



**ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE
LOGISTICS AND SUPPLY CHAIN MANAGEMENT UNIT**

**ASSESSMENT OF FLEET MANAGEMENT PRACTICES OF
PHARMACEUTICALS FUND AND SUPPLY AGENCY OF ETHIOPIA**

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**ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE
DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN
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Letter of Declaration

I hereby declare that the work which is being presented in this thesis entitled ASSESSMENT OF FLEET MANAGEMENT PRACTICES OF PHARMACUETICALS FUND AND SUPPLY AGENCY OF ETHIOPIA is original work of my own, has not been presented for a degree of any other university and that all sources of material used for the thesis have been duly acknowledged. I conducted the study with guidance and counseling of my advisor (DR, TARIKU JEBENA) by my own effort in order to fulfill the requirements for Master of Arts in logistics and supply chain management (LSCM) at the Addis Ababa university school of commerce.

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Statement of certification

This investigation, entitled “ASSESSMENT OF FLEET MANAGEMENT PRACTICES OF PHARMACUETICALS FUND AND SUPPLY AGENCY OF ETHIOPIA” was carried by Kibatu Seifu Mare so as to obtain his second degree from Addis Ababa University School of commerce. He conducted his original thesis under my guidance and supervision. I certify that, the study is his own original work and suitable for submission of the award of MA in Logistics and supply chain Management.

Advisor _____

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Date _____

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Abbreviations

APSL-Alexander Petroleum Services Ltd

DfT- Department for Transport (UK)

EDI -Electronic data interchange

Field VFM -Field Vehicle Fleet Management

FMOH -Federal ministry of health

GPS- Global positioning system

IHO -International humanitarian organizations

IPs -Implementing partners

OR -Odds ratios

PFSA-Pharmaceuticals funds and supply Agency

RFID - Radio frequency identification

VFM -Vehicle Fleet Management

VOs -Vehicles operators

SOPs-Standard Operating Procedures

TO-Transport Officer

TMS(s)-Transport management systems

Abstract

Transportation is at the center of logistics as it represents the physical movement of materials between points in a supply chain. The pressure to deliver faster and cheaper has made vehicle utilization an important aspect of fleet management. Better vehicle utilization lowers operating cost through better planning. Transport planning requires software support with the use of transportation management systems. The aim is to determine routes that will provide the highest overall utilization of vehicle capacity, with as many customers served and the largest amount of goods delivered, at the same time as the delivery times are minimized. Efficient logistics are fundamental to effective Pharmaceuticals fund and supply agency operations. Pharmaceuticals fund and supply agency needs to professionalize its logistics capacity both in the field and at headquarters if it is to ensure that the organization is running as close to its optimal edge as possible. The purpose of this study was to assess the effect of fleet management of Pharmaceuticals fund and supply agency. The study has incorporated both primary and secondary source of data. The primary data was collected using questionnaire. Secondary data was collected from journal articles, internet website, annual report and magazines. Out of 65 total populations 50 valid responses were collected. Descriptive data analysis method through the use of Statistical packages for social science (SPSS) version 16.0 software was used to analyze the data. For the quantitative analyses, the statistical analyses include descriptive statistics & for the qualitative analyses narrative type of analyses was used. The results indicate that pharmaceuticals fund and supply agency and its branches should be considering the importance of routine servicing, allocation or routing, fuel monitoring, fuel sourcing, fleet administration & costing, dispatching, vehicle inspection and maintenance Training in decision making process.

CHAPTER ONE

Introduction

This section encompasses background of the study, statement of the problem, objective of the study, research question, limitation and scope of the study, among others.

1.1 Background of the study

Transportation is at the center of logistics as it represents the physical movement of materials between points in a supply chain (Jonsson 2008; Waters, 2009). The pressure to deliver faster and cheaper has made vehicle utilization an important aspect of fleet management (Jonsson 2008; Waters, 2009).

Better vehicle utilization lowers operating cost through better planning. Transport planning requires software support with the use of transportation management systems. The aim is to determine routes that will provide the highest overall utilization of vehicle capacity, with as many customers served and the largest amount of goods delivered, at the same time as the delivery times are minimized. Advanced planning also takes into account specific factors such as road and traffic conditions, in order to provide a more realistic route. Technological communication improvements in the business environment have allowed for better planning through the use of electronic data interchange (EDI), radio frequency identification (RFID), satellite navigation, and so on (Waters, 2009).

For humanitarian organizations it is beneficial to have a large fleet of small vehicles, since it improves the efficiency and equity of aid operations. However, the operation and coordination of large fleets can be difficult for logisticians in the field (Huang, Smilowitz, & Balcik, 2012).

There is an increasing effort to develop and implement good software in the humanitarian sector for management of large fleet operations (Huang, Smilowitz, & Balcik, 2012). Currently, such software is mostly used for tracking, monitoring and reporting purposes, but it lacks modules that will support operational decisions, for instance based on fleet cost. Routing and

delivery scheduling decisions are made according to the insights and experiences of the logisticians (Huang, Smilowitz, & Balcik, 2012). Martinez, Stapleton, & van Wassenhove (2011) found that information systems for coordination and routing at field level will have a positive impact on fleet performance and route optimization. However, there is generally a lack of data bases and funding to purchase such a system.

Logistics and transportation services in developing countries have been changing and diverging into several service segments. The multiple services provided earlier by transport and trucking companies have been broken down into several specialized services to attain lower costs (cut-rate trucking) or to offer value-added services (warehousing, packaging, price ticketing and final assembly) through third-party and fourth-party arrangements and alliances (Bask et al., 2010). Humanitarian operations in Africa often implement relief and development aid in the field simultaneously (Besiou, Martinez, & van Wassenhove, 2012), giving the fleet a dual mission. In accordance with emergency and development operations, the fleet has a different purpose. Emergency aid is mainly concerned with the speed of delivery, while development aid seeks to cover demand in a cost efficient manner. Fleet management for relief has a short duration, higher urgency with highly stochastic demand, and short response time (Martinez, Hasija, & Wassenhove, 2010).

Fleet management for development is characterized by longer duration and response time, as well as low urgency and stochastic demand. A sustainable fleet management strategy is one that aims to reduce environmental impacts through a combination of cleaner vehicles and fuels, fuel-efficient operation and driving; and by reducing the amount of road traffic it generates (Besiou, Martinez, & van Wassenhove, 2012). In doing so the fleet minimizes fuel and vehicle costs and improves the safety and the welfare of employees especially in developing countries while reducing its exposure to the problems of congestion.

Pharmaceuticals fund and supply agency is the Federal ministry of health Ethiopia agency mandated with the task of providing logistic service particularly Medical Equipment and supplies to more than 3000 health facilities through its branch offices nationally the agency uses

more than 165 heavy and middle duty and refrigerator vehicles. In order to do this effectively Pharmaceuticals fund and supply agency has to have an efficient Fleet management system. Efficient logistics are fundamental to effective Pharmaceuticals fund and supply agency operations. Pharmaceuticals fund and supply agency needs to professionalize its logistics capacity both in the field and at headquarters if it is to ensure that the organization is running as close to its optimal edge as possible. Not only are the vehicles the means by which staff and aid workers get to the beneficiaries, they represent a large capital investment that needs to be supported in order to achieve a maximum of efficiency. This supposes valuing vehicles beyond their initial investment and accommodating the recurring costs with sound management. Caution is needed to avoid pursuing savings that defeat their own ends. Among other operating costs, Pharmaceuticals fund and supply agency might look to its transport and logistics sector as one area in which costs appear out of line with the benefits and services accruing to Agency. In many operations, Pharmaceuticals fund and supply agency maintains a quantity and quality of vehicles for its own use that is well beyond what it would ever consider providing to IPs (implementing partners) and their frontline workers who are in daily contact with beneficiaries.

1.2. Statement of the Problem

The pressure to deliver faster and cheaper has made vehicle utilization an important aspect of fleet management (Jonsson 2008; Waters, 2009). Better vehicle utilization lowers operating cost through better planning (Waters, 2009). According to Gitahi & Ogollah, (2014) there is little literature on the current Field Vehicle Fleet Management (Field VFM) in humanitarian operations. Data on vehicles is gathered and stored using unstructured databases like excel spreadsheets and text files (Wassenhove, 2010).

Well managed and maintained equipment can result in 20-30 % or more cost savings on running Costs alone. Improved efficiency of the users can result in even more savings. Better acquisition, Management and disposal of vehicles could save 12-17 percent (between US\$120

million and \$170 million a year) of an estimated \$1 billion annual spend (Gitahi and Ogollah, 2014).

