THE IMPACT OF FUEL MANAGEMENT ON SUPPLIER PERFORMANCE IN MINISTRY OF ENERGY AND MINERAL DEVELOPMENT: A Case Study of Ministry of Energy and Mineral Development

SPECIOZA AYEBAZIBWE

J21B12/310

A DESSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR'S DEGREE IN PROCUREMENT AND LOGISTICS MANAGEMENT OF UGANDA CHRISTIAN UNIVERSITY

September, 2023

UGANDA CHRISTIAN UNIVERSITY

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DECLARATION

This dissertation is my original work and has not been presented to any other university or other institution.

Signature…… Date …/……/……

AYEBAZIBWE SPECIOZA

J21B12/310

APPROVAL

This is to certify that this dissertation has been submitted for examination with my approval as an academic supervisor.

Supervisor

Signature …… Date: ……/……/……

Madam Tumuhamye Comfort

DEDICATION

I dedicate this report to the Almighty God, my parents, relatives and friends for the support they have given to me during my academic journey; spiritually, financially and emotionally to make it a success. May the almighty God bless you abundantly.

ACKNOWLEDGEMENT

Firstly, I thank the almighty God who enabled me to finish this work and my academics, glory is back to him.

Secondly, I extend my sincere thanks to my supervisor Madam Tumuhamye Comfort for devoting her time to read through this research project report and providing assistance that enabled me to continue with the study to the end.

On a third note, I would like to thank my family members for their financial and moral support throughout this period.

I also wish to acknowledge my colleagues especially my Discussion Group members who gave me moral support during the three-year course.

Lastly, I acknowledge employees of Ministry of Energy and Mineral development for their cooperation in providing data which enabled me to successfully complete this project report.

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ABSTRACT

The study was carried out at Ministry of Energy and Mineral Development among employees. The purpose of the study was to establish the impact of fuel management on supplier performance at ministry of energy and mineral development.

The research methodology for the study was quantitative research design and to a little extent qualitative research design. The sample size was 45 respondents and simple random sampling technique was applied in selecting the respondents who were included in the sample. The researcher used questionnaires to collect data and data was analysed using SPSS version 25 at univariate and multivariate levels.

The study found out the mostly used controls of fuel management as timely follow up for fuel consumption by managers allows the organization to allocate sufficient budget for fuel cost which enhances supplier performance, the ministry has the fuel store manager in place who ensures proper distribution of fuel resource. The study also found out that the mostly used strategies of fuel management at Ministry of Energy and Mineral Development are regular oil changes, fluid checks, wheel alignments, cooling system fill and transmission fluid changes and also the ministry uses fleet fuel card to reduce wastage of fuel through making a follow up of fuel used. The study also found out that fuel management lowers costs through good driving habits, decreases waste caused by fuel theft, allows timely follow up for fuel consumption and finally the organization allocate sufficient budget for fuel costs that enhances supplier performance.

The study also concluded that regular oil changes, fluid checks, wheel alignments, cooling system fill and transmission fluid changes are strategies used to manage fuel at the Ministry of Energy and Mineral Development. The study finally concluded that with fuel management, the ministry has experienced cost reduction through good driving habits, allocated sufficient budget for fuel costs and improves fuel efficiency which has enhanced supplier performance.

The study recommended that the organization should have to give a critical emphasis on assigning adequate budget for fuel cost and should manage fuel consumption and maintenance scheduling properly through developing better financial system and providing adequate training to employees under fleet department.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter includes the background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, scope and significance of the study.

1.1 Background information of the study

Transportation is at the Centre of logistics and its importance to human life has necessitated the need to improve the means of travelling. The advancement in technology has become the basis for which transportation has come to be a great industry in recent times. Through transport individuals are able to travel long distance by means of cars, ships, aircrafts and many more (Bask et al., 2010). High customer expectations and little tolerance for inadequate performance create a competitive environment for operating a fleet, which forces fleet managers to achieve high levels of reliability and cost efficiency (Remy et al., 2012).

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 by reducing the amount of road traffic it generates (Pedraza-Martinez & Wassenhove 2012). The aim being to make sure 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. Organizations have been experiencing problems with the management of the fleet of vehicles for example vehicle fuel management.

According to Ratcliffe (2008), the services included in a fleet management tool vary depending on the organization in context. Fuel management is one of the activities involved in fleet management that is the process of monitoring and increasing efficiency of transportation problems. Other fleet management activities include routing and scheduling, fuel management, vehicle acquisition, vehicle maintenance, driver briefing and debriefing. These activities are supervised by the fleet managers and primarily, a policy is formulated so as to serve as a guide for these activities and he also emphasized that the most important thing in fleet management is cost and fuel management. The fleet manager has to ensure that his or

her activities are cost effective. Fleet managers oversee delegation of duties to large groups of personnel responsible for operating the vehicles within the fleet. Map, (2011).

According to Rumelt (2008) there are a number of reasons why suppliers to organizations wish to develop different strategies and controls of fuel management and some could be based on purely commercial considerations, others on wider environmental, safety or transport policies. He continued and reported that factors which include saving money, by making more efficient use of company transport, as a strategic business tool, where efficiencies in the fleet can be found to meet wider company needs, as part of a travel plan, where an organization intends to reduce the amount of traffic it generates, often because of planning needs or parking and traffic problems.

1.1 Statement of the problem

Fuel management is an important aspect of fleet operation. Fuel is likened to be the very blood that is in the human body. It facilitates the movement of the vehicle at any point in time. It is crucial to note that while fleet operation and road safety are paramount to service delivery, fuel is a resource that needs to be well managed (Aflabo et al., 2020). Implementing formal fuel management program is effective strategy of making lasting reductions in the cost of fuel for fleet operation. In monitoring vehicle fuel, organizations put fuel control and management designs in place to monitor, save and optimize fuel related cost (Gitahi and Ogollah, 2014).

