In transport control represents the rules, regulations and algorisms that determine the transport trajectories within the transportation system (Randolpha, 1999).

Business and activities rely on transport to bring employees and customers to their premises and to convey goods and services essential to their functions. Transport is affected different factors in the environment that it happens as opportunities and threats of the function. But, it can be solved

through transport planning system. Transport planning process as means of bringing about improvement through identifying great problems and opportunities in transport practices (Headicar, 2009). The transport planning is clearly shows what happens in the environment now and in the future regarding transport activities.

2.3. Concept of Freight Transportation

In the transport and logistics sectors, the term freight management covers the different human and material means used for the shipment of goods. These are put in place by the diverse market players with a view to optimize the different stages of transportation of goods. The term applies for activities starting with the initial loading of goods at the clients' warehouse to their reception by the freight forwarder. Freight management integrates the constraints inherent to the traceability, distribution and storage of goods. To add, customs formalities relative to international trade also fall under the umbrella of freight management. The activity requires rigorous and thorough organization for the smooth execution of the many stages involved. The success of missions involves constant monitoring of transits and excellent communication between the different actors concerned. More and more freight management service providers integrate sustainable development criteria into their transit planning. Complementary to the proven financial savings gained, this aspect can add certain restrictive measures on operations by the competent administrations.

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

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

same location where most of the consumers are located.

The demand for transporting a product from a prearranged location depends on the presence of demand to consume that product in the distant location. Thus, the demand for transportation is generally referred to as a derived demand, as opposed to customer demand for a product. Sometimes it is also referred to as a secondary demand as opposed to a primary demand (Coyle et al, 2011).

Freight transportation is a major contributor to the economy and a competitive force in any business organization. It is the activity that physically integrate the business to its supply chain partners, such as suppliers and customers, and is a major influence on the customer's fulfilment with the company. Transportation is among the more vital economic activities for a business. By transporting products from locations where they are obtained to locations where they are required, transportation delivers the essential service of linking a company to its suppliers and customers. It is an essential activity in the logistics function, supporting the economic utilities of place and time (Özceylan, 2010).

According to Tseng and Yue (2005), the role that freight transportation plays in logistics system is more complicated than carrying goods for the owner. Its complexity can take consecutive only through highly quality management.

The number of vehicle running completely empty is even more shocking. In 2010 the EC estimated that almost a quarter (23.9%) of all Heavy goods vehicle (HGV) (also referred to as "truck" and "freight vehicle") kilometers run in the European Union (EU) were made by a completely empty freight vehicle (EC 2011b). Empty running may well be unavoidable in situations of asymmetric demand and where materials need to be distributed across a wide area from a single source however even a large, land locked, well-performing economy such as Germany observes national HGV empty running rates of over 20% of the total domestic road freight kilometers covered per annum (Eurostat 2011a). These figures are typically higher for domestic operations compared to international hauls where there is a stronger financial incentive to find a backload for the return journey (Vilkalis 2011; McKinnon & Edwards 2010). Most importantly, because the ratio of empty running vehicle kilometers fell by a mere 1% (from 25% to 24%) between 2007 and 2010 (Eurostat 2011b), it would appear that this phenomenon is to

remain well into the future. Cruijssen (2012, 3) provides a rather bleak outlook, stating that: Hence the strongest case for better utilizing travelling HGV capacity comes not from increasing degree of underutilization, but the growing economic cost that this inefficiency is accruing. It is indeed becoming ever more expensive to transport freight by road in the EU, primarily a result of rising oil prices, road tolls and various environmental taxes. This in turn means that the cost of operating at sub-optimal levels is ever greater.

Sweden has been among the most successful countries to minimize these inefficiencies. The share of empty runs among Swedish registered trucks has fallen by some 29% between 2009 and 2011 as a result of reduced haulage assignments and fewer kilometers driven. Some have even argued that with so few haulage assignments of over 300 kilometers, Swedish road transport operations are no longer worth the efforts of consolidation, and they are out of the competitive reach of other traffic modes (Stefansson & Woxenius 2007).

Transportation is typically observed as the "most important single element in logistics costs for most firms. It is also very important for businesses organization in generating time, place, and quantity utility, in addition to enabling larger scale production, geographic specialization, and increased competition (Roberts, 2012). If there is well-handled transportation system, products could be sent to the required place at right time in order to satisfy customers' satisfaction. This brings efficacy, and also it builds a link between producers and consumers. Therefore, freight transportation is the base of efficiency and economy in business logistics and expands other functions of logistics system. In addition, a good freight transport system performing in logistics activities brings benefits not only to service quality but also to company competitiveness (Tseng and Yue, 2005).

2.4. Freight transport management

According to Victoria Transport Policy Institute, (2011) Freight Transportation Management includes different strategies of increasing the efficiency of freight and commercial transportation. Logistics is a technical term for efficient and effective freight management, including shipping practices (e.g., vehicle type, shipment size, frequency, etc.), facility sitting, and related activities. The following are examples of Freight Transport Management activities.

- It improves scheduling and routing to reduce freight vehicle distance and increases load

factors (e.g., avoiding empty backhauls). This can be achieved through amplified modern technology and coordination between suppliers.

- It organizes regional distribution mechanism so fewer trips are required to distribute products.
- It reduces total freight transport by reducing product volumes and unnecessary packaging, relying on more local products, and sitting manufacturing and assembly processes closer to their final consumer. Use smaller truck and man powered transportation, specifically for distribution in municipal areas.
- It implements fleet management system that minimize vehicle distance, use optimal sized truck for each trip, and insure that fleet trucks are maintained and functioned in ways that diminish external charges.
- It changes freight delivery times to diminish bottleneck.
- It increases freight vehicle fuel efficiency and reduce emissions through design enhancements and new modern technologies.
- It improves vehicle operator training to encourage more efficient driving skill. Heavy trucks represent about 10% of total vehicle mileage, and smaller commercial vehicles represent another 5-10% of total vehicle traffic [Victoria Transport Policy Institute, May 2011].

- The management and organization of freight transport is depending on the scope of the organization or the objectives of the companies. The management and organization of freight transport managing system may be centralized or decentralized in having complete and efficient transport (Paul & John, 1992).The organization and management of any type of organization have an impact on the performance and efficiency. The most effective ways of maximizing transportation opportunities in a company is to centralize transportation system for shared services and centralized transportation system helps to centralize transportation network design, to get aggregate procurement, planning and organizing system, to create consistent and efficient way in communication and provide comprehensive analysis for freight transport system (Aberdeen, 2005).

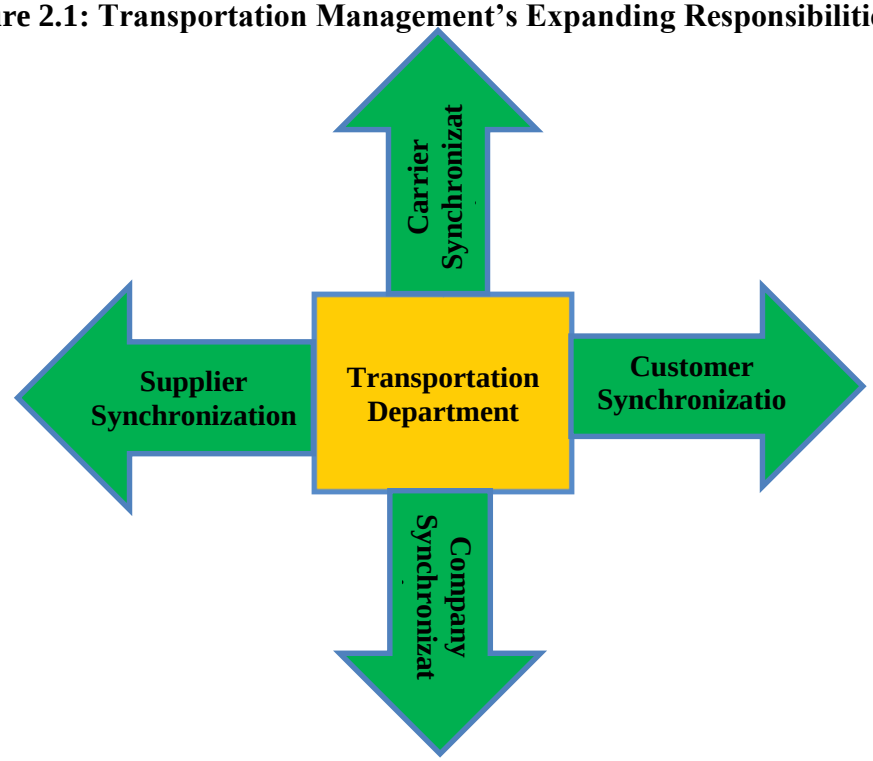
2.5. Best Practices in Transportation Management

As the author, Enslow (2005) found that, nowadays supply chain and transportation executives are under newly increased pressure to keep transportation costs minimize in the face of rate increases and keep service levels up in the face of capacity limitations. From the above point of view, to identify today's success strategies for transportation management, Aberdeen *Group* researched the domestic transportation practices of a variety of large and midsize companies and selected seven as best practice leaders. Let's see the Aberdeen Group research found.

2.5.1. Transforming the Waterfall

Based on Aberdeen *Group's* best practice research results that highest performers are implementing the new challenges, treating them as an opportunity to rise the value the transportation business delivers to the enterprise. Traditionally, the transportation activity has been the last step in a sequential, waterfall implementation process, responsible for consolidating and transporting out the orders the warehouse packs. By comparison, in best practice companies, the transportation department plays a fundamental role in synchronizing activities and data across the key stakeholders in the supply chain (Enslow, 2005). And the writer argued that, a transportation manager said, let's see the relationship in the figure below.

Figure 2.1: Transportation Management's Expanding Responsibilities.



Source: Aberdeen Group, June 2005, Transportation Management's Expanding Responsibilities.

Transport management practice in Army needs highly integration with all armed force units as well as other concerned parts to achieve its objective. So the researcher agreed with the necessity of transport synchronization for fast moving goods and services in all conditions such as, peace and war time. According to Enslow (2005), which transportation strategies are most influential in driving performance improvements? Based on the benchmarked companies, external collaboration and internal transportation centralization top the list. For instance, 63% of benchmarked companies report that they still have fragmented transportation operations or have yet to coordinate inbound and outbound transportation. The best practice indifferent cases tried to how companies in a variety of industries have succeeded in turning these strategies into action.

FM 4-0 (FM 100-10), in CSS also discussed that the use of synchronization as follows: Synchronization is a critical force projection characteristic. Just as a commander arranges activities in time and space to gain the desired effect during employment, he should also synchronize deployment activities to close the force successfully. Resources (such as lift assets, technical enablers, time, and information) are scarce. Synchronization normally requires explicit coordination among the deploying forces and staffs, supporting units and staffs, a variety of civilian agencies, and other services. Synchronization is best achieved when supported with situational understanding based on timely and accurate data from information technologies that create a common operational picture (COP) and are enhanced with automated optimization, scheduling, and decision aids.

2.5.2. Transport from the military perspective

Army transportation plays a key role in ensuring that Army and joint forces can execute global force projection and sustain forces in operations. Supporting the joint force commander (JFC) and the Defense transportation system (DTS), Army transportation is essential to effective and efficient force generation and sustainment.

The Army can mobilize Reserve Component forces necessary to meet the contingent needs of combatant commanders or the requirements of war or national emergencies. Combat service support (CSS) is a critical part of the mobilization process. As units transition from peacetime to

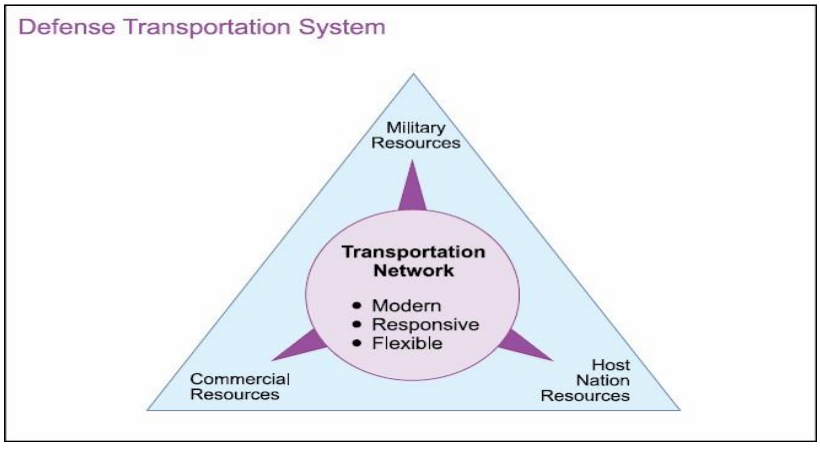
crisis or war, U.S. Army forces must be quickly brought to wartime readiness in equipment, personnel, supply, maintenance, legal, and medical areas. CSS organizations man and operate mobilization stations and aerial and seaports of embarkation. Reserve Component CSS forces were quickly mobilized and integrated with the active component forces (FM 4-0).

Among the components of CSS transportation plays a key role to generate the force. According to FM 4-0, Transportation is moving and transferring units, personnel, equipment, and supplies to support the concept of operations. It incorporates military, commercial, and multinational capabilities

Most commonly, the defense transportation system (DTS) is that portion of the worldwide transportation infrastructure that supports department of defense (DOD) transportation needs in peace and war. As shown in Figure 2.3, defense transport system consists of the military, commercial, and host nation (HN) assets. A modern, flexible, and responsive transportation network capable of integrating military, commercial, and host nation resources must exist in order to provide effective transportation services.