The literature review suggests that fuel savings of 10% or more can be obtained through a range of relatively low cost measures such as driver training, vehicle maintenance and vehicle design Baas (2012). According to Gitahi and Ogollah, (2014) the poor management of the fleet of vehicles in the 2011-2012 saw the UNHCR losing twenty million Kenya shillings due to escalating cost of repairs. This cost can be reduced if proper fleet management is in place. UNHCR is losing over 5,000,000.00 Kenya shillings each year since 2010 up to date as the fuel management system is not functioning as it should (Gitahi and Ogollah, 2014).

Fekadu (2013) identifies the constraints associated with logistics system in Ethiopia. Characterized by inadequate fleets of vehicles (means of transport) for goods transport, the market possibility of the country is hampered by poor logistics system, Very high traffic accident (the highest in the world) in which contribution of goods transport is significant. Congestion in cities and at inlets/outlets.

Damage of goods and quality deterioration while in storage, packaging transporting, and post-harvest loss in food items (up to 70%) & Lack of Organization and management tools that are required to promote intermodal system (Fekadu, 2013).

PFSA 2014 Annual report shows that there is a weakness in the system of issuing of fuel to the vehicles and the total amount of fuel consumed and the cost keeps going up each year (PFSA, 2014). Trucks and vehicles are used to transport these imported products to the central hub and then to the regional hubs and to facilities. The shortage of transportation is clearly manifested in all branches of PFSA as well as in health Facilities. Currently, The Number of health Facilities increased in Addis Ababa and different regions of the country as result of which the volume of Distributed goods increases from time to time. This makes the agency not to distribute the required amount of products to the branches and health facilities in time. Finally delay and non-availability of products are the major problems due to transportation problems as one of the agency's driver said when the researcher informally interviewed. In this study the existing practices of fleet management of the Agency will be critically analyzed and an

improved Fleet management Practices will be proposed to enhance the efficiency of the Fleet management system. The researcher also believes that conducting a research on this area have paramount role on the effectiveness of the Agency in particular and the health sector in general.

1.3 Research Question

The study addressed the following research questions:

1. What are the practices of fleet management at pharmaceuticals fund and supply agency?
2. What are Fleet management factors of pharmaceuticals fund and supply agency?

1.4 Objective of the Study

1.4.1 General objective:

The main objective of this study was to assess the practices of fleet management at Pharmaceuticals fund and supply agency in Ethiopia.

1.4.2 Specific Objectives

Specific Objectives of the study was based on the following research objectives:

1. To determine how vehicles repair and maintenance influences fleet management in the case of PFSA in Ethiopia.
2. To establish the influence of vehicles fuel management on fleet management in the case of PFSA in Ethiopia.
3. To assess how vehicles tracking influences fleet management in the case of PFSA in Ethiopia
4. To determine the influence of driver management and training on fleet management in the case of PFSA in Ethiopia.

1.5 Significance and Benefits of the Study

As a research, the primary merits of the study goes to the university academics. Since there are few studies in the area, it gives a comprehensive starting point for further research on Fleet management. Secondly Organizations gets ideas on Fleet management and fleet maintenance for their respective company.

Public organizations, such as, Pharmaceuticals fund and supply agency and all branches gets important concepts on the overall fleet management and fleet maintenance and able to measure efficiency and cost effectiveness of Fleet management and may take the recommendations to improve their fleet management system.

1.6 Scope of the Research

The study mainly focuses on Assessment of the practices of fleet management particularly on vehicles maintenance, driver management, and fuel management vehicles tracking in the case of Pharmaceuticals fund and supply agency and its branches. The research also focuses particularly on the heavy vehicles which are directly used for pharmaceuticals supply distribution to Pharmaceuticals fund and supply agency branches, hubs and Health Facilities. Managers, maintenance workers and drivers of pharmaceuticals fund and supply agency and its branches taken for the study. However, other staff of Pharmaceuticals fund and supply agency and its branches was not taken for the study.

1.7 Limitation of the Study

During the research of the study there have been major and minor problems faced by the researcher, some of them were solved easily without affecting the study but others were beyond the scope of the researcher.

Even though, the Agency has 17 branches in different regions of the country outside of Addis Ababa, the research only deals with Head office and six branches which in turn may not be representative of the overall picture. Getting qualitative data from the agency is very challenging thing for the researcher.

Some of the findings from different organizations may be difficult to implement in public organization due to difference in nature of industry.

1.8 Organization of the Study

The report is organized under five chapters. The first chapter represents background of the study, statement of the problem with basic research question, objective of the study, theory and hypotheses development, significance of the study, delimitation and limitation of the study and definition of terms. The second chapter deals with review of related literature. It includes both theory as well as empirical evidences related to the study topic. The third chapter is about methods of the study. It describes the type and design of the research to be pursued, concepts adapted from previous studies, detail description of participants/sample/ of the study, data sources, data collection tools and procedures, methods of data analysis and the like. The fourth chapter presented results and discussions about the research topic based on the result of third chapter. Here, the results/findings of the study summarized and interpretation as well as discussion with the use of related literature review was explained. Finally, the fifth chapter about the summary, conclusion and recommendation part of the study.

1.9 Definition of Terms

Transportation: is represents the physical movement of materials between points in a supply chain.

A sustainable fleet management: strategy that aims to reduce environmental impacts through a combination of cleaner vehicles and fuels, fuel-efficient operation and driving

Vehicles operators (VOs): are the key people responsible for the effective, safe, and economic operation of a vehicle.

A fleet: is a group of motor vehicles owned or leased by a business or government agency

Fleet management: is the management of a company's vehicle fleet, and can include a range of functions, such as: Vehicle financing, Vehicle maintenance, Vehicle telematics (tracking and diagnosis), Driver management, Fuel management Health & safety management

Scheduled Maintenance: is a planned servicing of equipment & vehicles to maximize efficiency

Unscheduled Maintenance: is work resulting from breakdowns such as component failure & surprise failures, which may necessitate road calls

Lifecycle management: refers to the stages of vehicle management from procurement to disposal.

Vehicle disposal and replacement: deal with the end of vehicle life cycle

CHAPTER TWO

LITERATURE REVIEW

2.1 Practices of Fleet Management

2.1.1 Vehicle Repair and Maintenance

Maintenance refers to preventive maintenance, the most widely used maintenance policy (Ozekici, 1995). Repairs are unplanned maintenance. They can be due to component failure (Brosh, Shlifer and Zeira, 1975), accidents or sabotage. Fuel management relates to fuel sourcing and fuel monitoring. Finally, vehicle disposal and replacement deal with the end of vehicle life cycle. Academic literature on replacement is extensive. Wang (2003) classifies replacement policies in age or mileage based, repair limit based or up to failure.

2.1.1.1 Repairs, Preventive Maintenance and Recalls

State of Wisconsin, (2004) Noted that it is the driver's or work shared vehicle coordinator's responsibility to ensure that all preventative maintenance is performed on schedule and have the vehicle serviced in a timely manner when notified of a recall or preventive maintenance. Failure to perform the maintenance and repairs in accordance with agency policy may result in loss of the vehicle or, in the event of damage to the vehicle, payment for vehicle repair (State of Wisconsin,2004).

2.1.2 Fuel Management

Alfonso P. Orla. S & Luk N., (2009) discussed Monitoring and evaluation is carried out via data collection and analysis. Key performance indicators related to Field VFM are used by International humanitarian organizations particularly to monitor vehicle lifecycle. We look at how data is collected, at what level of the IHO it is collected, how it is used within the International humanitarian organizations and for what purpose (Alfonso, Orla, & Luk, 2009).

2.1.3 Fleet management monitoring systems&Vehicle Tracking

The intention here is to provide a conceptual basis for monitoring systems and fleet management, which are functionally different. Fleet management focuses on providing the company with a means to manage its assets through control of the different variables involved in the process. Monitoring has as its objective, the exact product location, tying in with other variables related to the performance of the assets and the professional staff involved (Mauro, V., Silvio R. I. Pires, & Fernando B.S.,2012).

According to Mauro et al. (2012) the current logistics systems require real-time monitoring and interaction with fleet vehicles in order to achieve high utilization and rapid responses to customer needs. The technology needed to support real-time logistics requires mobile communication, GPS (Global Positioning System) and GIS (Geographical Information Systems), combined with information systems.

