

**INFORMATION TECHNOLOGY SYSTEMS AND
LOGISTICS MANAGEMENT BY OIL COMPANIES IN
KENYA**

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DECLARATION

This is my original work and has not been submitted for award of a degree in any university.

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Supervisor's Declaration

This project has been submitted with my approval as the University supervisor.

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I wish to recognize a few individuals and groups with whom I sincerely wish to acknowledge. To my supervisor, Dr. Kate Litondo for her time and guidance whenever I was in need of her. The respondents of oil companies in Kenya, for the assistance they conferred to me during data collection. Lastly, to my family and friends for the encouragement that kept me going.

DEDICATION

This project is devoted to my parents for the sacrifices that they made to see me through my university education that provided a base for this MBA degree.

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LIST OF ABBREVIATIONS

CBIS	Computer-Based Information Systems
CSCMP	Council of Supply Chain Management Professionals
DTT	Diffusion of Technology Theory
EAOGS	East Africa Oil and Gas Summit
EDI	Electronic Data Interchange
ERC	Energy Regulatory Commission
ERP	Enterprise Resource Planning
ICT	Information and Communication Technology
IHO	International Humanitarian Organization
IT	Information Technology
JIT	Just-in-Time
KPC	Kenya Pipeline Company Limited
NOCK	National Oil Corporation of Kenya
OTS	Open Tender System
RFID	Radio Frequency Identification
TAM	Technology Acceptance Model

ABSTRACT

Firms are facing rapid competition in achieving efficiency and effectiveness in managing logistics to realize on-time delivery for products and services. Technology is perceived to be a critical component in achieving this goal. The study was set out to achieve the following objectives: to establish the extent to which oil companies in Kenya are using information technology systems; to determine the benefits that oil companies in Kenya get from using information technology systems; to determine the challenges faced by oil companies in the implementation of information technology systems; and to establish the relationship between information technology systems and logistics management of oil companies in Kenya. This study utilized a descriptive research design. The population for this study involved the oil companies in Kenya. The sample size involved 32 oil companies. The study utilized primary data collated from personnel in the IT department. Data was analyzed using descriptive and inferential statistics. It was found that IT systems were implemented to a great extent by oil companies in Kenya. The IT systems commonly utilized by these firms included Enterprise Resource Planning, e-procurement, Electronic Data Interchange, Just-in-Time and Radio Frequency Identification Systems. The benefits realized from the use of IT systems in managing logistics were improved efficiency, sharing information, real-time processes and minimized supervision costs. Further, it was found that inadequate finances, lack of technical skills, inadequate training programmes and lack of a good user interface were the key impediments that faced oil companies in implementation of IT systems. It is recommended that oil companies should invest more in modern technologies and innovation and hence improve information sharing and impact positively on coordination of logistics management. It would be advisable for future researchers to investigate all oil companies in Kenya and

establish if there are unique IT systems used by other oil companies in managing logistics not captured in this research.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Increased use of Information Technology (IT) and the Internet technologies has enhanced impetus in managing logistics. Sambamurthy and Grover (2011) indicate that modern technologies present new ways of managing information. IT can be utilized as a tool to increase the capability and mitigate cost at the same time. Porter (2008) argued that firms can gain an advantage over their rivals by reduction of costs and product differentiation.

Information technology enhances the competitive positioning of a firm's initiative for for example reduction of cycle time and implementation of redesigned cross-functional processes. Gerald & Anderson (2012) opine that most organizations that use supply chain relationship through information technology have acknowledged improved performance through integration. Haag & Cummings (2010) insist on the importance of information and adoption of information technology as one of the ways to easily share information and to reduce communication costs.

According to Grover, Teng & Fiedler (2002) argue that, satisfying and pleasing the customer has become something of a corporate obsession. Provision of efficient and effective services to customers is critical since most customers prefer quick services. Furthermore, information is used by managers as a tool to minimize inventory and to ensure information flow for purposes of strategic planning. Managing logistics is concerned with flow of products and information within stakeholders in the supply chain network.

Present-day development in technologies enables institutions to access information easily in their premises. Modern technology is useful in coordinating supply chain activities in a manner that enhances efficiency in supply chain. Gerald & Anderson (2012) argue that use of Information and Communication Technology (ICT) lead to reduced logistics cost and improved delivery of goods and services.