However, the management of fuel in most organizations has become ineffective due to poor record keeping leading to lack of information by fleet managers concerning vehicle fuel level and consumption. Kibatu (2014) study reported that data on vehicles is gathered and stored using unstructured databases like excel spreadsheets and text files and also there are no updated data/monthly reports on vehicle maintenance, fuel and driver management in majority of public entities.

Therefore, detailed reports which identify drivers who waste the company’s fuel and identification of vehicles that use too much fuel need to be developed by the operators of institutions. As such, this study came up with measures that promote efficient management of

fuel by gathering and analyzing data related to the impact of fuel management on supplier performance while considering Ministry of Energy and Mineral development as a case study.

1.3 Purpose of the study

The purpose of the study was to establish the impact of fuel management on supplier performance at ministry of energy and mineral development

1.4 Objectives of the study

1) To determine the controls of fuel management on supplier performance in the ministry.
2) To find out the strategies of managing fuel in the ministry.
3) To find out the benefits of fuel management on supplier performance in the ministry.

1.5 Research questions

a) What are the controls of fuel management on supplier performance in the ministry?
b) What are the strategies used to manage fuel in the ministry?
c) What are the benefits of fuel management on supplier performance in the ministry?

1.6 Scope of the study

1.6.1 Geographical scope

The study was conducted at Ministry of Energy and Mineral Development which is one of the governmental bodies of Uganda. Ministry of Energy and Mineral development is located on Plot 29/33 Amber House along Kampala Road and post office number is 7270 Kampala.

1.6.2 Subject scope

The study only focused on the impact of fuel management on supplier performance.

1.6.3 Time scope

The study used recent data from the Ministry of Energy and Mineral Development. The study was carried out for a period of 3 months and within that period the researcher did the research proposal, collected data and came up with the research report.

1.7 Significance of the study

The study findings will help the ministry stake holders understand different strategies to be used to manage fuel and also understand the benefits of fuel management to an organization.

The findings of the study will act as guide to further research on fuel management by University academicians since there are few studies in the area related to fuel management.

The study may also be a source of reference to future researchers who may wish to conduct a similar study thus, it may help to close other information gaps that may have not been catered for in this study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents different literature related to the topic of the study including strategies to manage fuel, controls of fuel and benefits of fuel management.

2.1 Definition of key terms

2.1.1 Fuel management

Fuel is one of the biggest expenses for commercial fleets. In 2019, fleet managers reported that fuel spent accounted for an average of 24% of their total fleet costs. It's clear that minimizing these costs can drive huge savings for your fleet, but managing fuel effectively can be a great challenge. Fuel costs vary based on location, unpredictable economic factors and fluctuating regulations also create complications (Belachew, 2022).

Fuel management involves controlling and monitoring fuel consumption and expenses. It can be as simple as a driver checking a fuel gauge to see when to refuel or as expansive as fleetwide real-time fuel analytics. Commercial fleets can minimize the burden of fuel costs with fuel management systems. Fuel management systems help you lower fuel costs and maximize fuel efficiency. (Samsara, 2022). An effective fuel managing method can save about 10 percent of fuel budgets. To ensure any confidence in monitoring fuel expenses, the three elements of fuel efficiency must be caught on a fixed basis basing on covered kilometer/miles, amount of fuel used, and the charge of that fuel. Through this information, it is possible to compare the effectiveness of your vehicles with that of others (Transport for London, 2006).

2.1.2 Supplier performance

Effective service delivery is at the center of logistics as it reflects the physical movement of materials between points in a supply chain environment. High customer expectations and lesser tolerance for inadequate performance creates a competitive environment for operating a highly effective Market place, which eventually forces organizations to achieve high levels of customer experience and cost-efficiency. (Giaglis et al., 2007).

Performance is defined as the achievement of specific tasks measured against predetermined or identified standards of accuracy, completeness, cost and speed (Afshan, 2013). According to (Myla 2010), organizational performance can be indicated by the cost effective control alternatives applied to rectify cost inefficiencies or, in sh01t, minimize cost while customers perceived value, nor should they run afoul of safety laws

Supplier performance was measured basing on supplier lead time, availability and supplier competence and this improves efficiency and effectiveness of supply chain (Handfield et al 2008). Other supplier performance measures include financial and non-financial performance measures which include quality, time or responsiveness, innovation, physical environment and safety price performance, cost effectiveness and revenue administration (Lyson et al 2009).

Evaluating and improving supplier performance using the quality and production capacity criteria can lead to reduction in supplier quality problems, eliminates wasteful steps in a firms own processes and at the same time helps improve understanding of suppliers' business policies and processes that assist in waste and inefficiency out of supply chain resulting in higherquality suppliers and lower costs which in turn improves the profitability of the buyer (CIPS, 2007).

2.2 Fuel management and supplier performance

However, implementation of formal fuel management program is effective strategy of making lasting reductions in the cost of fuel for fleet operation. In monitoring vehicle fuel, organizations put fuel control and management designs in place to monitor, save and optimize fuel related cost. Mostly, information about fuel level and consumption is obtained by

connecting GPS tracker to an on-board computer or installing fuel level sensor directly in the fuel tank (Aflabo et al., 2020).

The study on the impact of fleet management practices on competitive advantage in the Ghanaian transport sector within the Kumasi metropolis conducted on a sample of 200 firms using purposive sampling technique revealed that, repair and maintenance, fuel and driver management, and training have positive effect on competitive advantage and recommended that, firms should employ experts in the field of fleet management to give them advice on how to implement fleet management practices to enhance service delivery hence giving them an edge over competitors (Aflabo et al., 2020). The study to investigate the effect of fleet management on fleet efficiency from the perspective of employee the case of world health organization Ethiopia that utilized mainly quantitative data analysis techniques found a positive correlation among the three of the variables (repair and maintenance, fuel management, vehicle tracking and driver management) supply chain dimensions (Begashaw, 2018).