Mauroet al. (2012)the authors noted that this technological tool is called AVL (Automatic Vehicle Location), which is the combination of the positioning and communication system, allowing the position of the vehicle to be known while performing operations associated with this information.

2.1.3.1 Vehicle Tracking

Although the majority of the dynamic fleet management models assume that the travel times areDeterministic, there are a variety of applications where traffic jams, equipment failures and undesirable weather conditions create substantial variability in the travel times. Huseyin,(2006) Furthermore, even if these events are rare, the travel times may appear to be random to the modeler, since they depend on factors outside the scope of the model (Huseyin,2006).

Huseyin,(2006) investigated in the car allocation business, the railroad company receives car requests from its clients on a daily basis. These requests are for a particular number of cars of a particular type, at a particular operating station and on a particular date. The company decides

which cars should be used to satisfy the requests and tries to get these cars to the clients. After using the cars for a certain amount of time, the clients return the cars to the company. To serve the clients in a prompt manner and to set the imbalances between where the requests originate and where the cars are returned, the company continuously repositions the empty cars (Huseyin,2006).

Sharon(2012) discussed Choose good fleet management software and uses it in decision making. In order to properly track costs, fleet management software is a must. Software tied to make, model, class and department should track preventive and scheduled maintenance, fuel usage, repair time, etc., for each vehicle. Software should interface with fuel systems. Many good fleet management software systems are on the market.

Sharon (2012) Noted that main goals of any fleet management system are to provide information to improve efficiency, decrease downtime and in-service breakdowns, reduce inventory, lower ownership cost and avoid waste. The selected software should provide detailed vehicle information such as: downtime, percentage of downtime, total miles traveled and cost/mile. It should be able to provide information on mechanics' efficiency and productivity. It should track parts inventory and have the capability to track/analyze all direct and indirect labor costs. This information should be used in purchasing decisions (Sharon,2012).

2.1.4 Driver Management and training

Drivers are a critical component in Field Vehicle Fleet Management,Mejza, et al. (2003), the authors noted that find the best performers of motor carriers in the US as to driver management practices. They find that careful hiring processes lead to better performance. Formal reward systems are identified as best practices in driver management.

2.1.4.1 Driver management

Baas (2012) Investigated that excessive speed and aggressive fuel-inefficient driving techniques increase fuel consumption and increase incident rates. A number of initiatives were introduced, aimed at improving driver behavior and education.

Baas (2012) the author identified Steps taken to improve driver management included, Developing a comprehensive prestart check sheet, ensuring that drivers understand that they are responsible and accountable for their actions , improving driver recruitment procedures, including the use of pre-employment external assessments, requiring all new staff to complete a comprehensive in-house induction and training program (new staff remained under training until being assessed as fully competent by a qualified driver trainer) , educating and coaching drivers about vehicle standards and visual inspections ,holding regular monthly driver forums , developing a culture where a driver can intervene in any unsafe or non-compliant act, Drivers developing their own voluntary code of compliance and policies, implementing in-cab driver assessments (six-monthly) and additional coaching from driver trainers or senior drivers when required, preparing monthly feedback reports on individual driver performance and vehicles related to speed and fuel consumption, developing a culture of continuous improvement within the driver teams to focus on total fuel consumption and driving techniques, including urban operation and All drivers participating in an individual driver recognition/incentive scheme that rewards positive behaviors and outcomes. The level of recognition was directly related to individuals' safety behavior, customer service and incident rates. The drivers' recognition scheme encouraged honest reporting(Baas, 2012).

2.1.4.2 Vehicle management

Baas (2012) Alexander Petroleum Services Ltd (APSL) knew that not only are the selection and purchase criteria of a vehicle critical, but also the ongoing support from the original equipment manufacturer (OEM) and other associated service providers.

This after-sales support from all inter-related service providers is critical in enabling a transport operator to achieve the safest, most cost-efficient and fuel-efficient result from any one truck,

irrelevant of its make and model. APSL worked with and included their service providers in the vision of wanting a best practice operation Baas,(2012).

Baas (2012) the author identified Steps taken to improve vehicle management included, limiting the speed of all vehicles to 88km/h , resetting all vehicle default idle time cutoffs to three minutes , monitoring all idle override exceptions ,maximizing the use of OEM-fitted driver displays recording fuel consumption , reprogramming the electronic transmissions to facilitate earlier upshifting ,matching engine size to the required tasks when specifying a vehicle from new, looking for the best fuel economy, specifying automatic shifting transmissions for improved fuel economy and safety, planning all predictive and preventative repair and maintenance schedules to minimize repair and maintenance costs, and unplanned breakdowns , using genuine OEM parts when replacing components, implementing a tire management program with service providers using KPIs based on tire pressures, rotations and maximum tire life , monitoring electronic brake system interventions, Working with a GPS service provider to upgrade the vehicle management systems to include an audible alert when the vehicle speed reaches 90km/h as tracked by the GPS system(Baas,2012).

According to Baas (2012) all vehicles purchased were fitted with the latest safety equipment. APSL were the first company to insist on front under-run protection, a driver's-side air bag and a roll stability program on Century Class freightliners in New Zealand.

The accuracy of the fuel reporting was at a level where if a truck developed increased fuel consumption through a mechanical fault or driver behavior, it was noticeable in the monthly fuel figures. The increased fuel consumption figures for June and July in 2007 were directly related to two trucks that developed fuel sensor problems. These were not immediately noticed by the driver but were picked up in the fuel consumption figures and managed (Baas, 2012).

2.1.5 Road Safety

Road safety refers to the actions taken by drivers and passengers to avoid accidents. Some measures of road safety are: the mandatory use of seat belts, no more than 8 hours driving per day (Jones and Stern, 1987), driving only during daylight time (Orris, *et al.*, 2005) and stopping to rest at least every 4 hours (Lin, Jovanis, & Yang, 1993).

2.2 Practices of Fleet management in Africa

2.2.1 Fleet Size in Africa

Raballand & Gaël (2009) discussed under the current traffic allocation assigning two-thirds of international freight to landlocked countries, their fleets are up to three times larger than needed for satisfactory levels of productivity for the capital invested in trucks.

Even considering long turnarounds and fleet characteristics, several landlocked countries have larger truck fleets than they need to meet current demand. This is partially explained by cartels. For example, the Central African Republic has a (theoretical) fleet of 600 trucks for approximately 200,000 tons of exports and less than 100,000 tons of imports. Assuming about one-third of the fleet is composed of inactive or out-of-service trucks, this leaves about 395 trucks as the adjusted current active fleet. However, the demand—measured by current import/export volume—would only require 125 good-quality trucks to carry the current freight volume. In West Africa, the total Nigerien fleet is approximately 4,500 trucks. Applying the same one-third factor to discount trucks not in service, the operational fleet would still be three times larger than needed. With around 1 million tons of imports and two thirds of the traffic for the Nigerien fleet than 100 trucks per day are needed. Fewer with a turnaround of 15 days, its ideal size should be about 900 trucks (Raballand & Gaël, 2009).

2.3 Practices of Fleet management in Ethiopia

The dominant means of freight transport for international as well as domestic transport. It accounts 95% of all freight transport modes (Asnake, 2006, Temesgen, 2009, and Debele,2011). Due to its Land lockedness and varied geographical terrain and scattered settlement pattern road transport systems become more important mode of transport in Ethiopia. Besides movement within the country, road transport plays an important role to cater the international transport requirement with the neighboring countries. The increasing reliance on road transport in Ethiopia has also been influenced by two main factors. First the flexibility of road transport operations which in spite of substantial failures are able to meet the criteria of speed, adaptability and cost a given firm. Second, the ownership factor within the road transport industry with about 90 of the trucks in the hands of individual owner operators and between 60 and 80 percent of the industry is with private ownership.

In this new era of economic development, both soft and hardware of logistics infrastructure are lacking in the country. Inadequate human capacity in the emerging economic and supply chain management system in governmental and private organizations is among the major bottlenecks in the field of freight transport and logistics activities in Ethiopia. In order to realize the objectives and ensure that the country's vision and dream come true, a coordinated and concerted effort on innovative freight transport and logistics system at national level is critical to aspire beyond what is required by the MDGs (Fekadu, 2013).

2.3.1 Road Infrastructure

The development of road system in the country has been generally progressing on the basis of highway and road sector development programs.