Global Transportation Management (GTM*)* refers to an integrated process that includes coordinated efforts in the planning, programming, budgeting, and execution process, development of unified or coordinated management procedures and systems for deliberate and crisis action planning, and application of department of defense and civil transportation systems.

Figure 2.2 Defense Transportation Systems



Source: US FM 4-01, June 2013

In-Transit Visibility (ITV), is the capability to employ information technology resources to track the identity, status, and location of department of defense units.

*Transportation requirements***:** Commanders and planners at the strategic, operational, and tactical levels require a detailed supporting database to provide adequate force, deployment, employment, sustainment, and retrograde information.

*General considerations***:** Although the level of detail may vary depending on the scope of the mission and the echelon of command where a transportation requirement is being worked, there are several general considerations that influence transportation planning and capability. *Critical infrastructure protection***:** Central to all plans that use defense transportation system is the assurance that physical infrastructures (such as ports and road and rail systems), command and control (C2) systems, and intelligence infrastructures will be available when needed. *In truck transport management* practice, improper planning of transport requirements may lead us to unnecessary costs.

According to McKinnon (2000) the problem of underutilization of assets may occur if the available slots of a container truck are not fully used during import- or export-related transportation. The underutilization of a slot capacity (i.e. the number of empty or non-empty containers a truck can carry) of a container truck can be termed "the empty trips problem. From this view point managers play a great role and take in to consideration the practices for taking truck loads in both directions (especially, the elimination of deadheads in backhauling– truck loading on return trips to avoid empty trips.

According to the US field manual (FM 4-0), planning is not the strict prerogative of management, especially; each truck driver must plan his intended journey so that the goods he has to deliver safely and timely. Each transport company must decide how, with regard to the sector of the industry and the operating environment, it can fit into and find a place in the market sector. For example, the company may decide that it is in the business to produce a very high quality customer service catering for a very selective clientele at a premium price. On the other hand, the company may decide to provide a service carrying low value freight with a minimum quality of service.

For the manager in transportation, planning is carried out in three stages:

1. Collect, analyze and set down all the relevant facts which have a bearing on the plan,
2. Consider all the facts and work out the alternative courses of action which will fulfill the objectives of the plan.
3. Choose the best course of action in light of all the facts gathered in. It must be recognized that action by one section of an organization will affect the actions of other sections. The best solution for a section may not be the one that produces the best results for the company as a whole.

As US Field Manual 4-0 combat service support (2003), Army transportation operates as a partner in the department of transport system to deploy, sustain, and redeploy forces in all military operations. Transportation provides vital support to the Army and joint forces across the strategic, operational, and tactical levels of war.

2.6. The concept of Defense Transport

The military transportation is basically different from other transport system because thousands of troops at one time within a period of months and often face problems in doing so. The fact that military transportation is difficult should be obvious from the broad numbers of military mission technical issues (Michael, 2009).This means managing transport is basically involving in determining the mobilization of military strength from one place to the other to accomplish military mission.

Transportation is critical to any operation requiring the movement of military forces and it needs the ability to prioritize available transportation resources rapidly. Each command should establish allocation procedures during peacetime to facilitate a smooth transition during crisis operations. Therefore, to address transportation issues within their command, such as prioritizing apportioned action should be initiated as close to the beginning of a deployment as possible in order to preclude confusion and backlogs, and to de-conflict commercial (Kevin D., 2017). This shows that the management of transportation focus on the management of repair and maintenance system, fuel management, vehicle management, driver management and training are the components of transportation management (Kennedy & Peter, 2014).

The strategic mobility of the military force is depending on the transport system design in defense force has significant impact on its achievement (Kevin D, 2017).The transportation

planning and allocation of resources in defense transportation is different in application in using of the existing resources in coordination with regional and national peace and security institutions in peace or war time in transporting defense material or personnel. Defense Transportation System (DTS) and its role in supporting operations and national security objectives in facilitating to mobilize required resources for required mission (Kevin, 2013).

2.7. The importance of truck transport practice

According to Gunnar (2009) project evaluation report found that, in truck transport, specially designed heavy truck is used to haul products. Some trucks are modified to carry definite types of products, for example platform trucks for shipping cars, refrigerated trucks for loads which need to be kept cold, and livestock trucks which can carry live animals. Truckers tend to follow established routes to reach their locations, relying on roads which are dependable and which have support services like weigh stations and fuel facilities.

Best practices for a management field are a set of useful solutions for the managers at every level (strategic, tactical, and operational) for performing their job (planning, organizing, leading, controlling). Transport Management practice refers to those methods or techniques found to be the most effective and practical means in achieving transportation objectives such as low costs, timely delivery of transportation related information to the rest of the enterprise and to customers, increase transportation velocity while making optimum use of the firm's resources.

Freight transportation has been growing even more rapidly than passenger transport and is expected to continue to do so in the future. Urban freight movements are predominantly by truck, while international freight is dominated by ocean shipping. The modal distribution of intercity freight varies greatly across regions (Cambrige 2013). As it was defined in Njord & Meyer (2005), transportation connects people to medical care, jobs, family, education, entertainment, and the goods needed for everyday life. Network of trade that deliver breakthroughs in technology, consumer goods that are ever less expensive, and a growing economy all are possible because of transportation. In this regard many scholars agree on that transportation management is critical Issues in determining service efficiency, for instance Taylor, Yue & Tseng, (2005) states; the operation of transportation determines the efficiency and effectiveness of moving products. The progress in techniques and management principles develops operation

costs, delivery speed, the moving load, service quality, the usage of facilities and energy saving. However, Khorasani, et. al., (2013) agrees, Modern transportation systems are more complex and their parts are more interdependent. The effective management of modern transportation systems requires better, faster, more comprehensive information about the current and future state of the system, and better management and control tools. Trace & Blaeser (2011) define that, the challenges of effectively managing international transportation are plentiful, complex and constantly changing.

However, the goals of a visionary international transportation manager are pretty clear:

- ✓ Deliver the goods at the right time, place, and in good condition.
- ✓ Reduce costs, in terms of money, time, and resources, associated with transportation and related services.
- ✓ Reduce inventory levels or safety stocks.
- ✓ Increase productivity levels of management and administrative staff.
- ✓ Reduce the carbon footprint associated with transportation and related services.
- ✓ Deliver all of these benefits regularly and reliably.

In this regard the necessity for capacity assessment in terms of trucks, transportation routes and human resource capability has great role mainly compared to its complexity to overcome the challenges and deliver needed transportation service. Tseng et al. (2005) states this idea as the Transportation providers today have four clear objectives: -

- ✓ Predict demand and optimizing capacity, assets, and infrastructure.
- ✓ Improve the end-to-end experience for travelers.
- ✓ Increase operational efficiency while reducing environmental impact.
- ✓ Ensure safety and security; as part of smarter traffic solution proposed by IBM.

In the above two ideas of making transportation management smart and efficient there are common points and both agreed on making emphasis to ensuring security of cargos, reducing carbon emission and protection of the environment that can be happened from unsecured and undetermined traffic accident. More over delivering on the right time without any damage on cargo by improving operational performance is vital.

According to (Rise 2009) the basic principles of truck mobility defined as follows, heavy trucks are bigger and heavier than passenger trucks, and therefore have larger turning radii than a

passenger vehicle, require longer stopping distances and are slower to accelerate. Trucks for the purpose of traffic operations analysis or transportation planning, the thirteen classifications are often grouped into three primary categories: light, medium, and heavy.

Best in practice enterprises have regular review meetings with carriers that performance trends and provide the carriers opportunities to bring up the challenges they face. The review meetings provide excellent time to discuss upcoming needs and for carriers to update clients on emerging issues in the industry that may affect operations and or performance. To deal with today's increasingly turbulent and complex environments, collaboration has been widely discussed as a process designed to create competitive advantage through mutual respect, trust, information sharing, joint ownership of decisions, and collective responsibility for outcomes between buyers and sellers (Ellinger, Daugherty, & Keller, 2000).

Performance measurement is very important as a strategic tool and also provides means to achieve the objectives required. Based on Iankoulova (2012) many firms have been observed to evaluate performance, primarily on the basis of cost and efficiency. Besides the financial measures, nowadays have the non-financial measures which include time, quality and flexibility. Time element has strategic importance in business and hence time has to be used as a strategic metric in performance measurement (Stack 1990). These authors argued that measuring, controlling and compressing time shall improve quality, reduce costs, improve responsiveness to customer orders, enhance delivery, increase productivity, increase market share and increase profits. Flexibility (to measure the ability to deal with the dynamic nature of the business) is a performance apart, since it is an ability to change something (for example, the production volume or mix) in relation to all the three performances of cost, time and quality (Pereira, 2015).

2.8. Transport capacity management

Capacity management in transportation relates to different technical resources with significantly different time-scale of implementation and duration as well as associated cost structures. They are also controlled by a disparate set of actors. Infrastructure is a specific example of a jointly used resource taking decades to plan, finance and build but when in place it is also used for decades if not even centuries.

2.8.1. Tactical capacity management

For transport operators, dimensioning capacity is generally dealt with in the medium term and often referred to as tactical decision-making. Rolling stock capacity is, as in most industries, added incrementally and the importance of the decisions relate to the character of the demand, the size of units and fleet as well as the marginal cost of buying and operating excessively many or excessively large units. Capacity dimensioning attracts increasingly more attention since the small profit margins have decreased the willingness of transport operators to keep extra capacity as a backup. Lack of slack resources in the system, however, complicates operations and operating close to full capacity often implies increasing average costs (Wedel, 2006). In some segments like mail and parcel services, general cargo forwarding (Sommar, 2006), ferry operations (Styhre, 2005) and public transport, users even take capacity for granted and the operators are forced to over-dimension their systems but they can, in turn, avoid complicated booking systems.

2.8.2. Operational capacity management in freight transport

The mono-directional character of freight transport implies that transport providers pay significant attention to even out imbalances (Taylor *et al.*, 2001) and to re-positioning their resources. Hence, prices can differ significantly between the directions of a route. This is obvious in container shipping where there, periodically, has been no charge at all for sending empty containers to China.

One option for freight operators that is rarely available to their colleagues in collective passenger transport is to route the resources dynamically after the demand. A classic example is tramp trade where ships are routed depending on current demand. Another example is the large road transport segment of part loads, i.e. loads that are too small for allocating a full transport resource but too large for efficient terminal handling. Typically, one truck picks up five to ten loads from consignors in one area and delivers them to consignees in another area. The routing is planned differently each day depending on demand. Some freight transport systems like mail, express parcel, wagon load rail and liner shipping are very complicated to design but once in operation they follow strict rules of execution.

For large market segments, however, dispatchers maintain a fixer mentality and use experience, rules of thumb and occasionally decision support systems for operational capacity management.

Full load transport, on the other hand, is rather simple to plan and execute.

Freight transport services are sold in a different way than passenger transport, generally in a business-to-business relation with substantial discounts for frequent users. The character of business relations between transport providers (TPs) and transport buyers (TBs) differs and, according to Wedel (2006), they range from deep and multi-year relationships where a single TP is designated, via frequent TBs having basic agreements based on tariffs with several TPs which they use selectively, to occasional TBs. According to Henriksson and Persson (1999), only 26% of Swedish TBs had contracted only one TP, while 53% had three or more contracts. Andersson and Norrman (2002) foresee further differentiation between types of TP-TB relationships. Finally, it should not be neglected that ordering transport services is still often characterized by routine (Lindau *et al.*, 2004). The conditions for using yield management thus differ from passenger transport.

2.8.3. Operational Costs and Freight Transportation Cost Functions

Operational costs are those expenses incurred in the daily running of a business and are internal to the carriers and include both fixed and variable costs (Holguín-Veras J., 2013). Fixed costs are defined as the costs of having a vehicle standing and available for work, and are not subject to frequent change and are not generally affected by the amount that the vehicle is used. Examples of fixed costs include vehicle excise duty, vehicle insurance, operator's license fee, drivers' guaranteed wages, depreciation, and overheads. Variable costs are factors which their level depends on the actual use of the vehicle. The costs of fuel, lubricants, tires and repairs and maintenance are examples of running or variable vehicle operating costs.

Kulović M., (2004) studied freight transport cost model based on truck fleet operational parameters. To investigate the main factors that may affect freight transport costs it is useful to examine the influence of trucks fleet operational parameters on transport costs. The freight cost model presented in Kulović is based on the operational parameters of the truck fleet. These parameters are various coefficients that indicate the amount of fleet use, time, truck capacity and path (route), average speed, and distance of loaded truck travelled.

Hooper A. and Murray D. (2018) presented An Analysis of the Operational Costs of Trucking. They studied the American Transportation Research Institute's (ATRI's) annual motor carrier

operations costs report. Average marginal costs were based on vehicle costs (fuel, insurance, permits, tolls, repair, and lease or purchase payments) and driver costs (wages, benefits). The average carrier cost per mile in 2017 was $1.691, an approximately 6% increase from 2016 costs. The average carrier cost per hour was $66.65 versus $63.66 in 2016. Driver wages and benefits represent 43% of total average marginal costs and fuel costs represent 22%.

2.9. Professional Competence for Truck transport Managers and drivers

The MoND transport policy tries to enhance professional competency of drivers and managers as system. Those measures in terms of educational qualification, standardized license, encourage long time work experience and free accident records taking in to consideration and the organization give an emphasis on capacity building and professional competency. Different authors found and discussed that as follows.