2.3 Strategies used by fleet managers to manage fuel.

Fuel management systems

To address problems in fleet administration, fleet management systems have been designed inhouse for internal use to provide a good analysis of the vehicles and driver performance. This enables the capturing of information on various aspects of fleet usage, maintenance and operations for example repair and maintenance per vehicle, rate of consumption of spare parts, servicing planned and completed, distances travelled, fuel consumption and destinations reached (Begashaw, 2018). Fuel management systems are a system that used to maintain, control and monitor fuel consumption and stock in any type of industry that uses transport, including rail, road, water and air, as a means of business. (Lange, H.B.1992).

There are several types of fuel management systems which include;

Card-based fuel management systems track fuel transactions based on a fuelling credit card and the associated driver PIN. Reports can then be generated based on fuel consumption by driver, and data can be downloaded directly.

On-site fuel management systems can employ fleet refueling services or bulk fuel tanks at the site. Fuel is tracked as it is pumped into vehicles, and on-site storage levels can be managed. Some fuel companies offer total fuel management systems whereby they provide elements of a card-based system along with on-site fuel delivery and refuelling services. Mobile fuel management refers to a fleet of fuel trucks which provide fuel supply to commercial fleets of trucks or construction equipment. The increasing use of bio-fuel has introduced another challenge in fuel management. With greater water content, there will be a risk of microbial growth – depending on the storage conditions, the fuel quality will deteriorate over time, leading to clogged filters and loss of productivity. (Hohn, Geoffrey M., 2011).

Developing fuel management

It is important to remember that while service delivery and road safety are compulsory for fleet operations, fuel is a resource that needs to be well managed. Although fuel use varies considerably across different public and private sector fleets, it nevertheless represents a major cost in most settings. In certain operations, fuel can account for 30% or more of total operating expenses. Establishing a formal fuel management program is an effective method of making permanent and lasting reductions in the cost of the operations. Considering the size of many sectors fleets, even a minor reduction in fuel use can save thousands of pounds each year and reduce carbon dioxide emissions by several tones. (Lange, H.B.1992).

Assigning a fuel champion

It is essential to have a Champion for your fuel management program to ensure that it is accepted throughout the organization and continues to be effective. The Fuel Champion can monitor fuel performance and provide information to the organization about the program. The role of fuel champion is to change the organization's attitudes towards the use of fuel and encourage staff to regard fuel as one of the sector's most valuable resources.

The key responsibilities of the Fuel Champion are: 1) understand how to gather fuel consumption information, the potential that exists to improve performance and the various ways this can be achieved 2) develop the strategies required and put them into an action plan and also investigate the factors that influence fuel consumption, such as driver performance, overloading, weather and seasonality. (Hohn, 2011).

Fuel selection

Selection of fuel type is a key factor within the fuel management program, but it should always be remembered that alternative fuels should only be considered after steps have been taken to optimize fleet performance (Lange, 1992).

In recent years, a large number of public and private sector organizations have introduced alternative fuels into their operations in preference to conventional petrol and diesel, in an attempt to reduce emissions and lower fuel costs. While there are many benefits associated with alternative fuel use, there can also be a number of disadvantages. For example, compared to conventional fuels such as diesel, many alternative fuels may require a greater volume of fuel to be used for the same energy output. The key to effective use of alternative fuel lies in understanding the comparative strengths and weaknesses of different fuel types (Chegewaiyaki, 2013),

It is important to note that the identification and trial of alternative fuels should only ever be one single element of a much more comprehensive fuel management program and when deciding on the most appropriate type of fuel (conventional petrol and diesel, or alternative) for a specific situation, it is worth considering the benefits to the organization, the outcome of any known evaluations and trials, the operational, financial and environmental advantages and disadvantages of each fuel type, supply availability, distances/tank range, and location of refill points, conversion costs, running costs, availability of funding for conversion or infrastructure and resale value (Lange et al., 2012).

Besiou et al., (2012) claim that a strategy that ensures sustainable fleet management is one that seeks to minimize 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. Implementing formal fuel management program is effective strategy of making lasting reductions in the cost of fuel for fleet operation. The following are some of strategies that can be used to manage fuel:

Keep it clean. Don't let cars go without regular washing. Dirt, grime, oil, grease, and especially salt which reduces fuel efficiency.

Preventive maintenance. Serious preventive maintenance schedule includes regular oil changes, fluid checks, wheel alignments, cooling system fill and transmission fluid changes. A vehicle's fuel performance can be negatively impacted when not kept in top shape. The older and dirtier oil gets, the harder an engine must work to circulate it, and the more wear on the engine.

Use a Fleet Fuel Card. You can't control an expense unless you know what it is. Unless it's possible to control these purchases at the pump, the fleet fuel expense will inevitably rise. Fleet fuel card programs reduces wastage of fuel through making a follow up of fuel used. Among the controls available that will enable management fuel at the pump include; Velocity limits that limit how often, or for how much, a card can be used and Fuel-only options that prevent drivers from adding non-fuel purchases to their visit.

Tires. Proper tire inflation is a critical component, not only in maximizing fuel efficiency, but tire life and safety as well. Under-inflated tires increase rolling resistance, and resistance forces the engine to use more fuel.

Baas et al (2005) specify possible measures for improving fuel efficiency as driver training, speed management, improving fleet management practices, improving in-cab temperature control, matching vehicles to the transport task, improving maintenance management and improving tyre management which reduces operational costs in an organization.

2.4 Controls of fuel management on supplier performance

Managing a fleet of vehicles is more challenging since it needs balancing of rising fuel costs, maintenance costs and safety concerns which are all necessary for better supplier performance in terms of service delivery Yi-Chung Hu et al (2015).