Apart from urban roads and rural trails and footpaths, the present road system could be generally divided into three hierarchical functional classifications: the Federal, Regional and Rural roads. The length of Federal and Regional road network is about 46,812 of which 6,938 is asphalt/concrete surfaced. This is road network density of 0.57 km per 1000 of population or 41.4 km per square km of area (Fekadu, 2013).

These values for the weighted mean of road density in all of Africa, is 2.6 km per 1000 persons and density of 58km per 1000 square km (Fekadu, 2013). The trunk road network radiates from Addis Ababa to the regional cities with minimal of gridding. Often areas close by through air distance are hundreds of kilometers by road because one should pass through Addis Ababa. This makes agricultural freight transport within country from areas with excess produce to deficient areas often expensive (Fekadu, 2013).

The federal road network gives good connectivity to all regional headquarters, main cities, ports and main international entry points. However, only about 30% of the rural areas are presently connected with all weather road and many of these roads are in poor condition (Fekadu, 2013).

Transportation is one of the most important issues in distributing the pharmaceutical products. The mode of transport PFSA currently uses are airplane, trucks, water (Ship). Water (Ship) airplane mode of transport is used for imported products. Trucks and vehicles are used to transport these imported products to the central hub and then to the regional hubs and to facilities.

According to Eyob(2013) a total of 64 vehicles are on duty, supported through SCMS/USAID. In addition to these new procurement proposal submitted to PEPFAR and GF in different rounds. There are also 6 heavy trucks with trailer ordered with 30% advance paid and the fund is served from GF. In addition 28 delivery vans currently operated. The shortage of transportation is clearly manifested in all branches of PFSA as well as in health center. This makes the agency not to distribute the required amount of products to the branches and health facilities in time. Finally delay and non-availability of products are the major problems due to transportation problems. PFSA tries to outsource transportation during shortage but the selection process by itself takes time. An open tender is preferred by the agency rather than long term agreement. The other problem related to out sourcing is most of the pharmaceutical products need cold room. Obtaining cold room vehicles from outside is another challenge and this also affects availability and on time presence of products at health facilities.

2.3.2 Fleet Management and Maintenance

This service is provided by the Human Resource and General Service Directorate. Transportation routings and maintenance are the main issues. Since most of the trucks are old they frequently get remarks. PFSA tries to solve these remarks by out sourcing the maintenance service. Here the most series problems are lack of spare parts and delay by the maintenance service provider. Sometimes the follow up is also weak. In addition, PFSA does not have a long term agreement with selected maintenance service provider since this will help to give priorities for the agency. PFSA also outsource transportation service, if the capacity of items transported is beyond the capacity of the agency(Eyob, 2013).

Most of the problem related to fleet management is related to limitation on transportation. Gullele branch a has number of vehicles, but due to lack of vehicles, these delivery vans also forced to give the service to special zones of Addis Ababa in Oromia like, Sululeta, Alemgena, Akaki, Sebeta etc. The other problem in fleet management is, there is a weak collaboration between procurement & storage and distribution. Without informing to the distribution & storage directorate huge amounts of items will be procured, and this greatly affects the efficiency of the distribution service. Because of lack of space in the warehouse, items will be outside the warehouse without refrigeration and this leads to wastage of drags before use and finally availability of drugs will not be ensured. In relation to these, in order to secure space for items outside a huge amount of item are forced to be transported to the branch and this greatly influence the transportation service and delay become the main problems. PFSA currently distributes pharmaceutical items to all branches even though it is not in the required amount (Eyob, 2013).

Customers

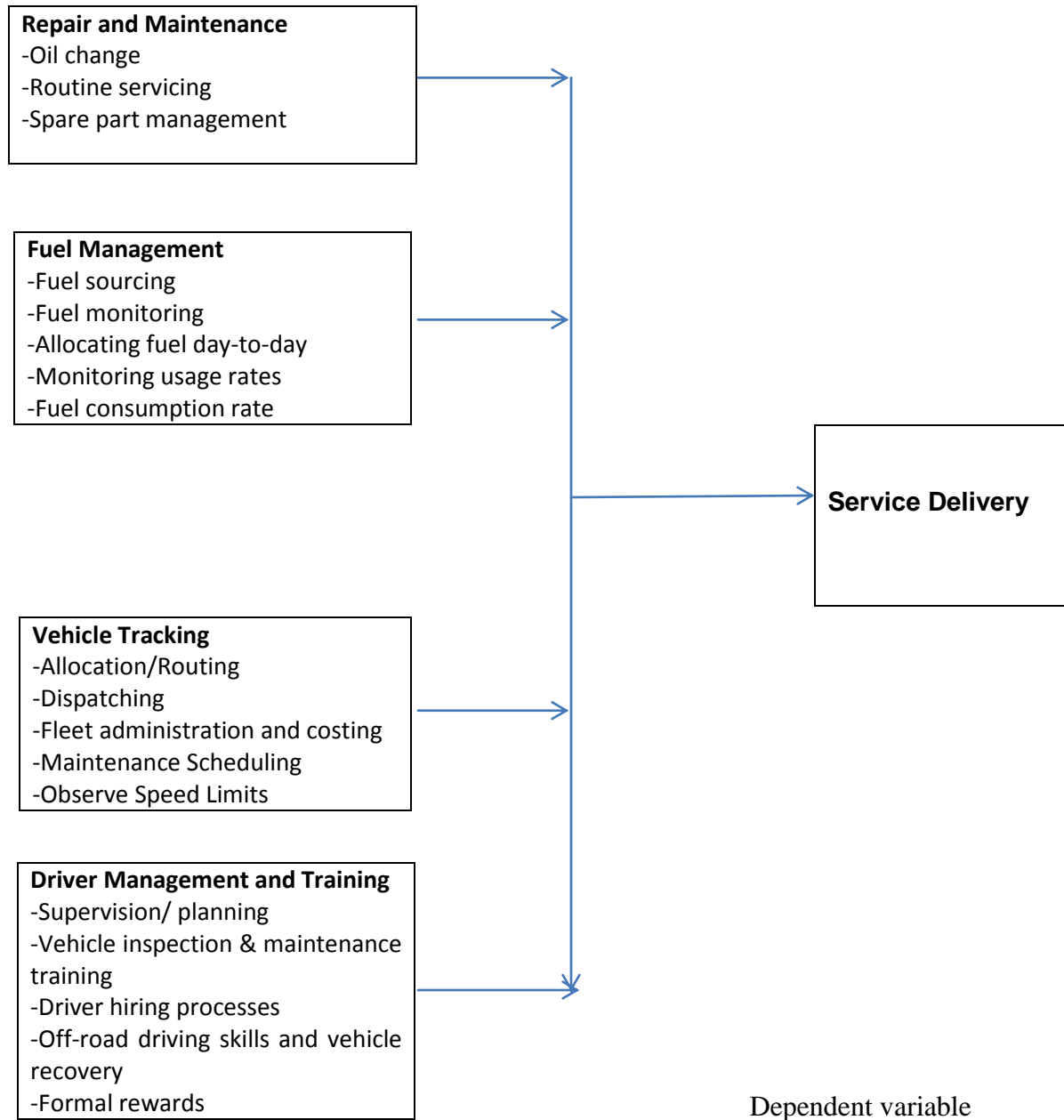
Since PFSA is established by proclamation, it stands for mainly the serve public health facilities like Hospitals, Health centers and Health posts.

In addition to the above, PFSA also serves private hospitals by giving priority to the public health facilities. Health posts do not supposed to get their consumption from PFSA, rather through health centers. Health centers and hospitals can directly delivered products form PFSA hubs according to their geographical locations. The Ethiopian health policy obliged each health centers to consist five health posts to achieve the MDG. There are a total of around 3000 health centers in the country and 15000 health posts (Eyob, 2013).

2.4 Conceptualization

Conceptual framework as a concise description of the phenomenon under study accompanied by a graphical or visual depiction of the major variables of the study (Gitahi & Ogollah, 2014). According to Gitahi & Ogollah (2014), conceptual framework is a diagrammatical representation that shows the relationship between dependent variable and independent variables. In the study, the conceptual Framework is look at assessment of fleet management practices of pharmaceuticals fund and supply agency of Ethiopia.

Figure 1: Conceptual Framework



Independent variable

Dependent variable

Source: adapted from Gitahi and Ogollah (2014)

CHAPTER THREE

Methodology

The purpose of this study was to assess the practices of fleet management on service delivery to PFSA. In this part of the study target populations, sampling technique, types of data and instruments of data collections, procedures of data collections, and methods of the collected data analysis discussed. Finally, validity and reliability of data was presented.