1.1.1 Information Technology Systems

Haag & Cummings (2010) define ICT as technologies that give access to information through telecommunications. It is connected to IT but it focuses on communication technologies that include the internet, wireless networks, mobile phones among other medium of communication. Further, IT can be defined as data processing with the aid of a computer. It involves use of technologies from computing in processing and distribution of information in digitized form. IT involves studying, designing, creation, utilization, support including managing of Computer-Based Information Systems (CBIS), in particular application of software and hardware. IT systems enable firms to work more efficiently and to maximize productivity and are one of the tools popularly used by organizations to improve faster communication, electronic storage and protection of records.

Licht & Moch (2009) note that organizations that use IT systems are more efficient in their operations as compared to those who are reluctant to adopt IT systems. Gerald & Anderson (2012) indicate that information technology supports the flow of information in the organization, this has increased dependency on global networks including internet. Use of IT systems provides a basis to solve problems through designing, developing and adoption of technology related systems and processes to boost efficiency and effectiveness of knowledge in strategic, tactical and operational

circumstances. IT systems are utilized by organization to execute various tasks. Some firms use IT to process basic transactions; others utilize it to allow customers, to interact easily with the firm. Internet is one of the most commonly used information technology system. IT systems are perceived as a driving force to most firms. Organizations are seeking to get IT applications to assist them in selling of products or services conveniently with the help of the internet, businesses can move information quicker and coordinate numerous activities. There are various IT systems used by organizations to achieve overall efficiency and improved flow of information. This study will discuss the following information technology systems: Electronic Data Interchange (EDI), Enterprise Resource Planning (ERP), E-procurement, Just-in-Time (JIT) and Radio Frequency Identification Systems (RFID) (Gerald et al., 2012).

1.1.2 Logistics Management

In accordance to the Council of Supply Chain Management Professionals (CSCMP) (2007), managing logistics system is aimed at satisfying the needs of the customers by making plans, controlling and implementation and movement of products and services from the point of origin to their destination. Logistics management activities are inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply and demand planning, and management of third-party logistics services provider.

Morash & Lynch (2012) explain that logistics functions also include customer services, sourcing and procurement, production planning and scheduling, packaging and assembly. Logistics management involves all levels of planning and execution, strategic, operational and tactical. It integrates and coordinates logistics activities with

other functions which include marketing, sales manufacturing, finance, and information technology.

Proper management of logistics enables an organization to enhance efficient flow of products and services in the least cost and to ensure on-time delivery of goods and services. This ensures that customer needs are met in a more efficient manner. Bowersox et al. (2009) indicates that organizations that have integrated their logistics management systems have significantly reduced and minimized their lead time and inventory management costs. Haag & Cummings (2010) maintain that organizations that use internet sources ship their merchandise in a more accurate and fast manner than competitors do. Logistics management will be measured using the following indicators such as reduced holding costs, reduced lead time and on-time delivery of goods and services.

1.1.3 Oil Companies in Kenya

There are 64 oil companies in Kenya that are involved in the distribution of petroleum products in the Kenyan market (Pipeline Coordinator, 2013). Some of the oil companies have retail station others do not have but they are also involved in exporting of petroleum products and wholesale to other firms. A report by East Africa Oil and Gas Summit (2014) indicates that there are five leading companies in the Kenyan oil market that command a market share above five percent. They include: Total, Vivo Energy (trading as Shell), KenolKobil, Oil Libya and National Oil Corporation of Kenya (NOCK) whose combined market share is estimated at seventy-two percent while their combined share of the retail stations is forty-five percent. This implies that leading firms have a competitive edge against the other players, and the entire oil industry is competitive (Energy Regulatory Commission, 2014).

KenolKobil and National Oil are the only local oil marketers. Towards the end of 2013, there was approximately 1400 retail petrol stations country wide with more than five dominants players owning a combined total of 654 of the stations countrywide split as follows (Total = 188, KenolKobil = 166, Vivo Energy = 121, NOCK = 101, and Oil Libya=78). The cumulative inland sale in the year 2013 was estimated at 4550km³, and the total industry sale in the retail was estimated at 1795km³.

Notwithstanding the kind of competition in the oil industry in Kenya, oil companies hold joint imports, through the Open Tender System (OTS), for motor fuels to benefit from economies of scale. These imports are coordinated by the Ministry of Energy and Petroleum through the OTS that includes oil marketing companies with a competitive quote for imports on behalf of the industry (Munyasya, 2014).