Fuel management systems are used to maintain, control and monitor fuel consumption and stock in any type of industry that uses transport, including rail, road, water and air, as a means of business (Lange et al., 2012). For vehicle fleet management and monitoring, one of the main applications is the global positioning system (GPS) technology tools which simplifies the work of fleet manager in terms of tracking fuel usage by the fleet and its driver.

Controlling fuel costs – one of the main operational costs for several trucks and equipment is a discouraging duty. It includes numerous aspects and circumstances and needs rearranging of fuel usage reports, lots of receipts, and pages of the dispatch note. Inefficient fuel administration is expensive; adversely affect a fleet's bottom line. Principally, fuel administration involves precisely gathering information on how a fleet consumes fuel and then using this evidence better to review consumption, decrease cost, and reject theft and waste (FU, 2017).

There are several approaches and classifications for achieving fuel costs control. The widely used method comprises manual information gathering and worksheets. Such methods trust on the dependability of operators recording their daily kilometer/hour record and fuel acquisitions, as well as the precision of the information entered being and the commitment of the supervisor to make sense of all the evidence and conclude how to practice it (Kidane, 2016). Such a guidebook and incomplete systems are vulnerable to fake receipts, an unnoticed facsimile, incorrect registers, and data entry mistakes, he describes. Besides, it doesn't support the supervisor to create any value. Fuel managing methods, on the other hand, systematize the gathering of fuel records and quantity the many actions associated with refilling, doing away with a human mistake, and assisting the supervisor realize the facts (Kolman, 2010).

FORS Fuel managing document describes in its pamphlet concerning fuel storing, controlling and computing fuel usage as storage that is if you have the capacity to stock fuel at your reservoir, purchasing fuel in large amounts can save your working capital. There are different ways that store man should follow while reserving fuel which included tank Storing place, type of depot and the volume of fuel to be stocked (Khyomesh and Chetna, 2011).

Connecting to the vehicle CAN Bus/ GPS technology- all recent automobiles practice a CAN Bus to transfer data among automated vehicle systems. This message web permits various series of data comprising odometer reading (ODO), fuel usage (MPG), revolutions per minute (RPM), engine temperature, engine load/torque, fuel levels, and throttle position to be checked. And it allows telematics to link straight into CAN Bus system to permit this information to be stored and consequently analyzed. However, when telematics methods are not compatible with the CAN bus, it uses GPS data instead to monitor the vehicle. This kind of arrangement can store an in-depth data on engine condition and faults, truck speed, and

operator activities such as rough handling of machines. Hence, to make the system effective operator feedback/opinion is very essential Sullivan et al., 2002).

Driver/ operator feedback that is applying the operator's comment relative to truck telematics is very significant. The operator is not aware of their efficiency and is consequently doubtful to adjust their actions to make developments. There are two main types of driver/operator feedback; the first one is Post-trip feedback, in this approach, where figures supplied by the telematics system are conveyed back to operators to notify them of their efficiency and if any ranges of their operating need fixing. This can be done by the fleet manager or immediately by the system. The second one is, in-cab feedback approach, in this approach, where immediate response is delivered, awake the operator to adjust their operating technique in real-time. This permits the operator to identify the characteristics of their way of handling that activate the warnings and recover them as they operate (Mathewos, 2017).

According to Cartrack (2023) brog fuel expenses seem to grow with each passing year, so when it comes to planning, budgeting and managing fuel costs, fleet managers use a few tips to give their tanks a break and below are the ways to reduce fuel consumption with monitoring; 1) Driving behavior that is investigate how team of drivers operate their vehicles and through training can change their driving behavior for the better. Poorly driven vehicles use up more fuel than expected and contribute to maintenance issues in the future, 2) Vehicle inspections that is bad driving habits results in damaged vehicles, so frequent vehicle inspections for any maintenance issues that contribute to excessive fuel usage an increased maintenance costs are recommended and 3) Route management that is finding the most fuel efficient route avoids excessive fuel consumption and cuts down on overall delivery time.

2.5 Benefits of fuel management on supplier performance

When fuel is managed effectively it can result into the following benefits;

Lower costs through good driving habits. One way to improve fuel efficiency is by driving the speed limit. Wasted fuel expenses can add up to be a meaningful expense. Fleet managers can analyze and come up with good fuel conservation behavior through using fuel management system data which helps fleet managers identify drivers who need coaching.

Improve fuel efficiency with proactive vehicle maintenance. Regular engine maintenance ensures that your fleet performs with its best fuel efficiency. When vehicles are at their maximum performance, it helps reduce fuel consumption. Non-engine maintenance improves fuel efficiency for example making sure a vehicle's tires are at ideal pressures and aligned properly minimizes rolling resistance which improves a vehicle's fuel efficiency and lowers fuel costs.

Decrease waste caused by fuel theft. Proper fuel management reduces wastage of fuel since every expense on fuel by driver has to be budgeted for and controlled by fleet manager.

Improved planning and route optimization. A fuel management system can help you plan and optimize your fleet's routes, leading to further savings on fuel as well as improved customer service. When your routes are optimized for both time and fuel dispensed, your customers can enjoy reliable, consistent delivery times while you can benefit from reduced costs.

Improved Data Accuracy. Human error in data collection is very common, so when you switch to an automated system, you can rely on the data being accurate and up to date. Your fuel management system will update your data in real-time, allowing you to intervene with early responses to any problems, improve vehicle performance and keep your fleet on the road for longer. The data is ideal for analysis and decision-making.

Reducing Fraud. Fuel theft is a big issue in the industry. Thieves can use a method known as fuel skimming, where they replace card readers at fuel pumps with a skimmer that captures cardholder data, creating fraud charges. But a fuel management system can keep track of the exact amount of fuel that is being used, and when the fuel is being accessed. You can use this data to identify security issues within your fleet and implement solutions.