3.1 Study Design and Type

Descriptive research design has been employed by the present study. A descriptive research design determines and reports the way things are (Mugenda & Mugenda, 2003). Creswell (2003) observes that a descriptive research design is used when data will be collected to describe persons, organizations, settings or phenomena. Descriptive design is ideal as the study will be carried out in a limited geographical scope and hence is logistically easier and simpler to conduct considering the limitations of this study (Mugenda, 2008). The design also has enough provision for protection of bias maximized reliability (Kothari, 2008). This design was selected because the researcher wished to collect information on people's attitudes and opinions as well as facts from existing reports in relation to assessment on the practices of fleet management of PFSA. In this study measure of central, dispersion distribution was applied.

3.2 Study Area

The Branches was selected based on purposive sampling PFSA has 17 branches in which six branches have been selected through purposive sampling as follow:

Head Quarter which was found in Addis Ababa region altitude 2355 meter, 527 km square and 3.385 million population size

Adama branch which was found in Oromia region altitude 1712 meter, 100 km Capital City Addis, 299621 population size

Bahirdar branch which was found in Amhara region altitude 1784meter,320 km from capital city Addis and 168929 population size

Addis Ababa branch which is found in Addis Ababa region altitude 2355 meter, 527 km square and 3.385 million population size. Gonder and Negelle borena branches also taken for this study.

3.2.1 Unit of Analysis

Literature shows that research design is case-based with the fleet management model as the unit of analysis (Yin, 2003). Unit of analysis for this study was Pharmaceuticals funds and supply Agency and unit of Inquiries will be managers, maintenance workers, & Heavy vehicles drivers of PFSA.

3.3 Study of Population& Sampling Design

3.3.1.1 Target Population

According to Neuman (2000:518), a sample is “a smaller set of cases a researcher selects through scientific sampling procedure from a larger pool, and generalizes to the population”. When the sample is representative, the results of the study may be generalized to the population. Unless the entire population is sufficiently small and the research cannot include the entire population in the study, a subgroup or representative sample is selected for study.

The participants/population/ of the study was Managers/Department heads, Maintenance workers & Heavy vehicle drivers of Pharmaceuticals fund and supply agency and its branches, (See table 3.1 Target populations of the study). According to Henry (1990), if the entire population is less than 100 it will be better to take all the population. The total population for this research is less than 100. Therefore, the entire population will be the participants of the study.

Table 3.1: Target populations of the study

No.	Branch Name	Department heads	Maintenance worker & Heavy vehicle Drivers	Total
1	Head Office	4	15	19
2	Bahir Dar branch	2	5	7
3	Addis Ababa branch	3	6	9
4	Adama Branch	3	5	8
5	Jima Branch	2	6	8
6	Gonder Branch	2	5	7
7	Negelle Borena	2	5	7
Total population				65

The total population for this research is less than 100. Therefore, census was applied. A purposeful sampling technique allows the researcher to select participants “based on a specific purpose rather than randomly” (Tashakkori, 2003). The Branches were selected based on purposive sampling.

3.4 Data Collection Techniques and Research Instruments

A data collection method, also referred to as a data generation method, provides a means of gathering research findings (Oates, 2006:36). Questionnaires and interviews are widely used data collection methods in information systems research (Oates, 2006:38). As part of the data collection process, we carried out interviews at head quarters, regional, national and field levels in Africa, the Middle East and Europe (Yin, 2003).The study appliedStructured Questionnaires and interviews.

There are primary and secondary methods of collecting data. Primary methods are those that collect data for the first time while secondary methods are those where the researcher uses data collected by other people (Oates, 2006:234). The structured questionnaire and the interview checklist have been adopted mainly from Martinez et al., (2010) &NAFA Fleet Executive Magazine (1987).

3.5 Data Analysis and Interpretation Methods

Once the primary data was collected, it was checked for completeness in readiness for the analysis. The responses from the field was first put into categories and coded according to the themes so as to answer the research question and obtain the relevant information. The classified data then presented in figures, tables and charts according to the study objectives for ease of interpretation, understanding, reading and discussion. The researcherused descriptive analysis like mean, percentages and frequencies in order to describe the demographic and general information of the respondents.

Descriptive data analysis Method through the use of Statistical packages for socialscience (SPSS) version 16.0 software was used to analyze the data.

3.6 Validity and Reliability

Derived from the Latin term *validitas*, meaning “strength,” validity is a term used in both qualitative and quantitative research. It asserts that a finding can never truly be proven; it can only be argued (Trochim, 1999). Specifically, a measure has content validity if the items it contains address all of the topics the researcher aims to study and is assessed in terms of face validity (whereby experts examine the instrument to see if it looks right) or sampling-content validity, in which the researcher systematically identifies how items on an instrument cover the topics of interest. A more rigorous assessment, construct validity refers to the degree to which a measure captures the theoretical construct it aims to cover. The questionnaire was assessed for reliability.

The process of pilot testing (testing and retesting) of questionnaires assisted in ensuring reliability of the questionnaires in soliciting response (Cook & Campbell, 1979:37). The standard questionnaires were checked for quality by officers, who have been working in fleet management at pharmaceuticals fund and supply agency. Additionally, before the questionnaire was dispatched a pilot test of 5 questionnaires is dispatched to the managers found at Addis Ababa branch which is out of the researcher population and feedback is taken and the questionnaire was re-corrected. This would improve the validity of the research.

Cronbach's alpha, which is coefficient of reliability (consistency), was employed to measure the reliability of the research.

3.7 Ethical Clearance

Ethical Clearance was obtained from ethical clearance committee of Addis Ababa University, School of Commerce, Department of Logistics and Supply Chain Management and permission from head quarter of PFSA and PFSA branches to conduct the study. Informed verbal consent obtained from each participant. The finding was shared for the studied branches of PFSA and the name of participant was included in order to be maintained the confidentiality.

CHAPTER-FOUR

Data analysis and discussion

In this chapter, the collected data from Managers, Maintenance workers and Drivers of PFSA and its branches are summarized and analyzed in order to realize the ultimate objective of the study.

Accordingly, reliability test, demographic profile of the respondent, Practices of Fleet management of pharmaceuticals fund and supply agency & factors of fleet management discussed.

4.1 Reliability test

Reliability test has been done to check whether the scale used on the Questionnaire consistently reflect what it mean measure or not. For the test of reliability Cronbach's alpha was 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 0.878 which is above the standard threshold level 0.7 (Nunnally, 1978). This shows that the data extracted from the Questionnaire was reliable.

Table 4.1: Detail Reliability Test

Item	Cronbach's Alpha	N of Items
Fuel management Factors	.722	5
Vehicle Tracking Factors	.889	5
Driver Management & Training factors	.744	5
Repair & maintenance Factors	.723	3

Source: Survey SPSS output (2016)

4.2 Response rate and demographic characteristics of respondents

4.2.1 Response rate

The researcher distributed 60 items questionnaires to 65 Managers, Maintenance workers and Drivers of PFSA and its branches of PFSA and its branches in Addis Ababa and Regions. However, only 50 respondents were returned and the response rate is 76.92% were usable.

4.2.2 Demographic characteristics of respondents

Respondents were asked to report their gender, age, educational status, working experience, and their income status.

A percentage and frequency characteristic of the respondents is presented in the following table.

Table: 4.2 Demographic Information of respondents

Items		Frequency	Percent	Valid percent	Cumulative Percent
Gender	Male	41	82	82	82
	Female	9	18	18	100
	Total	50	100	100	
Age	<30	13	26	26	26
	31-40	25	50	50	76
	41-50	9	18	18	94
	>50	3	6	6	100
	100	50	100	100	
Level of Education	Primary	2	4	4	4
	Secondary	7	14	14	18
	Diploma	11	22	22	48
	Degree	26	52	52	92
	Masters	4	8	8	100
	Total	50	100	100	
Years of Experience	<2 years	10	20	20	20
	3-5 years	21	42	42	62
	6-10 Years	10	20	20	82
	>10	9	18	18	100
	Total	50	100	100	

Source: Survey spss output (2016)

As shown table 4.2 above around 82% of the sample respondents are male and 18% are females. This implies that the study consists of more male than female respondents.

The Table 4.2 illustrates most of the respondents' age is ranged between 31-40 years old (50%) and 26% of them have the age of less or equal to 30 years. This indicates that most of the respondents are relatively adult. Around 18% of the respondents have the age ranged between 41-50 years and 3% respondents greater or equal to 50 years.