Oil marketers share joint facilities with KPC and distribution port when importing and transporting petroleum their products. These companies sign agreements to share facilities which are not sufficient to service the country's oil needs. Leading oil companies have their storage depots in Nairobi and Mombasa, which acts as a competitive tool since they can hold buffer stock to sustain their customers when KPC is out of stock (EAOGS, 2014).

Munyasya (2014) emphasized the importance of adoption of modern technologies like ICT; he further argued that the leading oil companies such as Total Kenya, KenolKobil and Vivo Energy invested in modern technologies to achieve an integrative approach in logistics management which has minimized transportation costs.

1.2 Research Problem

Companies are facing increasing levels of competitive pressure concerning maintaining and sustaining efficiency in their logistics systems. The management of most organizations is being forced to seek and implement innovative strategies with which to advance their organizations competitive advantage as well as their logistics management (Morash and Lynch, 2012). IT system is a competitive tool by organizations for enhancing logistics management. Sanders and Premus (2013) argue that IT is part of an integrative approach that coordinates supply chain system and enhances sharing of information. Sambamurthy and Grover (2011) stress that IT helps to align logistics function in a manner that it enhances information sharing and reduced communication costs.

Oil companies in Kenya face various challenges in enhancing efficiency and reducing costs of their logistics systems. Use of ICT to integrate the organization's logistics management activities and functions improves efficiency and facilitates effective coordination of supply chain in processes and procedures. This enables organizations to effectively compete in the market through utilizing IT to realize improved performance (Munyasya, 2014).

Studies have been done demonstrating the adoption of ICT in logistics management in Kenya and beyond. Lucas and Introna (2014) investigated the impact of IT on logistics in banks. It was found that IT led to improved efficiency in logistics management. In their study, Stock and Lambert (2001) concluded that ICT-enhanced sharing of information and significantly reduced communication costs in service firms. Atieno and Odhiambo (2014) found that adoption of IT improved efficiency in logistics management. A study by Ndeda (2014) on logistics Information Systems (IS)

and performance of International Humanitarian Organizations (IHOs) in Kenya concluded that the use of IS enhanced cost effectiveness, on-time delivery, accurate and timely reporting of IHOs.

Most of the available studies did not investigate the impact of IT on logistics management by oil companies in Kenya. This study achieved its objective by finding answers to the following research questions: what is the extent of usage of IT systems by oil companies in Kenya? What are benefits that oil companies get from using IS? What are the challenges faced by oil companies when using information technology systems? And what is the relationship between IT systems and logistics management of oil companies in Kenya?

1.3 Objectives of the study

The aim of this research was to establish the impact of in IT systems on logistics management by oil companies in Kenya.

1.3.1 Specific Objectives

The specific objectives of the study were to:

- i. Establish the extent to which oil companies in Kenya are using information technology systems;
- ii. Determine the benefits that oil companies in Kenya get from using IT systems;
- iii. Determine the challenges faced by oil companies in the implementation of IT systems; and
- iv. Establish the relationship between IT systems and logistics management of oil companies in Kenya.

1.4 Value of the Study

The findings of the study will be useful oil companies since it will guide them on the appropriate ICTs to adopt to effectively manage their logistics. Firms in other industries will learn and understand the benefits of IT systems and its contribution towards enhancing efficiency in their logistics management.

The empirical findings of this study might be used to guide the policy makers in formulating policies that encourage oil companies to adopt IT systems in their logistics management to improve on their delivery time and minimize logistics costs. This is essential for enhancing customer value.

Students will learn and understand the theories that support this study and their relevance and application as well as the appropriate IT systems to adopt in managing logistics of oil companies. Researchers who have an interest in this field of study might use the study findings a basis for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter consists of theoretical framework, information technologies, challenges facing firms in the implementation of information technology, the relationship between information technology and logistics management, summary of the literature review and the conceptual framework.

2.2 Theoretical Framework

This section consists of the theories that guide this study in reference to IT and logistics management. These theories include Technology Acceptance Model, Diffusion of Technology Theory and Theory of Constraints.