According to Samsara (2022) study, fuel is often one of the biggest expenses for commercial fleets. In 2019, fleet managers reported that fuel spent accounted for an average of 24% of their total fleet costs. It's clear that minimizing these costs can drive huge savings for your fleet, but managing fuel effectively can be a great challenge. Fuel costs vary based on location. Unpredictable economic factors and fluctuating regulations also create complications. However, commercial fleets can minimize the burden of fuel costs with fuel

management systems. Fuel management systems help you lower fuel costs and maximize fuel efficiency. These solutions can identify inefficiencies in fuel usage by tracking inventory and idling time across your fleet which in turn increases supplier performance.

As Scott (2008) the approach to operating fleets has many benefits with the management process of any operation that in place to meet a specific service need. The essential operational stages that benefit fleet managers in fuel management include understanding the service level requirement, developing a strategic plan to meet that requirement, understanding the external pressures that may affect the ability to deliver the service Selecting, or reviewing, the assets, equipment, buildings and systems used to deliver the service, as well as the staff required to make the operation work, actively managing the operation to ensure maximum day-to-day efficiency and monitoring performance learning from other similar operations reviewing and amending the strategic plan in the light of measured performance, changes in service need, available resources and other factors.

According to Manale (2020) study on effective management of fleets in Amhara waterworks construction enterprise is not only an issue of achieving its intended goals but which helps to boost its overall construction performance, that is, it enhances its operational performance (time), profitability (cost reduction), and success of the organization (customer satisfaction). And this in turn creates satisfaction of stockholders, (clients, consultants, and community) and at the same time in fostering the region water sector development and competitiveness of the organization.

According to Begashaw (2018) study better fuel management systems enable the organization to set a standard on fuel consumption rate per vehicle, allocate enough fuel coupons for field missions, there is a timely follow up for fuel consumption and finally the organization allocate sufficient budget for fuel cost which enhances supplier performance.

2.5 Research gap.

This study intended to fill the gap between fuel management strategies, controls of fuel and the supplier performance in terms of availability and lead time since previous studies did not clearly exhaust fuel management and its effect on supplier performance.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents different methodologies that were used in the study and they included; research design, target population, data sources, sampling techniques and sample size determination, data collection tools and techniques, data compilation and analysis, validity and reliability and ethical considerations.

3.2 Research Design

The researcher used a quantitative research design. This design provided the data needed to meet required objectives and to test the hypotheses of the study. The researcher to a smaller extent also adopted a qualitative research approach as the study also focused on findings which cannot be expressed numerically such as people's perceptions on strategies and benefits of fuel management on supplier performance,

3.3 Study Population

The study targeted a total of 45 employees in procurement, stores, contracts and legal departments of the ministry since employees from those departments were hoped to have enough information concerning the area of study.

3.4 Sampling techniques

The study used simple random sampling to collect data from respondents and the study used the lottery approach where names in each department under study will be written on tag and one picked at a time until the required number will be reached. This allowed every element of the population to have a chance of inclusion in the study.

This study also used purposive sampling which involved the researcher using own judgment or common sense regarding the participants from whom the information was collected thus the selection of the respondents was based in the researcher's experience with the respondents' possession of the required information.

3.5 Sources of Data

Data was collected from both primary and secondary sources.

3.5.1 Primary sources

Primary data refers to the data gathered by the researcher himself for a particular study. Primary sources of data were used for instance questionnaires that will be used to obtain the required information about the study topic. Primary data is more accurate and reliable because it comes from a direct source and also provides up to date information.

3.5.2 Secondary sources

When we use Statistical method with primary data from another purpose for our purpose, we refer to it as secondary data. Secondary sources of data will be used in the process of reviewing of relevant and related information from textbooks, research papers, journals, internet and dissertations. One of its advantages is that its time saving and readily available when it is needed.

3.6 Data collection method

3.6.1 Questionnaire

The study used a questionnaire approach where both qualitative and quantitative data was collected. Questionnaire method was used because it is very practical and offer a quick way to get results, self-administered questionnaires were given to respondents to fill their best options.

3.6.2 Interview

Interviews were conducted to fleet managers. In this method the researcher interviewed respondents face to face to obtain in depth qualitative information on fuel management and supplier performance. Interview Guides with a set of questions or prompts designed to guide the researcher during interviews with key informants.

3.7 Data collection procedures.

A letter of introduction was obtained by the researcher from Uganda Christian universityMukono school of business through the research department. This aided the researcher during data collection when at the field of study.

3.8 Data analysis, interpretations and presentations

Data collected was first be entered in excel and later exported to SPSS for analysis.

Categorical variables were analyzed using frequencies and percentages and also was visualized using bar graphs/pie chart while continuous variables were analyzed using minimum, standard deviation, mean and maximum and were visualized using a histogram.

3.9 Limitations of the study.

The study was limited by time frame since the researcher had to finish the study within the specified period offered by the university.

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND ANALYSIS OF RESULTS

4.0 Introduction

This chapter presents the results from this study after carrying out data analysis. It includes presenting of demographic characteristics of the respondents using frequency distribution tables.

4.1 Background information of the sampled employees

Respondents were required to indicate their gender, age, department, marital status and working experience. The results obtained are presented in Table 4.1 below;

Table 4.1: Study finding on background information of sampled employees

Variable	Category	Frequency	Percentages
Gender	Male	31	68.9
	Female	14	31.1
Age	18-29	11	24.4
	30-39	23	51.1

	40-49	08	17.8
	50 and above	03	6.7
Marital status	Never married	10	22.3
	Married	29	64.4
	Others	06	13.3
Department	Procurement	14	31.1
	Stores	22	48.9
	Contracts	06	13.3
	Legal	03	6.7
Working experience	<5 years	06	13.3
	5-10 years	19	42.2
	11-15 years	13	28.9
	>15 years	07	15.6

Table 4.1 above shows that more than a half of the respondents (68.9%) were males making them the majority and only 31.1% were females. This implied that more male participated in this study compared to females.