The table: 4.2 show that almost all of the respondents' educational level is above Secondary education. Accordingly, 22% and 52% responded diploma and degree holders respectively. This shows that around 74% of the sample respondents were diploma and first degree holders. The remaining around 14% of the respondents is Secondary, 4% the respondents is primary and 8% of the respondents are Masters.

This indicated that most of the respondents are able to understand and clearly identifies practices of Fleet management factors on Service delivery.

Based on the data collected through the questionnaire, around 20% of the respondents have less or equal to 2 years of experience in the Agency and around 42% of them have experience ranging from 3-5 years. The data shows that there are 20% of the respondents who have 6 -10 years working experience. The result indicated that 10% of the respondents were above 10 years of working experience.

4.3 Basic Information on Fleet Management Activities

Under Repair and maintenance factors 3 determinant variables were presented to respondents in order to know the importance of each item. Overall mean scores and standard deviations are ranked in order from highest importance to lowest importance below in table 4.3

Table: 4.3 Mean analysis result of repair & maintenance factor.

repair & maintenance	N	Mean	Std. Deviation
Routine Servicing	50	4.18	.720
SparePart Management	50	4.06	.867
Oil Change	50	3.46	1.281
Valid N (listwise)	50		

Source: Survey spss output (2016)

In the table 4.3 it is found that overall mean scores are ranked in order from highest importance to lowest importance during fleet management factors. Based on the mean results of the respondents ‘routine servicing’ ($\mu= 4.18$) is considered to be one of the most important determinants of mode choice factors in the case of PFSA. ‘Spare part management’ ($\mu=4.06$), is considered as very important determinant factors ‘oil change’ ($\mu=3.46$) is determined as list important factors.

Table: 4.4 Mean analysis result of fuel management

fuel management	N	Mean	Std. Deviation
Fuel Monitoring	50	4.10	.735
Fuel Sourcing	50	4.10	.735
Fuelconsumption Rate	50	4.02	.742
MonitoringUsage Rates	50	3.90	.886
Allocating Fuel Day to Day	50	3.66	1.154
Valid N (listwise)	50		

Source: Survey spss output (2016)

Based on the above mean results of the respondents ‘fuel monitoring’ ($\mu= 4.10$) and ‘fuel sourcing’ ($\mu= 4.10$) are considered to be one of the most important fleet management factors in the case of PFSA. ‘Fuel consumption rate’ ($\mu=4.02$), is considered as very important determinant factors ‘Monitoring usage rate’ ($\mu=3.46$) & ‘allocating fuel day to day’ ($\mu= 3.66$) are determined as list important factors.

Table: 4.5 Mean analysis result of vehicle tracking

Vehicle tracking factors	N	Mean	Std. Deviation
Fleet administration and Costing	50	4.20	.639
Dispatching	50	4.18	.691
Allocation or Routing	50	4.08	.778
Maintenance Scheduling	50	4.06	.620
Observe Speed Limits	50	3.98	.769
Valid N (listwise)	50		

Source: Survey spss output (2016)

According to the table 4.5 fleet administration & costing ($\mu= 4.20$), and dispatching' ($\mu= 4.18$) are considered to be one of the most important fleet management factors. Allocation or routing' ($\mu=4.08$), & maintenance scheduling ($\mu=4.06$) are considered as very important determinant factors 'observe speed limits' ($\mu=3.98$) & 'allocating fuel day to day' are determined as list important factors.

Table: 4.6 Mean analysis result of driver management & training

driver management & training	N	Mean	Std. Deviation
Vehicle Inspection and Maintenance Training	50	4.08	.695
Off-road driving skill	50	4.06	.712
Supervision or Planning	50	4.02	.742
Driver Hiring Process	50	3.92	.804
Formal Rewards	50	3.92	.877
Valid N (listwise)	50		

Source: Survey spss output (2016)

Table 4.6 shows that vehicle inspection and maintenance training' ($\mu= 4.08$), and 'off road driving skill' ($\mu= 4.06$) are considered to be one of the most important fleet management factors. Supervision or planning ($\mu=4.02$), is considered as very important determinant factors. 'Driver hiring process' ($\mu=3.92$) & 'formal rewards' are determined as list important factors.

4.3.1. Vehicles repair and maintenance practices of PFSA

Here below elaborates items/variables of fleet management determinant, total population (F) ranking; as ‘one of the most important’ (5), and ‘very important’ (4), ‘moderately important’ (3), ‘slightly important’ (2), ‘not important’ (1)

Table: 4.7 Repair and maintenance criteria

Items	5		4		3		2		1	
	F	%	F	%	F	%	F	%	F	%
oil change	8	16	25	50	7	14	2	4	8	16
Routine Servicing	16	32	29	58	16	32	2	4	0	0
Spare part management	15	30	27	54	5	10	2	4	1	2

Source: Survey spss output (2016)

In Table above 4.7 it found that half of the respondents were ranked as ‘very important’ for Repair and maintenancerelated criteria.

The percentage /frequency value of importance rated to oil change is 16 % (8) as ‘one of the most important’, 50% (25) as ‘very important’, 14 % (7) as moderately important, 2% (4) as slightly important.

Routine servicing, ‘one of the most important’ 32 % (16), ‘very important’ 58% (29), ‘moderately important’32% (16) ‘slightly important’ 4% (2), ‘not important’ 0% (0). Spare part management, ‘one of the most important’ 30 % (15), ‘very important’ 54% (27), ‘moderately important’ 10 % (5), ‘slightly important’ 4% (2), ‘not important’ 2% (1).

4.3.2 Fuel management Practices of PFSA

Fuel management is one of the most important attributes of fleet management.

Table: 4.8 Fuel Management criteria

Items	5		4		3		2		1	
	F	%	F	%	F	%	F	%	F	%
fuel sourcing	15	30	26	52	8	16	1	2	0	0
Fuel monitoring	13	26	31	62	5	10	0	0	1	2
Allocating fuel day-to-day	9	18	27	54	8	16	0	0	6	12
Monitoring usage rates	11	22	28	56	7	14	3	6	1	2
Fuel consumption rate	12	24	29	58	7	14	2	4	0	0

Source: Survey spss output (2016)

The table 4.8 above it shows in line to fuel sourcing that 30% (15) of the respondents rated as 'one most the important', 52% (26) ranked 'very important' 16 % (8) ranked 'moderately important', and 2 % (1) ranked as 'slightly important'. This indicates that most respondent ranked 'very important'

Hence, fuel sourcing should be considered as determinants of Fleet management.

Fuel monitoring rated 26% (13) as 'one of the most important', 62% (31) as 'very important' and 10% (5) as 'moderately important' 2% (1) as not important. The results shows indicated that most of the respondents were ranked 'very important' 62% (31); in a case "fuel sourcing" is 'very important' for PFSA and its branches.

And Allocating fuel day-to-day; 18% (9) rated as 'one of the most important', 54% (27) 'very important', 16% (8) 'moderately important', and 12% (6) as 'Not important'. The result of data analysis shows that 'Allocating fuel day-to-day' ranked as important factor.

Monitoring usage rates; 22% (11) rated as 'one of the most important', 56% (28) 'very important', 14% (7) 'moderately important', 6% (3) as 'slightly important' and 2% (1) as 'Not important'. The result of data analysis shows that 'Monitoring usage rates' ranked as very important factor. And Fuel consumption rate; 24% (12) rated as 'one of the most important', 58% (29) 'very important', 14% (7) 'moderately important', and 4% (2) as 'slightly important'. The result shows that Fuel consumption ranked as very important factors fleet management.

4.3.3. Vehicles tracking Practices of PFSA

Table: 4.9 Vehicle tracking criteria

Items	5		4		3		2		1	
	F	%	F	%	F	%	F	%	F	%
Allocation/Routing	14	28	29	58	4	8	3	6	0	0
Dispatching	15	30	31	62	2	4	2	4	0	0
Fleet administration and costing	16	32	28	56	6	12	0	0	0	0
Maintenance Scheduling	10	20	34	68	5	10	1	2	0	0
Observe Speed Limits	12	24	27	54	9	18	2	4	0	0

Source: Survey spss output (2016)

In the table 4.9 above it found Allocation/ Routing that 28% (14) of the respondents rated as 'one most the important', 58% (29) ranked 'very important' 8 % (4) ranked 'moderately important', and 6 % (3) ranked as 'slightly important'. This indicates that most respondent ranked 'very important'. Dispatching; 30% (15) rated as 'one of the most important', 62% (31) 'very important', 4% (2) 'moderately important', and 2% (4) as 'slightly important'

And Fleet administration and costing; 32% (16) rated as 'one of the most important', 56% (28) 'very important', 10% (5) 'moderately important'. The result of data analysis shows that 'Fleet administration and costing' ranked as very important factor. And Maintenance Scheduling; 20% (10) rated as 'one of the most important', 68% (34) 'very important', 10% (5) 'moderately important', and 2% (1) as 'slightly important'. The result shows that Maintenance Scheduling ranked as very important factor.