2.9.1. Capacity building

Capacity building is a dynamic process that is often part of a broader developmental or change process. Capacity building is a process: Effective capacity building is the result of the interplay between individual, organizational, network and institutional factors. Strengthen existing processes, Ensuring full local ownership, Role of external expertise, Skills and resources

2.9.2. Truck transport Managers

An Acquired Rights certificate or knowledge has been treated as having a serious impact on the repute of that professional transport manager. That knowledge shall be verified by means of a necessary written examination require persons who possess a certificate of professional competence. Transport managers with continuous training helps to update their knowledge if they wish to do so may require that holders of certificates of professional competence valid only for national or local transport administration. The holder of a standard international license must engage a holder of an international certificate of professional competence to act as transport managers.

2.10. Fleet Management

Fleet management can be seen as monitoring and increasing how efficient and effective one can recognize transportation fleet (Gitahi & Ogollah, 2014). It includes the management of truck like vans, trucks, ships, and cars. A lot of activities are considered when it comes to fleet management such as management of speed, financing vehicles, maintenance of vehicles, tracking of assets, fuel management as well as health, vehicle telematics, and roistering, driver shifting

and safety management. The primary aim of fleet management is to meaningfully minimize the risks associated with vehicle operation, efficiency, productivity and minimizing the transportation and staff cost entirely. Accordingly, Besiou et al., (2012) claim that a strategy that ensures sustainable fleet management is one that seeks to reduce environmental effect through the integration of cleaner vehicles and fuels, fuel-efficient operation and driving; and by minimizing quantum of traffic it creates on the road.

However, logistics efficiencies are basic to profitable fleet management. The transport sector required to improve its logistics capacity in the field of operation so as to make sure that the organization is performing close to its possible optimal edge. In so doing, organizations need to recruit and select qualified fleet managers/logisticians who have the technical know-how to operate fleet data management system. It also implies that non-expendable properties need to be comprehended and acknowledge for their usage and not just in terms of the budget (Kothari, 2008).

2.11. Application of Modern Technology in Freight Transport Management

Transport management is complex in mobilizing the resource from one place to the other. Therefore, Freight Transport management needs technology to use the transport efficiently and effectively for managing the transport system in order to supply the necessary materials, goods and personnel in short period of time. Freight Transport management technologies are Global positioning system (GPS), Geographical Information System (GIS), advanced information system, and radio frequency identification (Tsegaye, 2016). These technologies have an impact to manage the transport management, but its needs practical regulations, updating the technology based on the environment, it requires overall change of the organization, the technology acquire continues training and preventing the backsliding of transport management system (Aberdeen, 2005).This shows that freight transportation management requires technology to manage the resource mobilization in an organization.

Global positioning system satellite continually transmit data from its exact location and the exact current time and this helps to control and follow-up the transport convoys in their respective position and time. The technology helps to manage the truck, the driver and the fuel and other relative costs that increases transport costs (Bob, 2008). This shows that transport technology is important in freight transport management system for overall organizational objective achievements.

2.12. Empirical literature of heavy truck freight truck transport

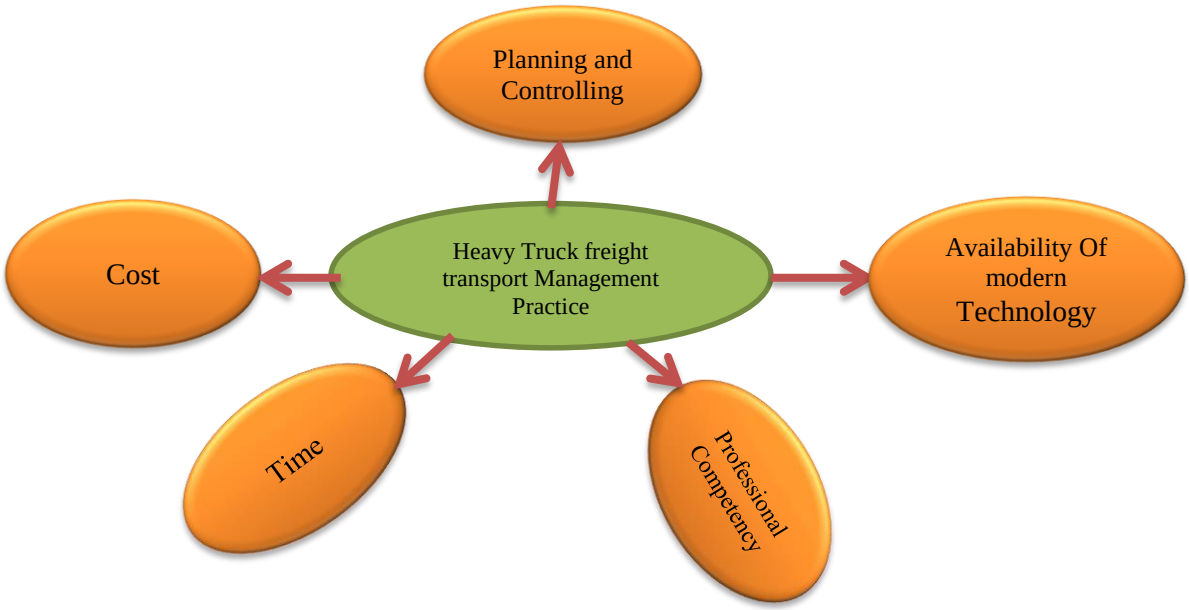
Transport is an important sector to grow up economic development of developing and developed countries as a whole. Let's see different authors discussed and found empirical issues related to this point. As the authors Eelco den, B., Femke, B., Arno, S., & Huib van, E. (2009) found that, Road freight transport (tonne-km) has grown sharply over the past few decades and is expected to grow by a further 60% in the EU between 2005 and 2030, due not only to economic growth, increased internal EU trade and globalization, but also to supply-side effects such as improved quality and stable or declining freight prices.

Other researchers discussed that, truck empty run is a typical problem for truck transportation sector for an increase in its cost and inefficient use of energy. The study found that out of a distance of 245,118 km. (per week), 85.75% of the backhauls were empty, which accounted for 210,193 km. of empty heavy truck run and 2,350,402 Baht worth of wasteful use of energy in single week. The number of empty truck runs will be lower with matching process allowing, where 14.59% of the total empty truck runs will be kept. The lower number of empty truck runs not only benefits the manufacturers for the lower transportation cost but also provides a good influence to the society as a whole. (Chaiyot Peetijade & Athikom Bangviwat, 2012)

2.13. Conceptual Framework

Based on the reviewed literatures the conceptual framework for the Heavy Truck freight transport management is developed. The framework comprises six factors required for assessing Heavy Truck freight transportation management: Planning and Controlling, Availability of modern Technology, Time, Cost, Capacity, and Professional competency. These variables are going to be used in the analysis and discussion of the research findings.

Figer2.3. Conceptual Framework



***Data Source**: Adapted from different Literatures.*

Transport's activity in MoND generally focused on two core activities which are providing internal and external transport services to the Army and its better performance is highly interconnected with above conceptual framework. From this point of view, common benefits of freight transport is, timely delivery of commodities, generating forces, improve service quality and assessing technology. This benefit leads to ministry of defense improving an overall its logistical support effectiveness and its transport performance which leads to ensure end users satisfaction. But this benefits are not achieving without challenges, the main challenges of heavy truck freight transport management practice includes loss of controlling over transport activities, traditional management system, lack of using information technology, difficulty of managing risk of an unsatisfactory outcome and the quality of work life/motivational level of personnel.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter deals with the methodology employed by the researcher i.e. It specifically addresses the research method used in the study; selection of samples; the procedures used in the study, the methods employed to collect data; and to assure the reliability and validity of the data collected.

3.1. Study area

This study was conducted in MoND joint Logistics main department Transport department in Addis Ababa (Akaki-Kality). Transport department provides a transportation service for the armed forces such as eastern command, western command, northern command, South Command, central command, North-West Command, Air Force, units in peace keeping mission, training centers and other main departments in the Ethiopian ministry of national defense.

3.2. Research Approach and Design

There are three basic components of a research approach philosophical world view, research design and methods of research. When we chose a particular research approach it requires matching research design and methods as well. Philosophical world view originates from epistemology considerations, which determines a paradigm as per the philosophical orientation of a research approach. Research design refers to the overall strategy that one chooses to attack the problem which requires integration of different components of the study in a coherent and logical way, thereby, ensuring to solve the problem in efficient way.

According to Kothari (2004), research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. As discussed in chapter one that the objective of this study was to assess the Heavy truck Freight transport management practice and the major shortcomings of transport services in the Ethiopian ministry of defense and to investigate how the practice influence the logistical service effectiveness in Ethiopian armed forces as well as suggest possible solutions that contribute to the betterment of freight transport service that is currently in practice. So as to meet these objectives, the research methodology was carefully design.

In order to describe and examine the current practice of Heavy truck freight transport management system in Ethiopian ministry of defense joint logistics transport department Addis

Ababa (Akaki-Kality), the researcher used descriptive type of research design.

Ethiopian ministry of defense transport is not-for-profit organization in this regard, descriptive research allowed the researcher to assess and describe the nature; condition and degree of the present situation of heavy truck freight transportation practice. Further the researcher employed in this study a mix of quantitative and qualitative methods. The qualitative strategy employed to understand the behaviors and motivations of the managers, supportive staffs and drivers of the department in their responsibilities such as planning, organizing, controlling and implementation of transportation service delivery and to investigate the organizational behavior of the transport department in terms of the institutional framework on the transportation practice. Quantitative strategy used to describe and analyze measurable data. The data of this study displayed in terms of tables, charts, and graphs by using percentages, mean values and standard deviations.

3.3. Study Population

Target population in statistics is the specific population about which information is desired. According to (Ngechu, 2004), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. This research sought to gain information from people involved in logistics transport department. This included all the higher and line officers, management staffs and noncommissioned officers (NCO) within the organization (Transport Department Human Resource check list 2021). The target population has been 150 staff in the organization who were directly or indirectly involved in on the freight transport and management operation.

Table 3.1 Distribution of target population.

Category	Target Population	Percentage
Supportive Unit	20	13%
Supply Unit	10	7%
Operation Unit	100	67%
Maintenance Unit	20	13%
Total population	**150**	**100%**

Source: *Transport Department Human Resource check list, 2021.*

3.4. Sampling Techniques and Sample Size

A sample is a smaller group obtained from the accessible population to represent the whole population while sampling is the process of selecting the individuals for the study from the population (Mugenda and Mugenda, 2008).

3.4.1. Sampling Technique

As indicated in Creswell (2012), the sampling technique describes method of selecting the sample and the sample size itself. Therefore, the sampling procedures and its variant forms along with their rationale was used in this section. However, military transport management departments was select using random sampling techniques. Besides, leaders and co-workers also combined on their proportion by using random sampling method. Therefore, the sampling technique was probability method.

3.4.2. Sampling Size

The primary concern of the study was to include representative and adequate number of sample size in order to perform a meaningful analysis. Thus, to cover and collect data from higher officers, line officers, NCO and civilians, Taro Yamane (Yamane, 1973) formula with 95% confidence level, was applied. The Researcher was working with a finite population and the population size is known, the Yamane formula for determining the sample size is given by:

n = N / (1 + Ne^2)

Where

n = corrected sample size,

N = population size, and

e = Margin of error (MoE), e = 0.05 based on the research condition.

Table3.2. proportionally decompose of sample size

	Units	Number Of Population (N)	$n = N / (1 + Ne^2)$	n
Transport Department	Supportive Unit	20	$n = 50 / (1 + 50*0.05^2)$	19
	Supply Unit	10	$n = 20 / (1 + 20*0.05^2)$	10
	Operation Unit	100	$n = 150 / (1 + 150*0.05^2)$	80
	Maintenance Unit	20	$n = 80 / (1 + 80*0.05^2)$	19
	Total sample size	**150**		**128**

3.5. Data collection methods and Instruments

The investigator relied on both primary and secondary data. Primary data was collected by using a pre designed open and close ended questionnaires, personal observation and interviews. As well as secondary data that collected from MoND joint logistics transport department.

3.5.1. Questionnaire

Survey questionnaire research was the best way to collect a large amount of data from a large number of people in a short amount of time and peculiar to ask for people's self-reported behavior or attitudes (Neuman 2006; Vanderstoep and Johnstone 2009). The Questionnaire is a very useful tool to study in breadth and to give an overview about the issue to be studied. Thus, both closed ended and open ended questions shall be prepare to assess and described the practice of heavy truck freight transport management in transport department.

The questionnaire had two parts. The first part consisted items dealing with respondent's profile. The second part contained items that were focused on assess and discuss objectives that listed in section 1.4. In chapter 1and the researcher presented those questions by using a Likert's scale based on a scale 1 to 5 (a Likert 5 type rating scale), with 5 strongly Agree, 4 Agree, 3 Neutral 2 Disagree and 1 strongly Disagree. To increase the response rate the researcher provided 128 questionnaires to respondents.

3.5.2. Interview

The Researcher conducted semi- structure interview, since semi-structured interviews allow respondents the freedom to express their views in their own terms and it was provide reliable, comparable qualitative data. I identified six respondents for interview, two of them from joint logistics main department and four respondents from transport department and sub-department leaders based on their relative possession of knowledge and practices about the practices of heavy truck freight transport management under study.