Majority of respondents (51.1%) were aged between 30-39 years followed by those who were aged 18-29 years (24.4%).and respondents aged 40-49 years were 08 (17.8%) and just 03 (6.7%) were aged 50 years and above. This suggests that the biggest number of employees sampled at the ministry were old enough to provide quality services to the public.

Study findings also revealed that majority of respondents were married (64.4%) and (22.3%) were never married/single while 13.3% were widowers, divorced and separated.

Study findings also revealed that most of the employees (48.9%) who participated in this study were from stores department, 31.1% were from procurement department, 13.3% and 6.7% were from contract and legal departments respectively. This can be interpreted to mean most of the respondents were taken from the departments that have adequate information on fuel management.

The findings also indicated that 42.2% of the sampled employees had acquired worked with the ministry for 5-10 years, followed by 28.9% who had worked with the ministry for 11-15

years, 16.5% had worked with the ministry for more than 15 years and 13.3% had worked with the ministry for less than five years. This can be interpreted to mean that most employeess had enough experience in fleet management and service delivery at Ministry of Energy and Mineral

Development.

4.2 The controls of fuel management on supplier performance at Ministry of Energy and Mineral Development

Table 4.2: Study findings on controls of fuel management on supplier performance

Controls of fuel management	N	Mean	Std Dev
The ministry has fuel control system in place that monitors fuel usage and reduce fuel theft.	45	3.31	0.793
Control of fuel costs by fleet manager allows the company to decrease cost, and reject theft and waste.	45	3.33	0.674
The ministry has the fuel store manager in place who ensures proper distribution of fuel resources.	45	3.60	0.580
Timely follow up for fuel consumption by managers allows the organization to allocate sufficient budget for fuel cost which enhances supplier performance	45	3.84	0.367
The ministry has set policies, regulations and procedures to ensure proper usage of fuel.	45	3.58	0.812
Connecting to the vehicle CAN Bus/GPS technology allows the fleet manager to access information concerning fuel levels, fuel usage and engine temperature.	45	2.78	1.146
Driver/operator feedback that is post trip feedback and incab feedback reduces adjustment of fuel levels by the driver since the manager monitors it in the system.	45	3.58	0.621
Driving behavior that is investigation on how team of drivers operate their vehicles and through training the ministry does not experiences fuel wastage by drivers.	45	2.53	1.325
Average	**45**	**3.31**	**0.79**

From Table 4.2 above its clear that most sampled employees agreed that fuel management controls are expected to have an influence on supplier performance at Ministry of Energy and Mineral Development with mean score of 3.31 and standard deviation of 0.79, most sampled employees almost strongly agreed with the statements under study that is the first fuel control which the respondents gave higher mean scores was the statement supposed that, timely follow up for fuel consumption by managers allows the organization to allocate sufficient budget for fuel cost which enhances supplier performance with the mean score of 3.84, and the second higher score registered also for the statement supposed that ,the ministry has the fuel store manager in place who ensures proper distribution of fuel resources. with the mean score of 3.60, and for the statements, the ministry has set policies, regulations and procedures to ensure proper usage of fuel.and Driver/operator feedback that is post trip feedback and in-cab feedback reduces adjustment of fuel levels by the driver since the manager monitors it in the system had the mean score of 3.58 each.

The study findings also revealed that fewer sampled employees agreed with the statements, the ministry has fuel control system in place that monitors fuel usage and reduce fuel theft with mean score of 3.31 and also Control of fuel costs by fleet manager allows the company to decrease cost, and reject theft and waste with mean score of 3.33.

The study also revealed that the fewest sampled employees did not agree with the statements that connecting to the vehicle CAN Bus/GPS technology allows the fleet manager to access information concerning fuel levels, fuel usage and engine temperature with mean score of 2.78 and also driving behaviour that is investigation on how team of drivers operate their vehicles and through training the ministry does not experiences fuel wastage by drivers with mean score of 2.53.

4.3 The strategies of managing fuel in the ministry of Energy and Mineral Development

Table 4.3: Study findings on strategies of fuel of fuel management

Strategies of fuel management	N	Mean	Std Dev
Fuel management systems have been designed to provide a good analysis of fuel.	45	3.47	0.894

Fuel management program has been developed since it makes lasting reductions in the cost of the operations.	45	3.31	0.900
A fuel champion has been assigned to ensure that it is accepted throughout the organization and continues to be effective.	45	2.80	1.014
Regular oil changes, fluid checks, wheel alignments, cooling system fill and transmission fluid changes	45	3.78	0.471
Fleet fuel card is used to reduce wastage of fuel through making a follow up of fuel used.	45	3.60	0.654
Average score	**45**	**3.39**	**0.787**

From Table 4.3 above, generally, the respondents agreed with the fuel management strategies used at the ministry with the mean score as 3.39 and standard deviation of 0.787 and it is also clear that most sampled employees almost strongly agreed with the most used fuel management strategy at Ministry of Energy and Mineral Development is rregular oil changes, fluid checks, wheel alignments, cooling system fill and transmission fluid changes with mean score of 3.78 and standard deviation of 0.471, they provided that the ministry uses fleet fuel card to reduce wastage of fuel through making a follow up of fuel used and this strongly agreed upon with a mean score of 3.60 and standard deviation of 0.654.

The study findings also revealed that fewer sampled employees agreed with the following fuel management strategies, fuel management systems have been designed to provide a good analysis of fuel with mean score of 3.47 and also agreed that fuel management program has been developed since it makes lasting reductions in the cost of the with mean score of 3.31.

The sampled employees did not agree with the strategy that a fuel champion has been assigned to ensure that it is accepted throughout the organization and continues to be effective with mean score of 2.80 and standard deviation of 1.014.