Observe Speed Limits; 24% (12) rated as 'one of the most important', 54% (27) 'very important', 18% (9) 'moderately important', 4% (2) as 'slightly important'. The result of data analysis shows that 'Observe Speed Limits' ranked as very important factor.

4.3.4. Drivers management and training Practices of PFSA

Table: 4.10 Driver Management and Training criteria

Items	5		4		3		2		1	
	F	%	F	%	F	%	F	%	F	%
Supervision/ planning	11	22	32	64	4	8	3	6	0	0
Vehicle inspection & maintenance training	11	22	34	68	4	8	0	0	1	2
Driver hiring processes	10	20	30	60	6	12	4	8	0	0
Off-road driving skills and vehicle recovery Scheduling	12	24	31	62	5	10	2	4	0	0
Formal rewards	10	20	31	62	6	12	1	2	2	4

In the table above 4.10 it shows that Supervision/ planning; 22% (11) of the respondents rated as 'one most the important', 64% (32) ranked 'very important' 8 % (4) ranked 'moderately important', and 6 % (3) ranked as 'slightly important'. This indicates that most respondent ranked 'very important'.

And Vehicle inspection & maintenance training; 22% (11) rated as 'one of the most important', 68% (34) 'very important', 8% (4) 'moderately important', and 2% (1) as 'Not important'. The result of data analysis shows that 'Vehicle inspection & maintenance training' ranked as important factor.

Driver hiring processes; 20% (10) rated as 'one of the most important', 60% (30) 'very important', 12% (6) 'moderately important', 8% (4) as 'slightly important'. The result of data analysis shows that 'Driver hiring processes' ranked as very important factor. Off-road driving skills and vehicle recovery Scheduling; 24% (12) rated as 'one of the most important', 62% (31) 'very important', 10% (5) 'moderately important', and 4% (2) as 'slightly important'. The result shows that Off-road driving skills and vehicle recovery Scheduling ranked as very important factor.

Formal rewards; 20% (10) rated as 'one of the most important', 62% (31) 'very important', 12% (6) 'moderately important', 2% (1) as 'slightly important' and 4% (2) as 'Not important'. The result of data analysis shows that 'Observe Speed Limits' ranked as very important factor.

4.3.5 Unstructured interview questions and corresponding analyses

The study also employed unstructured interview prepared to both managers and maintenance officers and Heavy vehicles drivers of pharmaceuticals fund and supply agency. Based on the responses provided from the users, this study clearly analyzes through narration form and gives interpretations.

Question No 1. What is the role of fleet management to achieve agency's' objectives?

Pharmaceuticals fund and supply Ethiopia agency mandated with the task of providing logistic service particularly Medical Equipment and supplies to more than 3000 health facilities through its branch offices nationally. The role of fleet management is distributing pharmaceuticals in time so as to avoid delay non-availability of products at health facilities According to the responses given by the managers and maintenance officers.

Question No 2. How vehicles tracking Influence fleet management at your agency or branch?

Based on the Interview result of the respondents Basic information on PFSA fleet management shows that, data on vehicles is gathered and stored using unstructured databases like excel spreadsheets text files. The primary source of data is the driver's logbook. In order to properly track costs, fleet management software is very important and track preventive and scheduled maintenance, fuel usage, repair time, etc., for each vehicle Vehicles tracking is very essential to ensure fleet management efficiency .

Question No 3. How repair and maintenance will affect fleet management at your agency or branch?

Based on the Interview result of the respondents Basic information on PFSA fleet management shows that, preventive maintenance is not widely practiced throughout the branches and maintenance is generally based driver discretion, usually on an ad hoc basis. They use authorized dealers, approved local workshops, Original spare parts can be very difficult to obtain locally and are usually stored until needed. Failure to perform the maintenance and repairs in accordance with agency policy may result in loss of the vehicle or, in the event of damage to the vehicle, additional cost for vehicle repair.

Question No 4. How driver management and training affects fleet management at your Agency?

Result of interview questions shows that drivers are recruited go through a rigorous process. Once hired, training is not generally offered. Road safety regulations are in place however most of the respondents don't know about it. Driving is not permitted after dark, drivers should not undertake more than 8 hours driving per day and speed limits should be obeyed. In the event that there is no limit, the maximum speed is 100 Km per hour. Opportunities for promotion are rare and although no definition of a good driver is available, penalty systems are in place for bad driving, speeding and accidents. Drivers are a critical component in Field Vehicle Fleet Management, if the agency fails to provide training & manage drivers' excessive speed and aggressive fuel-inefficient driving techniques increase fuel consumption and increase incident rates.

Question No 5. How Fuel management affects fleet management at your Agency?

Result of interview questions shows that fuel is procured locally through different suppliers. Vehicles often have to transport fuel over long distances and storage facilities are poor. Fuel efficiency is negatively affected by theft and driving quality though this is not taken into consideration in the monitoring of fuel consumption via the drivers' log book.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS&RECOMMENDATIONS

5.1 Summary of Findings

In the table 4.3 it is found that Based on the mean results of the respondents 'routine servicing' is considered as one of the most important determinants factors of fleet management in the case of PFSA. 'Spare part management', is considered as very important determinant factors.

Table 4.4mean results of the respondents 'fuel monitoring' and 'fuel sourcing' are considered to be one of the most important fleet management factors in the case of PFSA. 'Fuel consumption rate', is considered as very important determinant factors.

According to the table 4.5 fleet administration & costing, and dispatching' are considered to be one of the most important fleet management factors. Allocation or routing', & maintenance scheduling are considered as very important determinant factors.

Table 4.6 shows that vehicle inspection and maintenance training', and 'off road driving skill' are considered to be one of the most important fleet management factors. Supervision or planning is considered as very important determinant factors.

The implication of the above result is routine servicing; fleet administration & costing, and dispatching are one of the most important determinants of fleet management factors on service delivery. Vehicle inspection and maintenance training, and off road driving skill also perceived as the most important factor. Vehicle inspection and maintenance training, and off road driving skill are considered as one of the most important fleet management factors in PFSA.

Spare part management is considered as very important determinant factors. Allocation or routing, maintenance scheduling, & Supervision or planning are considered as very important determinant factors.

In addition to the above we explore addition fleet management factors like, fleet structure, deployment and routing, vehicle life cycle, drivers and road safety, and monitoring and evaluation. These factors affect fleet management objectives.

- From the results of descriptive analysis for the determinants of Routine servicing, Allocation or Routing, Fuel monitoring, fuel sourcing, fleet administration & costing, dispatching, Vehicle Inspection and Maintenance Training with mean score value $\mu=4.18, 4.08, 4.10, 4.10, 4.20, 4.18, 4.08$ respectively are the determinants fleet management factors on service delivery.
- Off road driving skill, Supervision or Planning, Spare Part Management, Allocation or routing, maintenance scheduling and Supervision or Planning with mean score value $\mu=4.06, 4.02, 4.06, 4.08, 4.06, 4.02$ respectively are the very important fleet management factors.
- Oil Change, Allocating Fuel Day to Day with mean score value $\mu=3.4, 3.66$ were least rated by respondents of the agency.

5.1.1 Practices of PFSA Fleet Management

Based on the interview result of the respondents Basic information on PFSA fleet management discussed below.

Preventive maintenance is not widely practiced throughout the branches and maintenance is generally based driver discretion, usually on an ad hoc basis. They use authorized dealers, approved local workshops, Original spare parts can be very difficult to obtain locally and are usually stored until needed.

Drivers are recruited go through a rigorous process. Once hired, training is not generally offered. Road safety regulations are in place however most of the respondents don't know about it. Driving is not permitted after dark, drivers should not undertake more than 8 hours

driving per day and speed limits should be obeyed. In the event that there is no limit, the maximum speed is 100 Km per hour. Opportunities for promotion are rare and although no definition of a good driver is available, penalty systems are in place for bad driving, speeding and accidents.