3.5.3. Secondary Data

Relevant secondary data related to heavy truck transport management practices has been assessed critically and utilize extensively in the study. To this end department five years (2016-2020) annual evaluation reports, plans, and other relevant documents was used extensively, retrieved systematically and reviewed critically. The data collection technique used by this instrument was mainly focused on the assessment of performance appraisal documents and monitoring and evaluation reports taken during the preparation and implementation of result oriented performance appraisal. At this point in Ethiopian national defense heavy truck transport documents is only personal evaluation.

3.5.4. Observation

According to Russel (2005) Observation method of research is the way to the study of social process overtime and at large events taking place within a relatively limited area and time in which many people are present. Thus I decided to use observation method to collect data concerning the issue under study. Observational and recording parameters or checklists will set since it is impossible to observe and record everything. Recording both what I saw and hear and note taking on what I observed and interpret has been used in the process to make observation. I was took field notes about the change on service delivery heavy truck freight transport management in Transport department (Kality), department and sub department leaders' encouragement and supervisors support to manage to implement the acquired transport service.

3.5.5. Pilot test

Before the distribution of the questionnaires to the sampling population pilot test has been conducted transport department heads and worker of freight transport department 10 people, this assessment help the researcher to get feedback as to whether or not the questionnaires is clear and helping to refine the questionnaire for the purpose of the research. The result of pilot test showed that 0.87. According to this result there was no significance difference.

3.6. Method of Data Analysis and Presentation

In any scientific study the method of data analysis is an approach to convert large quantities of data into condensed forms that facilitate easy interpretation and understanding by other readers. Data analysis entails that the researcher reflects on collected data and takes steps to understand what it represents, its significance and then interprets the larger meaning of the data. Data analysis is the process of analyzing all the information gathered and evaluating the relevant information that can be helpful for better decision (Creswell, 2012).

Both qualitative and quantitative data was collected, organized, classified, analyzed and interpreted in chapter four of this paper to arrive at conclusions using the descriptive analysis method. Each question in the questionnaires was categorized based on the study's research objectives and the basis of common characteristic. The data was interpreted and analyzed through Statistical Packages for Social Studies (SPSS) version 23 and used frequency, percentages, means and standard deviation as a case deemed necessary. The findings was presented using tables and chart. The justifications for the choices of these programs were that, these techniques facilitate word processing and data analysis very easy and enable for accurate pictorial presentations.

3.7. Validity and Reliability of Instruments

3.7.1. Content Validity

Content validity test was conducted to ensure that the measure includes sufficient coverage of the investigated questions, meanwhile the face validity was conducted to validate the items of research questionnaire and to ensure that the items are more consistent. Before the main study

the researcher was carried out the pilot survey to minimize errors due to improper design elements, such as question wording or sequence. So it was important to discover confused interview instructions; learning and ensures validity of the questionnaire whether it is too long or too short of the information, the researcher was used Cronbach's Alpha pre-testing technique, by using a 20 small sub-sample, may determine whether the data collection plan for the main study is an appropriate one.

3.7.2. Scale Reliability

The researcher has been used both quantitative and qualitative research methods (Methodological triangulation), to check whether the conclusions from each of the methods have the same. In the main study phase, the investigator briefed respondents to give serious attention for necessary information and completing the questionnaire presented and assure them their feedback kept secure.

To ensure reliability, it is important to have an appropriately sized sample to achieve statistically significant and reliable results. The researcher therefore conducted a census of different units of staff in the organization to ensure that the data collected was reliable. The total population was 128 people. This was deemed to be too small to subdivide further. A census of all the staff would also provide different perspectives to the research questions and allow the researcher to compare responses and draw more reliable conclusions. Cronbach's alpha is a coefficient of reliability that gives an unbiased estimate of data generalization. As per the result found from the collected data the overall Cronbach's alpha is 0.801 which is above the standard threshold level 0.7. An alpha coefficient of 0.7 or higher indicates that the gathered data are reliable as they have a relatively high internal consistency and can be generalized to reflect opinions of all respondents in the target population (Zinbarg2005).

3.8. Ethical Consideration

Ethics had a great relevance in research work and the researcher considered ethical issues critically as much as possible. To this effect a letter of cooperation had written from logistics main department to the transport department concerned officials and practically those officials had shown unreserved support and cooperative to the researcher. Respondents were approached

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

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, RESULTS AND DISCUSSION OF THE STUDY

Introduction

This chapter deals with the presentation, interpretation and analysis of data collected through questionnaire, interview, observation and secondary data concerning practice of heavy truck freight transportation management. The researcher distributed 128 questionnaires to the respondents of MOND Transport department at Kality in order to collect adequate information for the research. The analysis of the study is structured and conducted to answer the research questions by addressing the objective of the research. The data collected via questionnaires are summarized, organized and analyzed using statistical software called Statistical package for Social Science (SPSS). Accordingly, reliability test, response rate, demographic information of respondents, findings of the survey with its detail interpretation and discussion is presented. Therefore, this section of the study contains facts and information about the factors presenting the practice of heavy truck freight transport management.

4.1. Reliability test

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

As per the result found from the collected data the overall Cronbach's alpha is 0.801 which is above the standard threshold level 0.7 (Nunnally, 1978). This shows that the data extracted from the Questionnaire is reliable.

Table4.1: Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	**N of Items**
.801	28

Source: *SPSS output (version 23)*

4.2. Response rate and demographic characteristics of respondents

4.2.1. Response rate

128 questionnaires were distributed, 102 (79.69%) was returned, out of which 4(3.1%) were not correctly filled and rejected. Therefore 98 (76.6%) questionnaires were correctly filled and used for the study analysis. The total number of questions included in the questionnaire is 31. Out of those questions 28 of them are designed in Likert five scale formats and the other six questions are profile related.

As sited by Groves, R. M. (2006), Babbie (2007, p. 262) is bold enough to say, "A review of the published social research literature suggests that a response rate of at least 50% is considered adequate for analysis and reporting. A response of 60% is good; a response rate of 70% is very good".

Interview- a semi structured interview schedules were developed and administered with six (6) key selected department heads and unit heads that who have knowledgeable and experienced on the issue under this study. Thus, the selected interviewees were communicated by the researcher himself to be interviewed face-to-face to get further and reliable information, opinion, and attitudes of the respondents to enrich or help the data gathered by questionnaire.

4.2.2. Demographic characteristics of respondents

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

Table 4.2: Demographic characteristics of respondents

Item	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	63	64.3	64.3	64.3
	Female	35	35.7	35.7	100.0
Age Group	18 -30 years	34	34.7	34.7	34.7
	31 – 40 years	29	29.6	29.6	64.3
	41 years – 50 years	25	25.5	25.5	89.8
	above 50 years	10	10.2	10.2	100.0
Educational Level	Masters and Above	6	6.1	6.1	6.1
	BA/BSc	29	29.6	29.6	35.7
	Diploma	43	43.9	43.9	79.6
	Other	20	20.4	20.4	100.0
Work experience	0-2	24	24.5	24.5	24.5
	3-5	24	24.5	24.5	49.0
	6-8	31	31.6	31.6	80.6
	9 and Above	19	19.4	19.4	100.0
Rank of Soldier	Higher Officer	28	28.6	28.6	28.6
	Line Officer	30	30.6	30.6	59.2
	NCO	20	20.4	20.4	79.6
	Private	20	20.4	20.4	100.0
Position Of Workers	Department Command	1	1.0	1.0	1.0
	Unit Head	4	4.1	4.1	5.1
	Team Leader	10	10.2	10.2	15.3
	Support Staff	17	17.3	17.3	32.7
	Drivers	37	37.8	37.8	70.4
	Mechanics	29	29.6	29.6	100.0

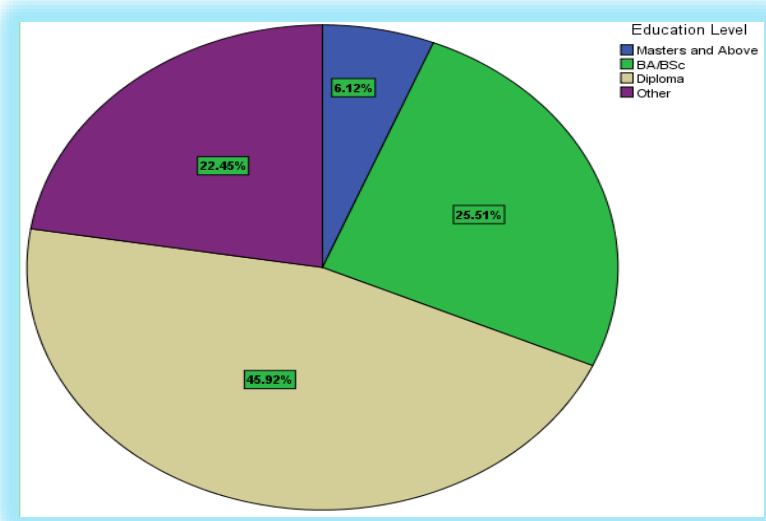
Source: *SPSS output (version 23)*

As depicted in the above table 4.2, 64.3 percent of the respondents were male and the remaining 35.7 percent were female. This implies that the study consists of more male than female respondents. Most of the respondents' age is ranged between 18-30 years of age. As shown above 34.7% of the respondents are in the age group between 18-30 years, while 29.6% are between 31-40 and the remaining 25.5% and 10.2% are between 41-50 and above 50 years of age

respectively. Constitute a frequency of 34, 29, 25, and 10 in the respective age grouping. This indicates that most of the respondents are relatively young. 34.7% of the respondents are in the age group between 18-30 years, while 29.6% are between 31- 40 and the remaining 25.5% and 10.2% are group between 41- 50 and above 50 years of age respectively.

The majority of the respondents, i.e. 45.9% and 22.4%, are diploma and degree holders respectively. This shows that around 71.5% of the sample respondents are a diploma or first degree holders. The remaining around 6.1% and 22.4%, respondents are at MA\MSC degree or other education level. This indicated that most of the respondents are able to understand and clearly identifies the existing situations of heavy truck freight transport management practices and its challenges. This is believed to increase the validity of the findings.

Figure 4.1 Educational level



Source: *SPSS output (version 23)*

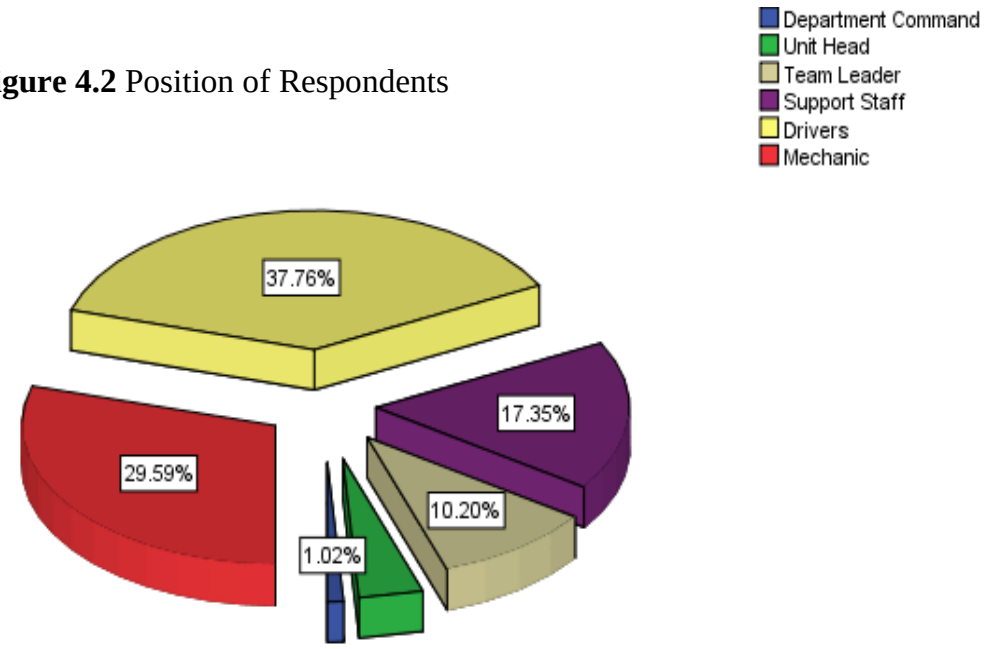
Around 24.5% of the respondents have less or equal to 2 years of experience in the company, around 24.5% of them have experience ranging from 3-5 years and around 31.6% of them have experience ranging from 6-8 years and the remaining 19.4% of them have experience nine and above years. The result indicated that more than 75.5% of the respondents were above 2 years of working experience.

As table 4.2 above indicated that, the majority of respondents 30(30.6%) were Line officers

(includes second lieutenant, Lieutenant and captain), and 28(28.6%) of respondents were higher officers (Majors- Colonels), 20(20.4%) of respondents were noncommissioned officers (NCOs), the last but not the least 20(20.4%) of employee was a basic soldier or private. This result indicated that Higher and Line officers were the greatest number of the employees in transport department.

Around 37(37.8%) of the respondents were drivers, 29(29.6%) of them were mechanics, about 17(17.3%) of respondents were Support staff, 10(10.2%) had the responsibility of team leaders and 4(4.1%) of respondent's positions were unit heads, and 1% of respondent positions were department command in transport department. This indicated that all employees had an equal chance to be selected in the study based on their proportion without bias but practically the researcher found that, the number of drivers and mechanics in transport department were greater than others professions.