4.4 The benefits of fuel management on supplier performance in the ministry of Energy and Mineral Development

Table 4.4: Study findings on benefits of fuel management on supplier performance

Benefits of fuel management	**N**	**Mean**	**Std Dev**

Fuel management lowers costs through good driving habits	45	3.67	0.674
Fuel management improves fuel efficiency with proactive vehicle maintenance	45	3.33	0.769
Fuel management decreases waste caused by fuel theft	45	3.60	0.618
Fuel management enables the organization to set a standard on fuel consumption rate per vehicle	45	3.64	0.484
Fuel management allows timely follow up for fuel consumption and finally the organization allocate sufficient budget for fuel costs that enhances supplier performance.	45	3.51	0.506
Fuel management enhances operational performance	45	3.13	0.842
Average score	**45**	**3.48**	**0.648**

From Table 4.4 above, the study results clearly revealed that most employees of the ministry strongly agreed that fuel management lowers costs through good driving habits with mean score of 3.67 and standard deviation of 0.674, decreases waste caused by fuel theft with mean score of 3.60 and standard deviation of 0.618, allows timely follow up for fuel consumption and finally the organization allocate sufficient budget for fuel costs that enhances supplier performance with mean score of 3.51 and standard deviation of 0.506 and also enables the organization to set a standard on fuel consumption rate per vehicle with mean score of 3.64 and standard deviation of 0.484.

More so, fewest respondents agreed that fuel management improves fuel efficiency with proactive vehicle maintenance with mean score of 3.33 and standard deviation of 0.769 and also enhances operational performance with mean score of 3.13 and standard deviation of 0.842.

CHAPTER FIVE

DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the discussion of the findings, conclusions and recommendations in relation to the objectives of the study and areas of further research.

5.1 Discussion of findings

The study found out the mostly used controls of fuel management as timely follow up for fuel consumption by managers allows the organization to allocate sufficient budget for fuel cost which enhances supplier performance, the ministry has the fuel store manager in place who ensures proper distribution of fuel resource and these were in line with the study carried out by Yi-Chung Hu et al (2015) that provided that balancing of rising fuel costs, maintenance costs and safety concerns are all necessary for better supplier performance. The study also revealed that the ministry has set policies, regulations and procedures which ensures proper usage of fuel.and Driver/operator feedback and this was supported by the study that reported that immediate response is delivered as a result of set rules awake the operator to adjust their operating technique in real-time (Mathewos, 2017).

The study also found out that the mostly used strategies of fuel management at Ministry of Energy and Mineral Development are regular oil changes, fluid checks, wheel alignments,

cooling system fill and transmission fluid changes and also the ministry uses fleet fuel card to reduce wastage of fuel through making a follow up of fuel used. This was in line with the study that reported that the effective strategy is the one that seeks to minimize 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 (Besiou et al., 2012).

The study also found out that fuel management lowers costs through good driving habits, decreases waste caused by fuel theft, allows timely follow up for fuel consumption and finally the organization allocate sufficient budget for fuel costs that enhances supplier performance. Begashaw (2018) study also provided that better fuel management systems enable the organization to set a standard on fuel consumption rate per vehicle, allocate enough fuel coupons for field missions and timely follow up for fuel consumption.

5.2 Conclusions

The main objective of the study was to find out the effects of fuel management on supplier performance and basing on the study findings the researcher concluded that the ministrycontrolled fuel management through timely follow-up of fuel consumption by managers, proper distribution of fuel resources and through setting policies, regulations and procedures to ensure proper usage of fuel by drivers. The study also concluded that regular oil changes, fluid checks, wheel alignments, cooling system fill and transmission fluid changes are strategies used to manage fuel at the Ministry of Energy and Mineral Development. The study finally concluded that with fuel management, the ministry has experienced cost reduction through good driving habits, allocated sufficient budget for fuel costs and improves fuel efficiency which has enhanced supplier performance.

5.3 Recommendations

The study recommended the following basing on the results of the study.

In order to improve the fleet efficiency there must be serious control and mechanisms on genuine spare parts used during service and maintenance. More so, the ministry should hire professional fleet managers, maintenance controller and experienced drivers to have better fuel management.

The organization should have to give a critical emphasis on assigning adequate budget for fuel cost and should manage fuel consumption and maintenance scheduling properly through developing better financial system and providing adequate training to employees under fleet department.

Technology is vital for the development of the organization, therefore, modern technology of GPS for vehicle tracking system is essential to the improvement of fleet efficiency in the organization.

REFERENCES

Aflabo J. E, Kraa. J. J and Agbenyo. L. (2020, May). Examining the effect of fleet management on competitive advantage in the transport industry. *European Journal of Logistics, Purchasing and Supply Chain Management, 8*(2), 7-23.

Ali, A. M. (2018). intelligent fleet management system, information communication technology, and operational performance of transport companies in Mombasa County, Kenya.

Baas, P. (2012). *Fleet management commitment to fuel efficiency.* NZ Transport Agency research report.

Begashaw, M. (2018). *The effect of fleet management on fleet efficiency from the perspective of employee (the case of World Health Organization Ethiopia).* Thesis, Addis Ababa University, Department of logistics and supply chain management, Addis Ababa.

Begashaw, M., & Temesgen, B. . (2018). *The Effect of Fleet Management on Fleet Efficiency from The Perspective of Employee. .*

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.

Borirug, S., Fung, C. & Philuek, W. (2009). A Study On The Requirements And Tools For Real Time Fleet Management E-Business Systems In Thailand. *The 8th International Conference on e-Business* .

Bruce, G. (2014). Fleet Telematics:Real-time management and planning of commercial vehicle operations. New York: Springer US.

Chegewaiyaki, E. (2013). Leveraging technology for business fleet applications: a case study of fleet management system implemented in kenya power & lighting company limited.