Fuel is procured locally through different suppliers. Vehicles often have to transport fuel over long distances and storage facilities are poor. Fuel efficiency is negatively affected by theft and driving quality though this is not taken into consideration in the monitoring of fuel consumption via the drivers' log book.

Disposal of the vehicles is expected to be disposed through the public procurement and property disposal services, sale or scrap and involves a long drawn out and bureaucratic internal process. Sales are carried out locally using a tender process.

Data on vehicles is gathered and stored using unstructured databases like excel spreadsheets text files and Manuel. The primary source of data is the driver's logbook. Key performance indicators for the fleet have not been defined and the data is generally compiled for auditing purposes only.

5.2 Conclusion

In conclusion this study which was descriptive type at describing fleet management factors with a particular emphasis on pharmaceuticals fund & supply agency and its branches. Among this the primary factors that have stood out during this research have been Repair and maintenance, Fuel management factors, Vehicle tracking factors & Driver management & training factors. Practices of fleet management also one of the issues stood out during this research.

The study concludes that Routine servicing, Allocation or Routing, Fuel monitoring, fuel sourcing, fleet administration & costing, dispatching, Vehicle Inspection and Maintenance Training aspects of fuel management influence fleet management to PFSA Ethiopia.

The study further concludes that off road driving skill, Supervision or Planning, Spare Part Management, Allocation or routing, maintenance scheduling and Supervision or Planning are the very important factors on fleet management to PFSA Ethiopia.

5.3 Recommendations

In order to accomplish its goals and to be effective PFSA should give due emphasis on fleet management factors. Cost effective and efficient movement of pharmaceuticals and medical equipment is relevant for the successfulness of agency. Based on the assessment made on practices of fleet management, the following remarks were drawn:

- ❖ Routine servicing, Allocation or Routing, Fuel monitoring, fuel sourcing, fleet administration & costing, dispatching, Vehicle Inspection and Maintenance Training was considered to be one of the important determinant factors. PFSA and its branches should be considering the importance of Routine servicing, Allocation or Routing, Fuel monitoring, fuel sourcing, fleet administration & costing, dispatching, Vehicle Inspection and Maintenance Training in decision making process.
- ❖ The issue of off road driving skill, Supervision or Planning, Spare Part Management, Allocation or routing, maintenance scheduling and Supervision or Planning are the very important fleet management factors. PFSA and its branch must be considering those issues.
 - All PFSA drivers and maintenance officers should be aware of transport policies, manuals and operating procedures. All standard operating procedures should be kept in a file wherever vehicles are located and made accessible to all staff members.
 - PFSA should choose good fleet management software and use it in decision making. In order to properly track costs, fleet management software is a must. Software should track preventive and scheduled maintenance, fuel usage, repairs time, etc., for each vehicle. Software should interface with fuel systems. Working with a GPS service provider to upgrade the vehicle management systems to include an audible alert when the vehicle speed reaches maximum

km/h as tracked by the GPS system. PFSA also should in place in house maintenance facility. In house maintenance also contributes a lot in reducing maintenance cost.

- The agency should in place preventative maintenance, performed on schedule and have the vehicle serviced in a timely manner when notified of a recall or preventive maintenance. Failure to perform the maintenance and repairs in accordance with agency procedure may result in loss of the vehicle or, in the event of damage to the vehicle, payment for vehicle repair.
- To improve Repair and maintenance PFSA should maintain adequate spare parts, planning all predictive and preventative repair and maintenance schedules to minimize repair and maintenance costs, and unplanned breakdowns, using genuine parts when replacing components, and implementing a tire management program with service providers using based on tire pressures, rotations and maximum tire life, monitoring electronic brake system interventions
- PFSA also should Steps taken to improve vehicle management included, limiting the speed of all vehicles to standard km/h, resetting all vehicle default idle time cutoffs to fixed minutes and monitoring all idle times.
- Drivers are a critical component in fleet management; careful hiring processes lead to better performance. A number of initiatives PFSA should be introduced aimed at improving driver behavior as follows. Improving driver recruitment procedures, including the use of pre-employment external assessments Requiring all new staff to complete a comprehensive in-house induction and training program (new staff remained under training until being assessed as fully competent by a qualified driver trainer)
- Educating and coaching drivers about vehicle standards and visual inspections holding regular monthly driver forums

- Developing a culture where a driver can intervene in any unsafe or non-compliant act implementing driver assessments and additional coaching from driver trainers or senior drivers when required
- Preparing monthly feedback reports on individual driver performance and vehicles related to speed and fuel consumption
- Developing a culture of continuous improvement within the driver teams to focus on total fuel consumption and driving techniques, including urban operation
- All drivers participating in an individual driver recognition/incentive scheme that rewards positive behaviors and outcomes. The level of recognition should be directly related to individuals' safety behavior, customer service and incident rates. The drivers' recognition scheme encouraged honest reporting.
- Finally, the researcher strongly recommend other researchers to conduct further investigation on 'what models best describe Fleet management factors on service delivery'.

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Appendix

ADDIS ABABA UNIVERSITY

SCHOOL OF COMERCEGRADUATE PROGRAM

MASTERS IN LOGISTICS & SUPPLY CHAIN MANAGEMENT

QUESTIONNAIRE

The purpose of this study is assessment of fleet management practices of pharmaceuticals fund and supply agency of Ethiopia. This questionnaire is meant to secure relevant data on various Fleet management factors and practices of fleet management, believed that your invaluable support in responding to the questions raised is paramount importance to the success of the study. Besides, your response will be kept strictly confidential. The questioner contains four parts. Please note,

- Writing your name is not required
- Close ended questions are answered by putting a tick mark (v) and for open ended questions please write short answers
- make Shure that total Number of pages are 4 (Four)
- It has no intention except for academic purpose
- After filling this questionnaires please return back to the researcher or Agents of the researcher
- If you Needs any clarification, you can contact by using by using the below address

Thank you in Advance!

Kibatuseifu

Phone No. +251913059988

E-mail, Kseifu2000@gmail.com

Part I

Personal data

1. Gender

Male Female

2. Age Range

Less than 30 31-40
41 -50 above 50

3. Highest Level of education

Attained Primary School Secondary School
College diploma University level
Masters degree PhD

4. Years of service in PFSA /PFSA Branches/

Less than 2 years 3 to 5 years
6 to 10 years More than 10 year

5. Monthly salary

1000-1500 1501-2000
2001-2500 2501-3000
3001- 3500 3 5 0 1 - 4 0 0 0
4 0 0 1 & a b o v e

Part II

Please rate the Fleet management factors listed below by ticking (✓) the degree/scale of importance for you on the boxes provided.

1= not important 4 = very important

2= slightly important 5=one of the most important

3= moderately important

Note: you are expected to Rate the different factors of Fleet management on service delivery.

	Repair and Maintenance Factors	1	2	3	4	5
RMF01	Oil change					
RMF02	Routine servicing					
RMF03	Spare part management					
	Fuel Management Factors	1	2	3	4	5
FMF01	Fuel sourcing					
FMF02	Fuel monitoring					
FMF03	Allocating fuel day-to-day					
FMF04	Monitoring usage rates					
FMF05	Fuel consumption rate					
	Vehicle Tracking Factors	1	2	3	4	5

VTS01	Allocation/Routing					
VTS02	Dispatching					
VTS03	Fleet administration and costing					
VTS04	Maintenance Scheduling					
VTS05	Observe Speed Limits					
	Driver Management and Training Factors	1	2	3	4	5
DMTF01	Supervision/ planning					
DMTF02	Vehicle inspection & maintenance training					
DMTF03	Driver hiring processes					
DMTF04	Off-road driving skills and vehicle recovery					
DMTF05	Formal rewards					

Thank you!!

Interview questions

An interview questions on assessment of fleet management practices of pharmaceuticals fund and supply agency of Ethiopia.

Instruction: Hello I am a post graduate student from AAUCC doing my MA thesis entitled” assessment of fleet management practices of pharmaceuticals fund and supply agency of Ethiopia. I have some questions to forward regarding Fleet management practices and factors affecting fleet management.

1. How vehicles tracking Influence fleet management at your agency or branch?

2. How Repair and maintenance will affect fleet management at your agency or branch?

3. Do you think driver training influence fleet management in your agency or branch?

A, Yes

B, No

4. If your answer is yes please Explain?

5. How driver management and training affects fleet management at your Agency?

6. Is there any additional Factors that affect fleet management at PFSA? If your answer is yes, please specify

Thank you!!