2.2.1 Technology Acceptance Model

Davis (1986) put-forth the Technology Acceptance Model (TAM) projects that an IT tool will be acceptable by identifying the modifications that needs to be incorporated in the tool to enhance its ease of use. The model depicts that for an IT tools to be utilize two factors must be considered. They are perceived usefulness that is defined as the extent to which an individual believes that use of IT tool can enhance performance. Perceived ease of use can be defined as the extent to which a system user trusts that the use of IT related tool is effortless. The model illustrates that perceived ease of use can be looked at from different dimensions this involves behavioural intention which is defined by a user's attitude towards use of IT tool and how he or she perceives the utility.

A person's attitude is not the only factor that determines the use of a system, but this is based on the influence that the system have on performance. Therefore, if an employee fails to welcome an IT system, the chances that he will utilize it is higher if he thinks that it will boost his performance. TAM makes a prediction of a direct linkage between perceived usefulness and ease of use when one is considering two systems that offer similar features, users might perceive the system to be useful if it is easier to interact with (Venkatesh, Morris & Davis, 2003).

2.2.2 Diffusion of Technology Theory

Diffusion of Technology Theory (DTT) highlights 5 fundamental traits of innovation which affect diffusion. Relative advantage which implies the degree to which use technology enhances efficiency as compared to previously utilized tools. Compatibility is seen as the extent to which technology is consistent with norms and values; complexity is how friendly technology when utilizing it, trialability is the attempt to utilize innovations prior to making a decision whether to use it or not. Observability is defined as the benefits derived from utilizing technology. It is worth to note that these traits are insufficient to make predictions on the extent of the rate of diffusion. However, studies have showed that innovations is appreciated by most firms since it is seen as a way that firms can exploit to achieve efficiency and compete with competitors.

Innovation diffusion outlines that how technology is perceived by individuals highly determines its usability. Rogers (1995) notes that innovation is clustered on the basis of speed of uptake and use, this includes early adopters, early majority, late majority and laggards. This trend looks uncertain and confusing because of its distribution overtime.

It is worth noting that early adopters are blend innovators into one which represents a variance of dispersion (Rogers, 1987). Extant research depicts an attempt to extend diffusion theory to more complex adoption for instance the management of a firm may influence adoption of technology through use of reward systems and incentives (North, 1995).

2.2.3 Theory of Constraints

In accordance to Goldratt (1990), the Theory of Constraints is an approach to identify limiting factors (constraints) that prevents an organization from achieving its set goals and objectives. Firms deal with this kind of limitation by improving the constraint to a point that it stops to be a limiting factor (Kendall, 1998). Finance is a key challenge that inhibits firms from adopting IT. This limits the organization from enjoying the benefits of using IT such as improved efficiency and reduced costs. IT is expensive therefore; the top management should allocate adequate finances to support its adoption and implementation (Goldratt, 2001).

Organizations seek to achieve efficiency and reduction of costs; adoption of IT is an approach that can be utilized by the firm to achieve a competitive edge over its rivals. The top management should allocate adequate funds to install and implement modern technologies. Successful implementation of IT leads to improved quality of services, improved efficiency and on-time delivery of goods and services (Goldratt, 1990).

2.3 Information Technology

There various kinds of IT systems, this study will discuss the following EDI, ERP, E-procurement, JIT and RFID Systems.

Stock and Lambert (2001) posit that EDI is an automated communication device that allows exchange of information through electronic means. This can be realized through complying with set standards. EDI has improved communication in particular monitoring logistics. These technologies are anticipated to have a similar data formatting and transmission protocols. This kind of technology is used by firms to integrate logistics functions.

The advantage of this approach is that players within supply chains can overcome problems through increased information sharing of actual demand and supply of information. EDI seeks to minimize cost and competitive gain of the organisation. The limitation of this approach is that it's quite expensive to install EDI system, it requires high amount of capital investment and trained employees to manage (Licht & Moch, 2009).

ERP is a system is a data base where firms exploit systems of interrelated applications to manage organisational functions, people and services. ERP provides an integrated overview of the core business functions on a real-time basis with the help of databases maintained with a database. This aids the organisation in monitoring resources and production capacity of the business (Licht & Moch, 2009).

Patterson et al. (2013) observe that ERP is an essential organizational tool because it integrates various systems in the organization and facilitates accuracy of transactions and production. This system manages connections to outside stakeholders while allowing efficient and effective flow of information within the organization. This enhances sharing of information and decision making as a result of increased access to information and reduction of costs.