City of Seattle . (2014, August). 'A clean and green fleet' Transportation Research Part E: Logistics and Transportation Review. *45*(6), 978-987.

Fleet Forum. (2012). *last accessed in August 2012: www.fleetforum.org.*

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. , 2 (1), 336-341. *European Journal of Business Management, 2*(1), 336-341.

Hesketh, I., Cooper, C. & Ivy, J. (2015). Well-being, austerity & policing: is it worth investing in resilience training. *The Police Journal: Theory, Practice & Principles, Personal communications, 88*(3), 220-230.

Huang, M., Smilowitz, K., &Balcik, B. (2012). *Models for relief routing: Equity, efficiency and efficacy. Transportation Research* . Master Thesis.

Joerss, M., Schroder, J., Neuhaus, F., Klink, C., & Mann, F. . (2016). *Parcel Delivery the Future of Last Mile. Travel, Transport and Logistics: McKinsey&Company.*

Kothari, T. (2008). Logistics Training: Necessity or Luxury? Forced Migration review, (22), 60.

Pedraza-Martinez, A. J. and Wassenhove, L. N. V. (2012 , Springer-Verlag + EURO -). *Transportation and vehicle fleet management in humanitarian logistics: challenges for future research.* Faculty & Research Working Paper. The Association of Euro.

Tagwireyi, C. M. (2019). The Impact of Fleet Management on Logistics Management in the Retail Sector of Zimbabwe . *International Journal of Management & Development, 06*(10), 157-165.

Waters, D. (2009). Supply Chain Management: an introduction to logistics.

APPENDIX: RESEARCH QUESTIONNAIRE

Dear Respondent,

My name is **Ayebazibwe Specioza** pursuing a Bachelor's degree in Procurement and Logistics Management Registration number J21B12/310 from Uganda Christian University. You have been selected as one of the respondents in this research entitled "IMPACT OF FUEL
MANAGEMENT ON PERFORMANCE IN THE MINISTRY OF ENERGY AND
MINERAL DEVELOPMENT" using Ministry of Energy and Mineral Development as my case study. All responses given are for educational purposes thus are considered confidential.

INSTRUCTIONS

Tick and fill in where necessary.

SECTION A: BIO DATA

1. Gender

a) Male ☐

☐

b) Female

2. Marital status

a) Married
b) Single
c) Any other, specify
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3. Department in which you work

a) Procurement
b) Stores
c) Contracts
d) Legal
e) Any other……
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…….

4. Academic qualifications

a) Masters
b) Bachelors
c) Diploma
d) Certificate
e) Others, specify……
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5. For how long have you worked in Ministry of Energy and Mineral Development? a) Less than 5 years
b) 5-9 years

c) 10-14 years

d) Above 15 years

SECTION B: The controls of fuel management on supplier performance at Ministry of Energy and Mineral Development

Respond by ticking where necessary whereby, A= Agree, S/A= Strongly Agree, D/A= Don't Agree, N/S= Not Sure.

S/N	Controls	A	S/A	D/A	N/S
A	The ministry has fuel control system in place that monitors fuel usage and reduce fuel theft.				
B	Control of fuel costs by fleet manager allows the company to decrease cost, and reject theft and waste.				
C	The ministry has the fuel store manager in place who ensures proper distribution of fuel resources.				
D	Timely follow up for fuel consumption by managers allows the organization to allocate				
	sufficient budget for fuel cost which enhances supplier performance				
E	The ministry has set policies, regulations and procedures to ensure proper usage of fuel.				
F	Connecting to the vehicle CAN Bus/GPS technology allows the fleet manager to access information concerning fuel levels, fuel usage and engine temperature.				
G	Driver/operator feedback that is post trip feedback and in-cab feedback reduces adjustment of fuel levels by the driver since the manager monitors it in the system.				

H	Driving behavior that is investigation on how team of drivers operate their vehicles and through training the ministry does not experiences fuel wastage by drivers.				

I) In case there are any other controls of fuel management on supplier performance at Ministry of Energy and Mineral Development apart from those mentioned above, please specify:

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SECTION C: The strategies of managing fuel in the ministry of Energy and Mineral Development

Respond by ticking where necessary whereby, A= Agree, S/A= Strongly Agree, D/A= Don't Agree, N/S= Not Sure.

S/N	**Strategies**	**A**	**S/A**	**D/A**	**N/S**
A	Fuel management systems have been designed to provide a good analysis of fuel.				
B	Fuel management program has been developed since it makes lasting reductions in the cost of the operations.				
C	A fuel champion has been assigned to ensure that it is accepted throughout the organization and continues to be effective.				

D	Regular oil changes, fluid checks, wheel alignments, cooling system fill and transmission fluid changes				
E	Fleet fuel card is used to reduce wastage of fuel through making a follow up of fuel used.				

I) In case there are any other strategies of managing fuel in the ministry of Energy and Mineral Development apart from those mentioned above, please specify:

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SECTION D: The benefits of fuel management on supplier performance in the ministry of Energy and Mineral Development

Respond by ticking where necessary whereby, A= Agree, S/A= Strongly Agree, D/A= Don't Agree, N/S= Not Sure.

S/N	Benefits	A	S/A	D/A	N/S
A	Fuel management lowers costs through good driving habits				
B	Fuel management improves fuel efficiency with proactive vehicle maintenance				
C	Fuel management decreases waste caused by fuel theft				
D	Fuel management enables the organization to set a standard on fuel consumption rate per vehicle				

E	Fuel management allows timely follow up for fuel consumption and finally the organization allocate sufficient budget for fuel costs that enhances supplier performance.				
F	Fuel management enhances operational performance				

F) In case there are any other benefits of fuel management on supplier performance in the ministry of Energy and Mineral Development apart from those mentioned above, please specify:

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MAY GOD BLESS YOU