Figure 4.2 Position of Respondents



Source: *SPSS output (version 23)*

4.3. Heavy Truck Freight Transport Management Practices

Based on the conceptual frame work of the literature factors are categorized as Planning and controlling, time, Cost, Professional competency and availability of modern technology related factors. The respondents were asked to consider the importance of various factors relating to the transport of their products on a five-point Likert type scale.

4.3.1. Principal methods and procedures

Table 4.3: Principal methods and procedures

Item	N	SD = 1		DA = 2		N = 3		A = 4		SA = 5	
		F	%	F	%	F	%	F	%	F	%
There is a clear monthly, quarterly and annual plan in the department.	98	3	3.1	8	8.2	12	12.2	39	39.8	36	36.7
Subordinates have an opportunity to participate through developing each plan.	98	8	8.2	24	24.5	29	29.6	32	32.7	5	5.1
Subordinates have an opportunity to share their Ideas through developing each plan.	98	8	8.2	24	24.5	29	29.6	32	32.7	5	5.1
Orientation is clearly given to all department members on the Prepared plan.	98	3	3.1	8	8.2	17	17.3	46	46.9	24	24.5
The department has a convenient contingent plan to meet the Changing demands of the army.	98	6	6.1	15	15.3	20	20.4	40	40.8	17	17.3
Unit commanders usually check overall vehicle readiness weather they have fuel and necessary materials before Dispatching.	98	3	3.1	8	8.2	15	15.3	46	46.9	26	26.5
Transport department has a strong principal cooperation with its stakeholders.	98	6	6.1	13	13.3	26	26.5	33	33.7	20	20.4
Transport officers will receive timely feedbacks from internal And external service users to increase speed of transit.	98	3	3.1	11	11.2	30	30.6	44	44.9	10	10.2
Transport officers will manage an empty trip while the vehicles return back	98	32	32.7	47	48	18	18.4	-	-	-	-

Source: *SPSS output (version 23)*

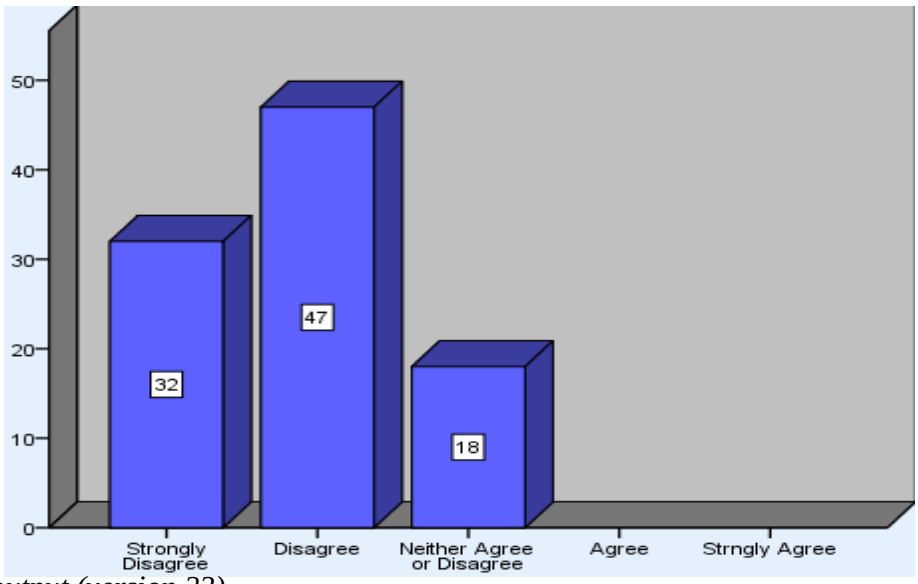
Based on table 4.3, the researcher found that, 39 (39.8%), and 36 (36.7%) of the respondents agreed and strongly agreed respectively on the question that stated, there is a clear monthly, Quarterly and annual plan developed in the transport department and similarly majority of respondents had positively responded on the presence of monthly, Quarterly, and annual plan in the department. while replying to the open-ended questions, 32(32.7%) and 29(29.6%) of respondents also agreed and neither agreed nor disagreed on the research question stating, subordinates have an opportunity to participate and share their ideas through developing each plan, and about 70(71.4%) of the respondents agreed on the question stated, orientation is clearly given to all department members on the prepared plan, 57(58.1%),of respondents agreed and strongly agreed the question, department has a convenient contingent plan to meet the changing demands of the army and the rest respondents disagreed and neutral on this issue. Most of the respondents provide positive feedback for the above five factors, This implies that clear and acceptable plan helps the management to regularly monitor achievement and exert control to reduce any variance from the plan and also helps to Investigate on a regular basis of what has been achieved, Implementing corrective action where tasks are not achieved, or achieve on time.

The majority of respondents 54(55.1%), agreed and strongly agreed on transport officers timely receive important feedback from users 14(14.3%), 30(30.6%) disagreed and not sure respectively for the above mentioned question. This indicted that Effective timely feedback has benefits for the department because Feedback is always there and effective listening method also it can motivate and can improve performance.

About 53(54.1%) of respondents agreed on the question, transport practices in defense has a strong principal cooperation with its stakeholders and 19(19.4%) of respondents disagreed on the question stated. This implies that Stakeholders' cooperation is important for the improvement of transportation service and also can lead to aligned motives and goals. This can help stakeholders strive in the same direction as they avoid the conflicts and implement effective solutions for the problems. The majority of the respondents 82(83%) agreed on Unit commanders usually check overall vehicle readiness whether they have fuel and necessary materials before dispatching for a given mission, 15(15.3%) neither agree nor disagree. This result indicates that Coordinates, supervises, and inspection, of vehicles and supportive equipment by unit commander is at optimal condition. These are a very beginning performance indicator to support the armed forces

during peace and theater time. Vehicles empty trip in transport department has a significant inefficient of transport services in ministry of national defense. Then it is further described in the figure below as follows.

Figure 4.3 Empty trip of Vehicle



Source: *SPSS output (version 23)*

Figure 4.3 shows that, there is an empty trip of vehicles while they returned back to their departure place. About 79(80.7%) and 18(18.4%) of respondents had relied on disagree and not sure respectively on the managing and controlling empty running of trucks while they were returns back to their original place. From this point, it is possible to generalize that, in ministry of national defense heavy truck transport department was inefficient utilization of truck transport management practice. Because most of the time vehicles move empty or without having load while returns back to their departure.

Empty truck run is a typical problem for transportation sector for an increase in the transportation cost and inefficient use of energy. Based on the department annual report (2020), the survey found that out of a distance of 5,155,180 km. (per year), 51.04% of the backhauls were empty, which accounted for 2,579,515km. This implies that the department freight transport management practice for allocating routes is not governed by modern intelligent transportation system due to this high empty runs was covered by the trucks,

The researcher also further described the principal methods, procedures and transport management practices by mean score and standard deviation, to assess the practice of heavy transport services across the defense force in the following table.

Table 4.4: Mean Score of Principal methods and procedures

Item	N	Mean	Std. Deviation
There is a clear monthly, quarterly and annual plan in the department.	98	3.99	1.050
Subordinates have an opportunity to participate through developing each plan.	98	3.02	1.055
Subordinates have an opportunity to share their Ideas through developing each plan.	98	3.03	1.069
Orientation is clearly given to all department members on the Prepared plan.	98	3.82	.998
The department has a convenient contingent plan to meet the Changing demands of the army.	98	3.48	1.133
Unit commanders usually check overall vehicle readiness weather they have fuel and necessary materials before Dispatching.	98	3.86	1.005
Transport department has a strong principal cooperation with its stakeholders.	98	3.49	1.142
Transport officers will receive timely feedbacks from internal And external service users to increase speed of transit.	98	3.48	.933
Transport officers manage an empty trip while the vehicles return back	97	1.06	.707

Source: *SPSS output (version 23)*

The researcher sought to establish the principal methods and procedures that have been put in Place at defense heavy truck transport management practices, the respondents were instructed to respond the statements on a 5 point Likert scale and indicate that to what extent they agree with the statements that is: 5- Strongly agree, 4- agree, 3- Neither agree nor disagree, 2-Disagree, 1- strongly disagree. A mean (M) score of 0-1.5 means that the respondents answer agreed on strongly disagree, between 1.50 to 2.50 means they said disagree, 2.50 to 3.50 means the respondents were neither agree nor disagree, 3.50-4.50 means they agreed, and a mean above 4.50 means the respondents strongly agree. Based on the findings on Table 4.4 the respondents agreed on the question stated, there is a clear monthly, quarterly and annual plan in the department, orientation is clearly given to all department members on the prepared plan, and

Unit commanders usually check overall vehicle readiness weather they have fuel and necessary materials before Dispatching. The department is taking in to account the chancing demand of users by the mean scores of 3.99, 3.82, and 3.86 respectively. On the other hand, respondents agreed to a not sure or neutral on the question that, Subordinates have an opportunity to participate and share their Ideas through developing each plan, the department has a convenient contingent plan to meet the Changing demands of the army, the department has a strong principal cooperation with its stakeholders, and transport officers will receive timely feedbacks from internal and external service users to increase speed of transit as shown by the mean scores of 3.02, 3.03,3.48, 3.49, and 3.48 respectively.

Thus, the result revealed that the mean score values for planning system, orientation provide to all employee on the prepared plan, and checking overall vehicles readiness before dispatching have above the moderate or medium mean value but although, this result is not bad the department give an attention to reach its result better than mean value of 4 and cloth to 4.5. As most interviewees and respondents on the open and close ended questionnaire strongly disagreed on Transport officers manage an empty trip in transport department and respondents agreed on the same question, by mean score value of 1.06. As a result, it brings cost or inefficient utilization of vehicles in transport department.

4.3.2. Cost related factor

Table 4.5: Cost related factors

Item	N	VP= 1		P = 2		G= 3		VG = 4		EX = 5		Mean	Std. Deviation
		F	%	F	%	F	%	F	%	F	%		
There is a clear methods to evaluate the cost of fuel and lubricants.	98	42	42.9	47	48.0	9	9.2	-	-	-	-	1.66	0.641
There is a perfect methods to evaluate the cost of Tires.	98	57	58.2	37	37.8	4	4.1	-	-	-	-	1.46	0.577
There is a strong methods to evaluate the maintenance cost.	98	19	19.4	15	15.3	64	65.3	-	-	-	-	2.46	0.802

Source: *SPSS output (version 23)*

The above table 4.5 shows that in line to the practice that follows methods of evaluating Tire, fuel and lubrication cost, 57(58.2%), 42(42.9%) of the respondents respectively rated as very poor, 37(37.8%), 47(48.0%) ranked as poor and 9 (9.2%) 4(4.1%) ranked good. This indicates that most respondent were ranked as very poor. This implies that, the department following to evaluate the cost of tire, fuel and lubrication is not at appropriate condition. The cost of tire and fuel will determine the overall mobilization of the resources in transport system. This means tire and fuel saving is fundamentally important in running transport operations. Therefore, the researcher has assessed tire and fuel management system in transport department is not at a self-motivated condition. This shows that in transport department there is no costing the overall deployment of transport for organized management of the vehicles.

"There is a strong methods to evaluate the maintenance cost." mean value ($\bar{x}$ =2.46); 19.4% (19) rated as very poor, 15.3% (15) as ranked as poor and 65.3% (64) ranked as good. The results indicated that most of the respondents were ranked as good. This implies that the methods and procedures to evaluate cost of maintenance that perform by the department at good condition. The respondents also write their views on the open-ended question and structured interview as the problems of maintenance in the department includes the life history of vehicles are not recorded correctly, vehicles are stored in the maintenance for couples of years, low quality maintenance and high frequency of vehicles maintenance and preventative maintenance is not implemented correctly in the department. This leads to high cost, and low customer satisfaction and this causes also not have transparency and accountability for maintenance in the department. The respondents also added that in the department main challenges of maintenance is luck of original spare parts and low competency of professionals.

4.3.3. Time and reliability related factor

Table 4.6: Time and reliability related factors

Item	N	VP= 1		P = 2		G = 3		VG = 4		EX = 5		Mean	Std. Deviation
		F	%	F	%	F	%	F	%	F	%		
There are perfect methods that rate the reliability of on-time pickup	98	-	-	-	-	57	58.2	41	41.8	-	-	3.42	.496
There are perfect methods that rate the reliability of on-time delivery.	98	-	-	-	-	37	37.8	61	61.2	-	-	3.62	.487
There are perfect methods that Measure total transit / lead time for the delivery.	98	-	-	-	-	79	80.6	19	19.4	-	-	3.19	.397

Source: *SPSS output (version 23)*

In Table above 4.6 the study found that the calculated mean value to reliability of on time delivery ($\bar{x}$= 3.62). The percentage /frequency value of importance rated to reliability of on time delivery is 37.8 %(37) as good, 61.2% (61) as very good, and non-of respondent rated very poor, poor and excellent. Reliability of on time pickup ($\bar{x}$ =3.42), good 58.2% (57), very good 41.8%. Lead time /total transit time for delivery ($\bar{x}$ =3.19), 'good' 80.6% (79), 'very good' 19.4% (19), The results indicated that 'reliability of on time delivery', 'reliability of on time pickup' and 'lead time/total transit time for shipment' considered being one of the most determinant factors.