Sambamurthy & Grover (2011) defines e-procurement utilization of internet sources to operate transactions involving requisitioning, authorizing orders, receiving and payment of services and products. E-procurement focuses on local business administrators (business-to-business) network system by which firms can easily connect with their suppliers in order to procure goods and services at a cheaper cost. Sanders et al. (2013) maintains that E-procurement system integrates all levels of the organizations. E-procurement systems allow an increase in the spend visibility and control, this enables the finance officers to match their purchases with their purchase orders, receipts and job tickets. E-procurement system helps to manage tenders with the help of a website. This leads to increased accessibility to tenders. The advantage of this system is that it enables the firm to achieve efficiency and minimize costs. It promotes transparency in procurement services to minimize corruption and provide equal opportunities to the suppliers.

Gerald & Anderson (2012) define JIT as an operating concept designed to eliminate waste. The goal for JIT is to produce goods and services without wastage. This is achieved by testing each step in a process to determine if it adds value to the product or to the service. Firms that use JIT concept have minimum inventories by having each part delivered when it is needed, where it is needed, and in the quantity needed to produce the product.

Stockdill & Morehouse (2013) explain that a JIT system enables firms to operate efficiently with the least amount of resources hence improve quality, minimize inventory levels and provide maximum motivation to solve problems as and when it occurs. The advantages of a JIT system is that it minimizes the cycle time since goods are produced upon requisition by the customer. This increases cost savings and

competitiveness since customers get the right product in terms of quantity, quality and value based on their requirements.

Morash & Lynch (2012) note that RFID is a mode of identification where an item's identification is taken in which the reading and recoding of data is done using modern technology. This kind of technology assists the firm to minimize costs; this process is quite efficient as compared to manual process. The advantage of using RFID is that it gives a wide storage where information can be collated from several sources simultaneously (Sanders & Premus, 2013).

2.4 Benefits of Information Technology

Stockdill et al. (2013) posit that IT has several benefits to the organization; it provides a platform for organisations to develop competitiveness in specialized areas within the logistics infrastructure. However, it is worthwhile to note that success is based on the way the organisation exploits technology to enhance efficiency in execution of tasks and increasing accuracy in its operations.

Technology plays a fundamental role in achieving improved efficiency in managing logistics. In the logistics management, modern technologies are used in developed nations however in a country like India implementation takes long. However, as a result of liberalization, competitive pressures have piled up and implementation of technology is seen as the way to remain relevant in the market (Gerald et al., 2012).

Sanders & Premus (2013) contend that IT saves the firm costs of labour while improving quality and accuracy. IT minimizes labour time utilized on manual entry for instance when planning to procure and deliver goods and services. This helps in reducing costs while decreasing error and improving the overall customer service. IT

allows firms to easily store and access important information this assist in creating a record of positioning such as vehicle information. Use of IT has minimized the costs of supervision and hence improved efficiency of operations in the firm. This has led to greater flexibility and convenience resulting into improved performance. In logistics management it has improved monitoring services and logistics activities (Patterson, Grimm & Corsi, 2013).

2.5 Challenges of Implementing Information Technology Systems

There are various challenges faced by organizations when implementing IT. The major challenge includes lack of adequate funds to invest in modern technologies. Firms in the developing economies lack sufficient funds to invest in modern technologies this prevent them from enjoying the benefits of IT systems. Lucas et al. (2014) posit that IT requires a huge capital investment that most organizations in the developing countries lack.

The other challenge that hinder implementation of IT lack of adequate and skilled personnel to design, program, install, configure and maintain information technology. Firms lack qualified and recognized information technology professionals and thus hindering IT adoption and development. The acquisition of some professionals and technical skills by few professionals in developing countries does not constitute transfer of technology. Sanders et al. (2013) note that transfer of technology takes place when the recipient country has corresponding technical information to enable it to implement the hardware in an effective and efficient manner.

Patterson et al. (2013) argue that lack of training and support programmes is a major challenge that prevents implementation of information technology. Organizations in

the developing countries have shortage of skills and training which is attributable to inadequate expertise, resistance and inadequate technical support.

The other challenge could be lack of top management support. This might make it difficult to implement IT systems in the organization. Stockdill et al. (2013) maintain that the top executives should plan and organize the process of implementing information technology by setting-up a task force and providing them with the necessary resources and facilities to facilitate the process of implementation. They should engage the employees and lead them in the adoption of IT by explaining them the significance of adopting IT.