4.3.4. Professional competencies of manager, unit commanders and transport officers

Table 4.7: Mean Score of professional competencies

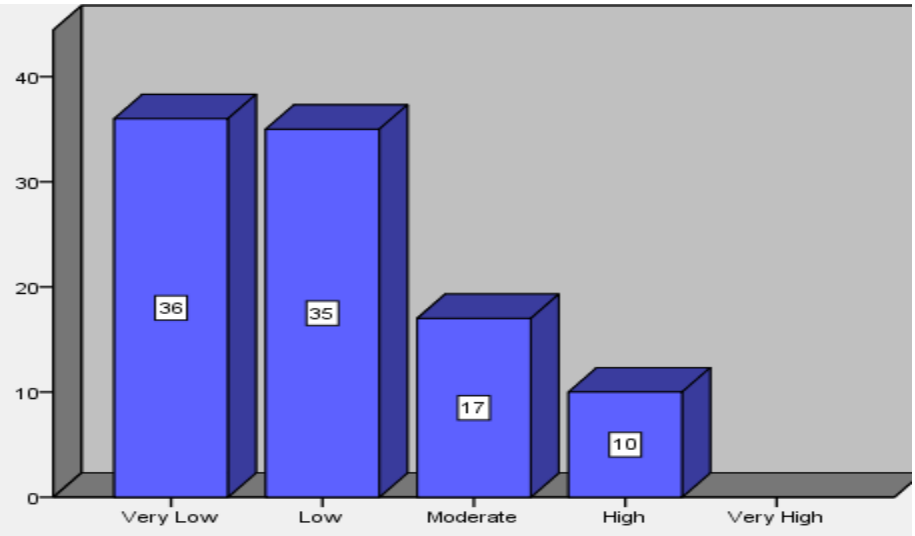
Item	N	VL= 1		L = 2		M = 3		H = 4		VH = 5		Mean	Std. Deviation
		F	%	F	%	F	%	F	%	F	%		
To what degree the level of qualified professionals that are available at the Department?	98	46	46.9	42	42.9	10	10.2	-	-	-	-	1.63	0.664
To what extent the employee's that perform their duties and responsibilities based on knowledge and skill?	98	36	36.7	35	35.7	17	17.3	10	10.2	-	-	2.01	0.979
To what degree the commitment of commanders and Subordinates to enhance their professional competencies?	98	49	50.0	32	32.7	17	17.3	-	-	-	-	2.67	0.757
To what extent the department heads manages and control freight activities following scientific methods?	98	23	23.5	55	56.1	20	20.4	-	-	-	-	1.97	0.665
To what extent the unit heads manages and control freight activities following scientific methods?	98	28	28.6	45	45.9	25	25.5	-	-	-	-	1.97	0.739
To what degree the capacity building efforts undertaken to modernize its management system?	98	98	100	-	-	-	-	-	-	-	-	2.00	0.000

Source: *SPSS output (version 23)*

The researcher sought to establish the professional competencies of manager, unit commanders and transport officers that have been put in Place at defense heavy truck freight transport

management practices, the respondents were instructed to respond the statements on a 5 point Likert scale and indicate that to what extent they agree with the statements that is: 5- Very high, 4- high, 3- Moderate, 2-low, 1- Very low. A mean ($\bar{x}$) score of 0-1.5 means that the respondents answer agreed on very low, between 1.50 to 2.50 means they said low, 2.50 to 3.50 means the respondents were Moderate, 3.50-4.50 means they agreed on high, and a mean above 4.50 means the respondents very high. Based on the findings on the above Table 4.7, the professional competencies of manager , unit commanders and transport officers that have been put in place by respondents in the defense transport department: the level of qualified professionals ($\bar{x}$ =1.63), Employees performance based on skill and knowledge ($\bar{x}$ =2.01), the commitment of commanders and Subordinates to enhance their professional competencies ($\bar{x}$ =2.67), the department heads and unit heads manages and control freight activities following scientific methods ($\bar{x}$ =1.97), and the level of capacity building efforts undertaken to modernize its management system ($\bar{x}$ =2.00). So all respondents answer are fall in between 1.63 to 2.67. These results indicated that, the mean score were an average low mean. It implies that the professional competencies of manager , unit commanders and transport officers insufficient and weak as described in detailed by percentage, frequency and what respondents replayed in the interview as well as on the open ended questionnaire above. Let's see figure 4.4 below, further described Employees performance based on skill and knowledge by the bar chart as follows.

Figure 4.4 Employee performance



Source: *SPSS output (version 23)*

In Figure 4.4 above, the level of Employees performance based on skill and knowledge in transport department have shown mean score of 2.01 which indicated that below a medium mean score and moreover for this question about 36(36.7%) respondents agreed on the very low level of employee performance based on skill and knowledge, 35(35.7%) of them responded that, it has low for performing their duties, 17(17.3%) respondents agreed on moderate and 10(10.2%) respondents agreed on high capacity for the employee that performs their job based on skill and knowledge in the transport department. Not only that but also an interview was conducted according to the predesigned questions. For this research interview helps to get necessary information directly from respondents. One of the prerequisites for undertaking interview is preparing interview guide questions. So to this effect, a semi-structured guide questionnaire was prepared in advance. Based on this point, the researcher also conducted an interview with selected officials about the Employees performance based on skill and knowledge put in place by the national defense to ensure modern transportation services in all directions of the army.

As a part of this transport department have an access to train its employees but as most interviewees responded that, unless some usual efforts have done, no continuous training and effective capacity building had conducted to overcome the dynamism of today's military situation and problems in the real practice is observed especially on easily operating modern equipment and technologies. From this point, what the researcher found that, there is no parameter used to measure technical skills and whether they have good traits of drivers and other support staff in the department. Moreover the interviewees replied that, although the drivers have long time experience and they have performed their tasks effectively, some drivers have not graduated from high school. In this case the respondents suggested that there were gaps and shortfalls. From this point of view what we observed that, a limitation on correctly identified the principal way that support staff performing their duties based on knowledge and skill in transport department and it can be promptly addressed the principles, steps and main pain points for accomplishing their duties and responsibilities as required level.

4.3.5. Visibility and status of transportation management system

Table 4.8: Truck visibility and status management system

Item	N	VP= 1		P = 2		G = 3		VG = 4		Ex=5	
		F	%	F	%	F	%	F	%	F	%
The visibility and status of overall heavy truck transportation management system in defense.	98	-	-	-	-	47	48.0	29	29.6	22	22.4
How do you rate transport officers using effective control mechanism on their responsibilities?	98	-	-	16	16.3	31	31.6	25	25.5	26	26.5
There is availability and utilizing modern technology of GPS, RFID and other equipment in each truck.	98	52	53.1	46	46.9	-	-	-	-	-	-
There is availability and utilizing Web Enhanced Electronic Data Interchange (EDI).	98	50	51.0	48	49.0	-	-	-	-	-	-
There are methods that measure the efficiency of every truck activities using Modern Technology.	98	53	54.1	45	45.9	-	-	-	-	-	-
To what extent commanders focusing on the job training to build up employee's capacity and enhance their awareness?	98	21	21.4	77	78.6	-	-	-	-	-	-
How do you rate the attention of drivers in following safely rules while driving?	98	-	-	-	-	-	-	70	71.4	28	28.6
There are mechanisms that the transport officers using modern technologies to control on-trip trucks.	49	50	49	50	-	-	-	-	-	-	-

Source: *SPSS output (version 23)*

As Table 4.8 above shown that 47(48.1%), 29(29.6%) and 22(22.4%) of respondents replied good very good and excellent respectively on the question, the visibility and status of overall heavy truck transportation management system in defense. 31(31.6%) , 25(25.5%), and 26(26.5%) of respondents replied good, very good and excellent respectively on the question, transport officers performance and utilization of effective control mechanism towards their responsibilities, 16(16.3%) of them responded that poor on the question stated above.

Availability and utilizing modern technology of GPS, RFID, EDI and other necessary communication equipment in each truck, 52(53.1%) of the respondents agreed on very poor and 46(46.9%) of the respondents agreed on poor execution related to the question. 53(54.1%), and 45(45.9%) of respondents replied poor and very poor on the question that measure the efficiency of every truck activities using Modern Technology. When we compare the above two questions result the outcome almost the same this implies that majority of the respondents were understood the importance of modern technology in transport management. on the job training to build up employee's capacity and limited up grading their awareness regarding new technology and 77(78.6%) and 21(21.4%) of them said that, commanders in transport department have a poor and very poor respectively for implementation of on the job training to build up employee's capacity and their awareness in their tasks and also all interviewees were supported to the safely driving and well experienced truck drivers in Ethiopian ministry of national defense. In the same question let's see how the visibility is specifically described in mean value and standard deviation as follows.

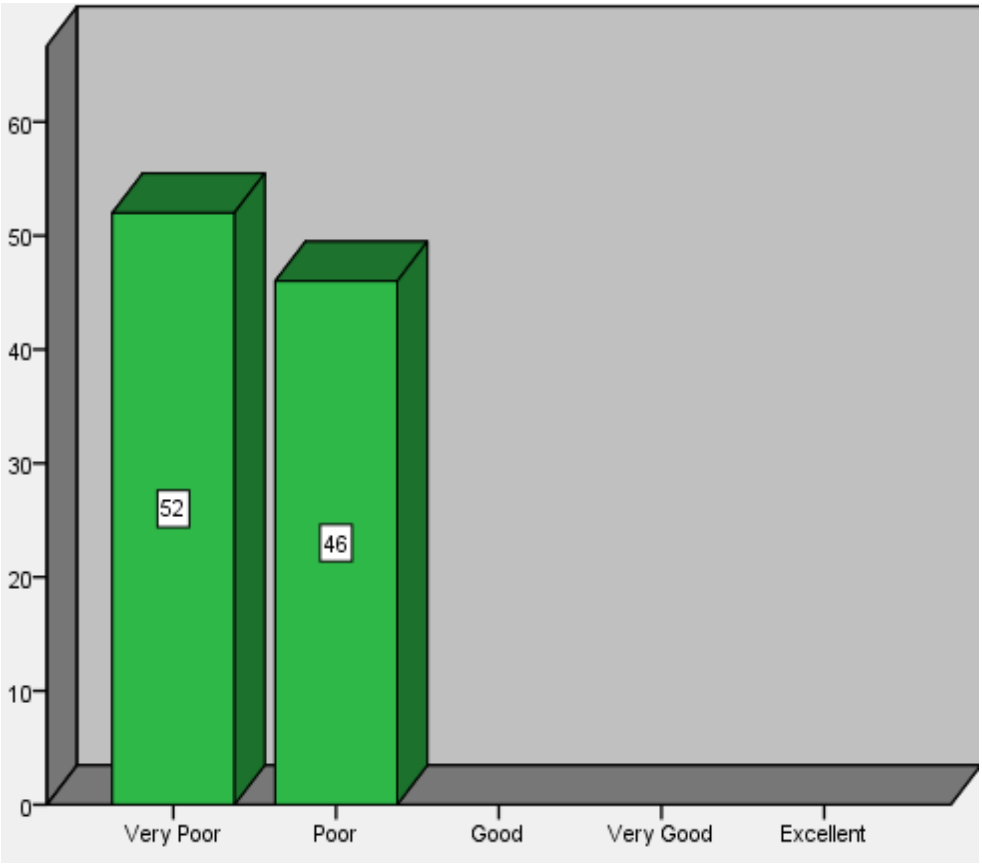
Table 4.9: Mean Score of visibility and status management system

Item	**N**	**Mean**	**Std. Deviation**
The visibility and status of overall heavy truck transportation management system in defense.	98	3.74	0.803
How do you rate transport officers using effective control mechanism on their responsibilities?	98	3.62	1.050
There is availability and utilizing modern technology of GPS, RFID, EID and other equipment in each truck.	98	1.47	0.502
There are methods that measure the efficiency of every truck activities using Modern Technology.	98	1.46	0.501
To what extent commanders focusing on the job training to build up employee's capacity and enhance their awareness?	98	1.79	0.412
How do you rate the attention of drivers in following safely rules while driving?	98	4.29	0.454
There are mechanisms that the transport officers using modern technologies to control on-trip trucks.	49	1.50	0.503

Source: *SPSS output (version 23)*

In order to see how commanders implement the visibility and status of overall heavy truck transportation management system in defense the researcher gives 7 questions and here the researcher were instructed to respond to the statements on a 5 point scale i.e. 1 =Very poor, 2= Poor, 3 = Good, 4 = Very good and 5 = Excellent and here the scale indicate a mean (M) score of 0-1.5 means that the respondents respond by saying very poor, between 1.50 to 2.50 means they it is poor, 2.50 to 3.50 means the respondents were Good, 3.50-4.50 means they Very Good, and a mean above 4.50 means the respondents say it is excellent. Therefore based on this from the above table 4.9 we can say that the transport officers using effective control mechanism on their responsibilities with mean M=3.62 and SD=1.051 which is very Good. And the same is true for the visibility and status of overall heavy truck transportation management system since the mean M = 3.74 and SD=0.803 and the drivers in following safely rules while driving mean M = 4.29 and SD=0.454. What the researcher found that, the respondents agreed on very poor availability and utilizing modern technology of GPS, RFID, EDI and other equipment's in each truck. So, Mean M =1.47 and SD=0.502 and also the methods that measure the efficiency of every truck activities using Modern technology is very poor with M=1.46, and SD=0.501. Accordingly, that the mean score indicated that visibility and on the job training of employees and the mechanisms that the transport officers using modern technologies to control on-trip trucks in transport department M=1.79, and SD=0.412 and M=1.50, and SD=0.503 respectively is poor and this response of questionnaire respondents was cross checked with the interviewee result and surprisingly the same result was found hence as the interviewees responded that modern communication equipment's such as global positioning system and radio frequency identification in defense truck vehicles transport system is not available or very poor and no advanced information systems is accessing . Therefore heavy truck transport management practice of MoND is required modern technology to enhance visibility and since, it is a traditional controlling mechanism of truck transportation is implemented. As a result, commanders don't give the right and timely decision making, because of poor visibility and inaccessible timely and right information while vehicles were dispatching to mission and far away from their departure place. Let's see further described below especially on the gap of using GPS and RFID answered by the respondents.

Figure 4.5 Availability of GPS, RFID and EID



Source: *SPSS output (version 23)*

The above figure have shown us, there is poor utilization of global positioning system, radio frequency identification and enhanced electronic data interchange in the real practice of heavy truck freight transport management in ministry of national defense. Since, the statistical survey result indicated us about 52(53.1%) and 46(46.9%) of the respondents agreed by saying very poor and poor availability of GPS, RFID and EDI respectively. A total of 100% respondents were saying no such kind of technologies used in the department at all. So this result getting below an average mean value (M= 1.47). And also the majority of respondents in interview and in the open ended questionnaire agreed on unavailability of global positioning system, radio frequency identification and enhanced electronic data interchange in defense heavy track freight transport management practice.

Furthermore, the problems of heavy truck freight transport management are the management has been used traditional methods than the technological advance system, there is no controlling and monitoring based on transport standards, insufficient number of human resources, there is discrimination in deployment of vehicles for transport purpose, there is no record on the performance of drivers and there is no true inventory for the materials in the department as respondents' response on open-ended question.

Moreover, the study has interviewed selected groups regarding heavy truck freight transport management in the department and all of them agreed that there has no clear standard for loading, dispatching mechanisms didn't implement, data analysis didn't conduct for the loading materials to analysis profit and loss, there is a problem of analysis for the transported kilometer and fuel consumption rates and there is no transport request procedures for transport purposes.

In conclusion, the quantitative and qualitative analysis of the study shows that heavy truck freight transport management of the department problem is complex and needs an organized system development.

4.4. Secondary Data Analysis

In the study document analysis was employed as a method of data collection. Relevant documents were identified and assessed by the researcher, how those documents well organized and recorded for the convenience of users to facilitate transport routine functions in the organization. The main documents used in the analysis include organization policies, reporting files, structures and guidelines for transport dispatching rules, regulations, periodical evaluation, and plan of the department were used as sources of secondary data. To support the data collected by questionnaire and an interview for analysis, field observation had conducted by the researcher and focused on facility location, as a result, office facilities is not convenient, and data base filing systems is not available so the researcher observed poor filling system of necessary documents in transport department. Based on the information obtained from secondary data and field observation freight transport management of the department is lack of allocating routes, high empty runs, dispatching fleet, administration and costing of the transport of materials, maintenance scheduling, observed speed limits and track efficiency management. To increase efficient and effective heavy truck freight transport practice in army operations, applying modern intelligent transportation system played a great role to enhance good visibility and reliability of transportation management.

CHAPTER FIVE

Summary of Finding, Conclusion and Recommendation

5.1. Summary of the findings

Based on the report provided under chapter four, the summaries of findings are given to the readers know and reach about the key results of this study. In order to achieve the study objectives, data were collected from the target population of logistics transport department employees and which processed in both quantitative and qualitative approach of descriptive research method. Consequently, descriptive statistics were used to analyze the data collected from the respondents. Frequencies, percentages, mean and standard deviation were used to analyze the data. The study used the categorized factors to assess practice of heavy truck freight transport management system. These were factors Principal methods and procedures, cost related factor, time and reliability related factor, Professional competencies, Visibility and status of transportation management system (information technology) related factors.

From the demographic characteristics of respondents', the majority (64.3%) was male and the remaining (35.7%) were female participants. Besides, most employees who participated in the study survey were relatively ranging their work experience from 6 to 8 years 31(31.6%). The greatest numbers of respondents who have 49.0% and 48.0% diploma and first degree respectively educational level and the rest participants have 2.0% certificate and other academic level. Rank of this survey participants were more between 30.6% middle officers and 20.4% noncommissioned officers.

The analyses result revealed that the mean score values for planning system (M=3.99), orientation provided to all department members (M=3.82), checking truck readiness (M=3.86) are above moderate. This implies that management to regularly monitor achievement and exert control to reduce any variance from the plan. Investigating on a regular basis of what has been achieved, implementing corrective action where tasks are not achieved, or achieve on time. Besides in the defense transport department there was an empty trip or underutilization of vehicles have indicated in their real practice with (M=1.06). It demonstrate that freight transport management of the department is lack of allocating routes that cause high empty runs.

Based on table 4.7, the mean score of professional competencies of managers, Unit commanders and transport officers and drivers also indicated in low level range 1.63-2.67 , It implies that

more efforts to become better than the existed employee's professional competency. And also the response of questionnaire respondents were cross checked with the interviewees result.

The majorities of the respondents replied as poor and very poor on the methods and procedures to evaluate the cost of maintenance, Tire, fuel and lubrication with average mean score and standard deviation (M=1.86, SD=0.673). This implies that the department cost evaluation method is very poor

The most effective ways of maximizing transportation opportunities in a company is to centralize transportation system for shared services and centralized transportation system helps to centralize transportation network design, to get aggregate procurement, planning and organizing system, to create consistent and efficient way in communication and provide comprehensive analysis for freight transport system. Surprisingly the same result was found hence as the interviewees had responded that very limited and poor utilization of modern communication equipment's such as GPS, RFID and EDI with mean score (M=1.50) in defense vehicles transport practices and no advanced information systems is accessing within it.

5.2. Conclusion

The research findings indicated that the principal methods and procedures of heavy truck freight transport management practices to ensure quality of transport services across the defense includes developing clear monthly, quarterly and annual plans at all levels of the department. In developing the plan all subordinates in the department have equal opportunity to participate. Once an agreed plan is set by the department, orientations are the major means of communicating the tasks in the plan for all members of the department. As strength, the department always prepares a contingency plan or "Plan B" in case new demands to execute arise for the army as local and global changes are fully unpredictable these days.

In order to boost freight services, transport commanders and officers in this department receive timely feedbacks from both internal and external customers. Before dispatching the vehicles, unit commanders usually check an overall readiness whether the vehicles have fuel and necessary materials. Although the department tried to make cooperation and coordination among stakeholders, the findings of this study indicated that, there are gaps in implementing those plans and guidelines.

In this study, it is discovered that, there is an empty trip while the vehicles return back to their

departure and often when they are back to the base station. This indicated that there is underutilization of vehicles and deficiency of route control system in the transport department. The research findings indicated unsatisfactory performances and less efficiency in this respect.

The professional competencies of the unit heads, transport officers, support staff and drivers, while carrying out their duties is found out to be adequate and very fair enough. Those managers and subordinates undertake their duties and responsibilities are basically based on the way that they have prior knowledge and skills. Especially the drivers in the department have the required skill and knowledge that they gained through their long time experience.

In the third basic research question, the availability and utilization of modern technologies in ministry of national defense, such as Geographic Information Systems, radio frequency identification, Electronic data interchange and other important communication equipment's are are not exist i.e. the control mechanism of heavy truck freight transport management system in the MoND is very traditional. Accordingly, visibility of truck transport management practice is very poor and no timely information is being disseminated. As a result, the heavy truck freight transportation practices in Army operations are less inefficient.

The challenges faced by the department in implementing heavy truck freight transport management system includes system compatibility and integration, limitation of cooperation from IT unit, user resistance and efforts to automate manual tasks, and inconvenient infrastructure facilities are the major factors which hinders the department not to provide effective transport services in full.

The FDRE MoND transport Department heavy truck freight management practice is not at the standard level due to lack of various transporting activities. These are work flow of the departments are not well organized, there is no organized efficiency measurement of trucks activities, tracks have no organized data for their life cycle, there is high empty runs, service user of the tracks didn't give their needs on time prior to their activity, there is no fact-based system to give their transport need in the organization and there is no fleet management system to control and manage the department activities as a whole. The above drawback indicates that the practice of heavy truck freight transport not at the required level to give active and on time services to support FDRE Ministry of Defense in mission accomplishment.

5.3. Recommendations

According to the findings of the study, the researcher suggested the following points as reasonable recommendations in the order of the seriousness of the problem.

Effective capacity building is the result of the interplay between individuals, organizational, network and institutional factors. Therefore, in order to achieve the objective of human resource capacity building, the department should develop a comprehensive staff development plan and implement it effectively. It is better to develop the basic principles of capacity building and particularly it necessary to use group development principles as well as capacity building steps.

The department has to give an emphasis on developing data base recording system. Eliminating manual paperwork and developing more sophisticated transportation system are critical points that need deep emphasis.

Secondly, to provide efficient and effective heavy truck freight transport service in the Army, the department should exercise conceptual model of smart transportation management system. Since it help the department to adopt smart freight and smart transport management framework.

The MoND should revise its rules on truck transport systems to avoid cost inefficiency and the department should liaison with governmental organizations and other stakeholders in order to find market for those empty trips. As other operating costs for car become currently high and this kind of arrangement will assist to subsidize expenditures.

Thirdly, most of the activities in this department is done manually and there is gap in using the modern technologies in managing those truck transportation management practices; therefore the management should focus on using those modern technologies which helps in building efficient utilization of resources in this sector.

The department should focus on attaining real-time visibility of freight and assets - complete with performance metrics. Today's transportation providers can leverage global positioning system and radio identification technologies to achieve real-time visibility of the entire transportation operation. Good visibility brings the department an efficient and enables to have, advanced information systems which provide the real-time information for both transport officers and deliverymen to adjust their paths as new demands occur based on the dynamism of military situations.

Finally but strongly, the researcher recommend that other researchers in ministry of defense to conduct a more in depth study on the same or related topic of this study by using more preferably other methods of research like that of exploratory and using other research designs.

References

Aberdeen, G. (2005). Best Practices in Transportation Management: How Companies Are Driving Cost and Service Improvements? Boston, Massachusetts: Aberdeen Group, Inc.

Accent and Hague Consulting Group. *The value of travel time on UK roads* – 1994 [Final report].

Andersson, D. and Norrman, A. (2002) 'Procurement of logistics services - a minute's work or a multi- year project?' *European Journal of Purchasing & Supply Management*, **8**(1), pp. 3-14.

Authority, E. R. (2017, Novmber 12). *History of Road Building in Ethiopia in Brief*. Retrieved from www.era.gov.et:http://www.era.gov.et/documents/10157/52c63bfe-744b-44b

Bask, A.H., Tinnilä, M. & Rajahonka, M. (2010). Matching service strategies, business models & modular business processes. *Business Process Management Journal*, Vol. 16 (1), 153-180.

Bektas, T. and Gabriel. C.T. (2007). A Brief Overview of International Transportation. Interunviversity

Research Center on Enterprise Networks, Logistics and Transpoetation (CIRRELT).

Besiou, M., Martinez, A. J.P. & Van Wassenhove, L. N. (2012). The effect of earmarked funding on fleet management for relief & development. INSEAD, Working Paper.

Botan, C., Frey, L.R., & Kreps, G. (2000). *Investigating communication: An introduction to research methods:* Boston: Allyn & Bacon.

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

Blaeser James, (2011): Best Practices In International Transportation Management: Taking Visibility Beyond Track & Trace.

Bob, W. (2008). *Intelligent Transport Systems Standards.* USA: ARTECH HOUSE, INC.

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

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

Cochran, W. G. (1963). *Sampling Techniques*, 2nd Ed., New York: John Wiley and Sons, Inc.

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

Crespo, M.(2017, November 02). *www.springer.com/.* Retrieved from www.springer.com/: http://www.springer.com

Creswell, J. W. (2012). *Educational Research.* Boston,: Pearson Education.

Cruijssen. F. 2012. Horizontal collaboration: A CO3 position paper. (FP7-SST-2011-RTD-1-7.6) Deliverable D2.1.

Cuninghame, C.,Forster, G.,& Saunders, C. (2010). Transport management: a self-learning guide for local transport managers of public health services.

David, L., Henry, L., William, G., Adam, D., & Corbett, M. (2009). *Fundamentals of Transportation.*London: Frue press.

Ellinger, A.E., Daugherty, P.J. and Keller, S.B. (2000). The relationship between Marketing and Logistics interdepartmental integration and performance in U.S. manufacturing firms: an empirical study, Journal of Business Logistics, Vol. 21 No. 1, pp. 1-22. IJLM 20,3 442

Eurostat. 2011a. Road freight transport statistics. Available at: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Road_freight_transport_statistics

Eurostat.2011b. A fall in average vehicle loads: Average loads, distances and empty running in road freight transport 2010. Issue 63. Available at: http://epp.eurostat.ec.europa.eu/cache/

Ensermu, M. (2015). *Logistics Management A green Supply Chain Perspective:* Addis Ababa*:* p,220.

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

Gitahi, M. P. & Ogollah, K (2014). Influence of Fleet Management Practices on Service Delivery to Refugees in United Nations High Commissioner for Refugees Kenya Programme. *European Journal of Business Management, 2 (1), 336-341.*

Groves, R. M. (2006). Nonresponse rates and nonresponse bias in household surveys. Public Opinion Quarterly, 70(5), 646-675.