2.6 The Relationship between Information Technology and Logistics

Management

Grover et al., (2002) argue that integration is a fundamental component of IT that can be used to enhance collaboration and sharing of ideas to boost efficiency in logistics management. IT creates a platform for innovation through devising more flexible and dynamic systems to meet customer needs and to provide value adding goods and services.

Stock and Lambert (2001) explain that logistics management an example of IT that helps companies to improve efficiency and ensure on-time delivery.

Patterson, Grimm & Corsi (2013) explain that logistics IS help organizations to track information flow with the organisation by providing reports on inventory management and to establish the amount of stock to place. This allows the organisation to achieve optimal stock level.

Lucas and Introna (2014) maintain that logistics highly depends on the effectiveness of the top management within the supply chain. Logistics managers have a responsibility of purchasing goods and ensuring that these goods are transported to their rightful destination. To deliver this role, logistics managers highly depend on advanced IS to manage and track items from the manufacturer to the final consumer. Due to increased volumes and complexity that business face, IS allows a smooth flow of the products within the organization. Sanders & Premus (2013) argue that use IT continually comes up with innovations to address the ever-changing customer needs like finding the right routes for shipments.

2.7 Summary

The theoretical review and empirical review indicate that information technology is an essential tool for enhancing efficiency and effectiveness in business operations. Effective implementation of information technology allows the firm to easily access and share information, enhances flexibility, speed and accuracy this impacts positively on logistics management through reduction of lead time, on-time delivery of goods and services and reduced holding costs.

The influence of information technology systems on logistics management is supported by theories that guide this study which include Technology Acceptance Model, Diffusion of Technology Theory and the Theory of Constraints. The most common IT systems used by firms include, Electronic Data Interchange, Enterprise Resource Planning, E-procurement, Just-in-Time and Radio Frequency Identification Systems. In line with the study objectives, it is expected that information technology influence logistics management therefore, the study has adopted a descriptive research design to establish this relationship.

2.8 Conceptual Framework

Figure 2.1 shows the hypothesized relationship between information technology systems and logistics management. The independent variables include Electronic Data Interchange, Enterprise Resource Planning, E-procurement, Just-in-Time and Radio Frequency Identification Systems. The dependent variable is logistics management. It is expected that the independent variables will influence the dependent variable.