Gunnar Stefansson & Kenth Lumsden.(2009). *Performance Issues of Smart Transportation*

Management Systems: International Journal of Productivity and Performance Management. Emerald Group Publishing Limited: Vol. 58 Iss I P,55-70.

Headicar, P. (2009). *Transport Policy and Planning in Great Britain.* London and Newyork: Routledge.

Henriksson, C. and Persson, C. (1999) *Studie av tidsvärden och transportkvalitet för godstransporter (Study of time values and transport quality for freight transport),* Inregia,

Commissioned by SIKA, Stockholm. In Swedish.

Holguín-Veras 2013. J. *Freight data cost elements (Vol. 22). Transportation Research Board.*

Hooper A, Murray D. 2018. *An analysis of the operational costs of trucking: 2018 update.*

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

International Transport Forum (ITF). 2012. Transport Outlook: Seamless transport for greener growth. OECD report. Available at: www.internationaltransportforum.org

John, J. L. (2012). *Supply Chain Management and Transport Logistics.* London: Routledge.

Jonathan, C., & Michael, S. (2015). *Essentials to Geographic Information Systems.* San Francisco,: Flat World Knowledge, Inc.

Kahn Ribeiro, S., Kobayashi, S., Beuthe, M., Gasca, J., Greene, D., Lee, D. S., & Wit, . (2007). Transport and its infrastructure. Climate change, 323-385.

Karsson, C. *et al.* (2007). The management of infrastructure: Performance, Efficiencies and Innovation. UK: Edward Elgar publishing Ltd.

Kawamura K. 2000. Perceived value of time for truck operators. Transp Res Rec: J Transp Res Board. 2000;1725:31–36.

Kothari, T. (2008). Logistics Training: Necessity or Luxury? *Forced Migration review*,(22)

Kennedy, O., & Peter, M. G. (2014). INFLUENCE OF FLEET MANAGEMENT PRACTICES ON SERVICE DELIVERY TOREFUGEES IN UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES KENYAPROGRAMME. *European Journal of Business Management*, 10-12.

Kevin, D. (2017). *The Defense Transportaion System.* Washiogten DC: Joint Force

Development.

Kevin, s. (2013). *The Defense Transportation System.* USA: Deparment of Defense.

Khorasani Gholamreza, TatariAshkan, Yadollahi Ali & RahimiMilad, (2013): *International Journal of Chemical, Environmental & Biological Sciences (*IJCEBS) Volume 1, Issue 1 (2013)

Evaluation of Intelligent Transport System in Road Safety. Kothari, C.R, (2004), Research

Methodology Methods and Techniques. New Age International (P) Ltd.

Kulović M. 2004. Freight transport costs model based on truck fleet operational parameters.

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

Lefebvre L (2006) Analyse des déterminants de la productivité dans le transport Routier de Marchandises. Une approche régulationniste, unpublished working paper, INRETS-University Lille I

L., K., & R., B. (2002). Transport Planning models:An Historical and critical Reveiw. *21st Annual South African Transport Conference.* Cape Town: Conference Planners.

Lindau, R., Woxenius, J. and Edlund, P. (2004) *Verkstadsindustrins logistik – en innovationssystemanalys (The logistics of the manufacturing industry - an innovation system analysis)*, Meddelande 120, Department of Logistics and Transportation, Chalmers University of Technology, Göteborg. In Swedish.

Liu, J. J. (2012). *Supply Chain Management and Transport Logistics:* London & New york: Routledge.

Majercak, J, Kudlac. S, and Panak M, (2015). Choosing the Right Mode of Transportation I Freight

Transportation. Department of Railway Transport, University of Zilina, Vol X, Iss 4

Mattila, T. and Antikainen, R. 2011. Backcasting sustainable freight transport systems for Europe in 2050. *Energy Policy* 39: 1241-1248.

McKinnon, A. 1996. The empty running and return loading of road goods vehicles. *Transport Logistics* 1(1): 1-19.

Mercier, P. (2010). *Intelligent Transport Systems:* Luxembourg: European Commission.

Meunier C, Lefebvre L, Burmeister A (2004) Logistic performance and development of the firms. World Conference on Transport Research, Istanbul, Juillet

Michael Armstrong and Helen Murlis. (2004). *Rewrad mangement.* London: Kogan Page Limited.

Michael Armstrong. (2005). *Handbook of Management Techniques.* Philadelphia: Kogan Page Limited.

Michael Armstrong. (2006). *Handbook of Management Techniques.* Philadelphia: Kogan Page Limited.

Michael A, W. L.-Y. (2005). *the Role of Transportation in Logistics Chain:* Adressing to Eastern Asia Society for Transportation Studies. South Australia:.Centre University of South Emerald Group Publishing Limited p. 54-70.

Michael, E. ,. (2009). *the science of War.* USA: Princeton University Press.

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

Njord John R. & Meyer Michael D. (2005): Critical Issues in Transportation

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

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

Paul, M., & John, R. (1992). *Economics,Organization and Management.* New Jersey: Prentice-HalJ, Inc.

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

Ranaiefar, F.(2012).*Intelligent Freight Transportation Systems*. Institute of Transportation Studies, University of Carolina.

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

Randolpha, w. (1999). *Handbook of Transportation Sceince.* New York: Spring Sceince

+Business Mwedia.

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

Stefansson, G. and Woxenius, J. 2007. The concept of smart freight transport systems: The road haulier's perspective. 19th annual NOFOMA conference, Reykjavik, Iceland, 7-8 June 2007.

Styhre, L. (2005) *Towards Improved Port Performance in Intermodal Transportation*, Licentiate thesis, Report 60, Chalmers University of Technology, Göteborg.

Sommar, R. (2006) *Intermodal transport in less-than-truckload networks*, Licentiate thesis, Report 66, Chalmers University of Technology, Göteborg.

Taylor, G. D., Whicker, G. L. and Usher, J. S. (2001) 'Multi-zone dispatching in truckload trucking', *Transportation Research Part E: Logistics and Transportation Review*, **37**(5), pp. 375-390.

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

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

Thomas, J. G. (2014).*The Definitive Guide to Transportation:* US America: Pearson Education, Inc.

Transport Department, D. (2019). *Annual Report of 2017.* Kality: Defence Transport Department.

Transport Department, *Human Resource check list 2021.* Kality: Defence Transport Department.

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

Tsegaye. A.K, (2016). Assessment on Truck Transport Management practices in Ethiopian Ministry of National Defense Logistics Main Department. Addis Ababa University School of Commerce.

Turcu, C. (2010). *Sustainable Radio Frequency Identification Solutions.* India: Intech.

USArmy.(2013). *Defense Transportation System:* Washington DC: Joint Publication 4-01.

Victoria Transport Policy Institute, TDM encyclopedia, *Freight Transport Management*, May 2011.

Vilkelis, A. 2011. Utilisation of transport capacities and opportunities to mitigate negative environmental impact of logistics operations. Selected paper from TRANSBALTICA 7th International Conference, 5-6th May 2011.

World Energy Council 2007. Transport technologies and policy scenarios to 2050. Transport Specialist Study Group. Available at: http://www.worldenergy.org/documents/transportation_study_final_online.pdf

Wedel, J. (2006) Manager of key accounts, Schenker AB, interview 2006-02-02.

Zeng AZ, Rossetti C. 2003. Developing a framework for evaluating the logistics costs in global sourcing processes: An implementation and insights. Int J Phys Distrib Logistic Manage. 2003;33(9):785–803.

Annex 1:

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE GRADUATE STUDIES DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Dear respondents;

My name is Leulsaged Bekele a graduate student of Addis Ababa University School of Commerce in Department of Logistics and Supply Chain Management. I am doing my MA thesis on "ASSESSMENT ON HEAVY TRUCK FREIGHT TRANSPORT MANAGMENT PRACTICE" for the partial fulfilment of the requirements for the award of the degree of master of logistics and supply chain management. The purpose of this questionnaire is to gather data for the study, and hence you are kindly requested to assist the successful completion of the study by providing the necessary information.

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

Instruction: - Before answering the questions please read the instructions;-

Don't write your name in the answering sheet

Please try to answer the following questions openly by marking as (√) to the space provided along each questions according to your point of view on the following demographic information and likert five scale questions as per the specified choices below.

Leulsaged Bekele

Graduate Student at AAU

E-mail lulsaged201415@gmail.com

Mobile No = +2519111065870

Questionnaire to be filled by Respondents

PART I

Demographic Information

1. **Gender**

   Male ☐ Female ☐

2. **Age**

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

3. **Education**

   Masters & Above ☐ BA/ B.Sc. ☐ Diploma ☐ other ☐

4. **Rank**

   General officer ☐ Higher officer ☐ Line officer ☐ NCO ☐ Private ☐

5. **Work experience in in transport (in year)**

   0-2 ☐ 3-5 ☐ 6-8 ☐ 9 and above ☐

6. **Position**

   Dep't Commands ☐ Unit Heads ☐ Team Leaders ☐

   Support Staff ☐ Drivers ☐ Mechanic ☐

PART II: Questionnaires focusing In Relation to **Heavy Truck Freight Transport Management Practice**, please indicate the degree/scale of importance of the factors listed below by ticking (√) in the appropriate response column.

Q1. **How the department uses principal methods and procedures to perform heavy truck freight transport services across the Defense?**

Key: - 1 = strongly disagree 2 = Disagree 3 = neither agree nor disagree 4 = Agree 5 = strongly agree

No.	Items	1	2	3	4	5
1.1.	There is a clear monthly, quarterly and annual plan in the department.					
1.2.	Subordinates have an opportunity to participate through developing each plan.					
1.3.	Subordinates have an opportunity to share their Ideas through developing each plan.					
1.4.	Orientation is clearly given to all department members on the Prepared plan.					
1.5.	The department has a convenient contingent plan to meet the Changing demands of the army.					
1.6.	Unit commanders usually check overall vehicle readiness weather they have fuel and necessary materials before Dispatching.					
1.7.	Transport department has a strong principal cooperation with its stakeholders.					
1.8.	Transport officers will receive timely feedbacks from internal And external service users to increase speed of transit.					
1.9.	Transport officers manage an empty trip while the vehicles return back					

Q2. What is the level of professional competencies of managers, Unit Commanders and Transport Officers?

Key: - 1 = Very low 2 = Low 3 = Moderate 4 = High 5= Very high

No	Items	1	2	3	4	5
2.1	To what degree the level of qualified professionals that are available at the Department?					
2.2	To what extent the employee's that perform their duties and responsibilities based on knowledge and skill?					
2.3	To what degree the commitment of commanders and Subordinates to enhance their professional competencies?					
2.4	To what extent the department heads manages and control freight activities following scientific methods?					
2.5 .	To what extent the unit heads manages and control freight activities following scientific methods?					
2.6.	To what degree the capacity building efforts undertaken to modernize its management system?					

Q3. How the department manages and evaluate Operational costs?

Key: - 1 = Very Poor 2 = Poor 3 = Good 4 = Very Good 5= Excellent

No.	Item	1	2	3	4	5
3.1.	There is a clear methods to evaluate the cost of fuel and lubricants.					
3.2.	There is a perfect methods to evaluate the cost of Tires.					
3.3.	There is a strong methods to evaluate the maintenance cost.					

Q4. How the commanders implement the time and reliability criteria of overall heavy truck transportation management?

Key: - 1 = Very Poor 2 = Poor 3 = Good 4 = Very Good 5= Excellent

No	Item	1	2	3	4	5
4.1	There are perfect methods that rate the reliability of on-time delivery.					
4.2	There are perfect methods that rate the reliability of on-time pickup.					
4.3	There are perfect methods that Measure total transit / lead time for the delivery.					

Q5. How the commanders implement the visibility and status of overall heavy truck transportation management system in Defense?

Key: - 1 = Very poor 2 = Poor 3 = Good 4 = Very Good 5. Excellent

Item		1	2	3	4	5
5.1	The visibility and status of overall heavy truck transportation management system in defense.					
5.2	How do you rate transport officers using effective control mechanism on their responsibilities?					
5.3	There is availability and utilizing modern technology of GPS, RFID, EDI and other equipment in each truck.					
5.4	There are methods that measure the efficiency of every truck activities using Modern Technology.					
5.5	To what extent commanders focusing on the job training to build up employee's capacity and enhance their awareness?					
5.6	How do you rate the attention of drivers in following safely rules while driving?					
5.7.	There are mechanisms that the transport officers using modern technologies to control on-trip trucks.					

6. Challenges on heavy truck freight transport management practice:

You can freely express your feeling and experience for the following open ended questions, please indicated the number and use back of this paper if the space provided under each question is not sufficient for your response.

6.1. What are the main challenges facing on implementing heavy truck freight transport management system in defense? Please be write your opinion.

6.2. Do the vehicles carry full load while they moving and returns back? Please feel free to forward your suggestion in this regard here under.

6.3. List out some of the efforts make to overcome the challenges.

Interview Guide Questions

1. How do you describe the capacity building efforts put in place by the national defense generally to ensure modern transportation?
2. Do you think that the transportation dep't organizational structure accommodates all the relevant organs and how performs principal methods of heavy truck freight transport management practice?
3. Are there any standards operating procedure or benchmarks used in ensuring the transport service delivery?
4. What methods and procedures does the department use to ensure quality of its transport service and to manage empty trip?
5. Do you think drivers and commanders professionally competent and happy while they perform their task at any time?

Thank you so much for your cooperation!!