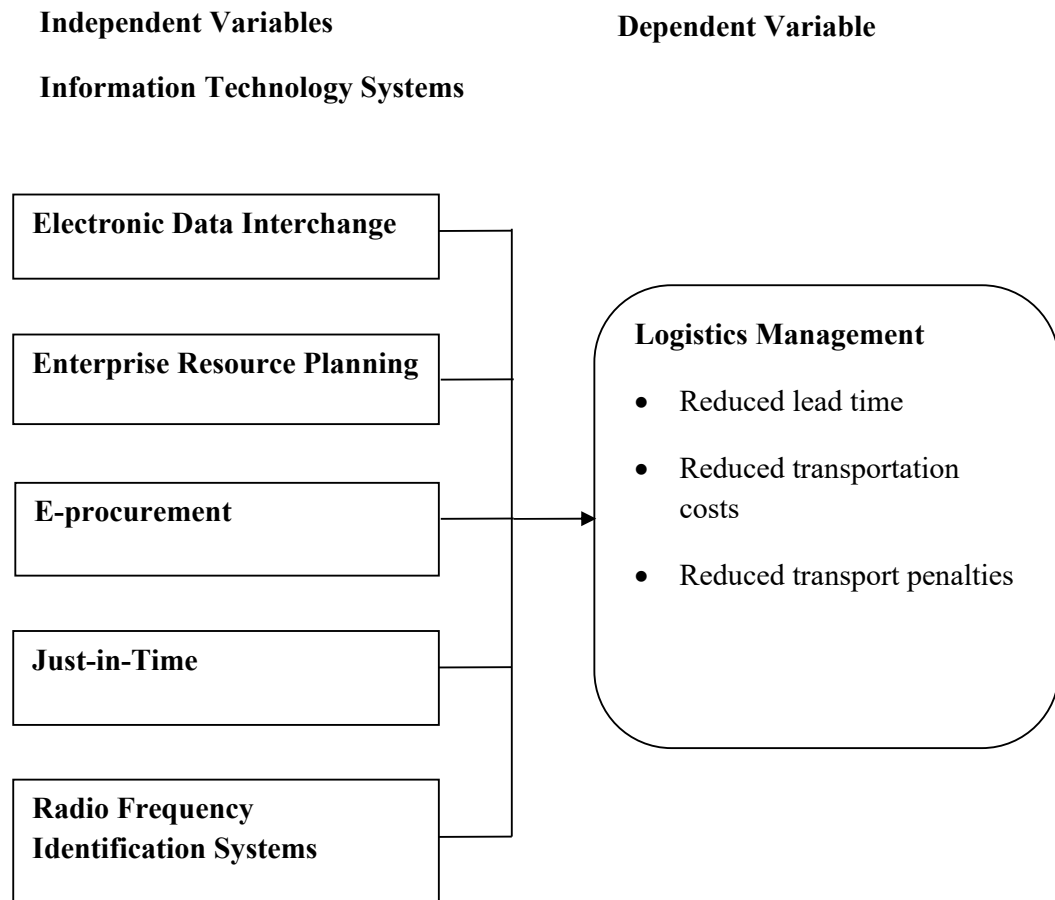


Figure 1: Conceptual Framework

Source: Researcher, 2016

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter discussed the methodology of the research that was implemented to address the research problem. Outlined in this chapter included the research design, the population of the study, data collection and data analysis.

3.2 Research Design

This study adopted a descriptive research design. This research design is supported by Cooper and Schindler (2006) indicate that a descriptive research design is used to explain the current and the existing conditions. Further, this design is used to establish a hypothetical nexus between variables. Choice of this research design was because it was appropriate in establishing the existing link between variables. This design is applicable when using both primary and secondary sources of data.

3.3 Study Population

Population for this research involved the oil companies in Kenya. According to Pipecor Coordinator (2014), there are 64 oil companies that were licensed to work and operate within the confines of Kenya. Kothari (2004) defines a population as a set of distinct items or objects that possess similar traits.

3.4. Sampling

The sample size for this study will be 32 oil companies. This constitutes 50% of the population which is well above the 10% minimum recommended sample size by Mugenda and Mugenda (2003). The 32 oil companies were selected using systematic random sampling technique due to its simplicity and good representation of the

population. Every even number in the list of oil companies as represented in Appendix II was selected.

3.4 Data Collection

The study used primary sources of data. This data was collated with help of questionnaires. Primary sources of data were gathered with the help of questionnaires. The questionnaires were in the form of Likert-type scale; in this case the respondents were required to indicate their level of agreement on a five-point scale (1 – 5). The questionnaires consisted of five sections. Section A consisted of questions on the background information of the respondents and the organisation. Section B covered questions concerning the extent to which oil companies implement IT systems, Section C covered questions on the benefits derived from use of IT systems by oil companies, Section D covered questions on challenges faced by oil companies in the implementation of IT and Section E covered questions concerning the influence of IT systems on logistics management of oil companies. The study utilized primary data was collated from personnel in the IT department. Choice of these categories of respondents was because they were informed about use of IT and logistics management of oil companies. The questionnaires were administered by dropping and picking them later. Emails were sent to oil companies that are in far distant places.

3.5 Data Analysis

Data was gathered was then sorted, cleaned and coded before analysis. Analysis was done using descriptive statistics for objective one (to determine the extent of implementation of information technology systems by oil companies in Kenya), objective two (to determine the benefits that oil companies in Kenya get from using information technology systems) and objective three (to establish the challenges faced

by oil companies in the implementation of information technology). Objective four (to establish the relationship between information technology and logistics management by oil companies in Kenya) was analyzed using a multiple regression model. Below is a multiple regression equation which was used in this study for data analysis.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where:

Y= Logistics Management

X₁= Electronic Data Interchange

X₂= Enterprise Resource Planning

X₃= E-procurement

X₄= Just-In-Time

X₅= Radio Frequency Identification Systems

α =Regression constant

ε =Error term normally distributed about the mean of zero.

$\beta_1 \beta_2 \dots \beta_n$ = model coefficients

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

Described in this chapter is the analyzed data and outcomes from the study. The study utilized a descriptive survey which aided the researcher to establish the link between information technology systems and logistics management.

4.2 Return Rate

Out of the 32 questionnaires which were administered to the respondents of oil companies in Kenya, firms, 30 were returned. This epitomizes a response rate of 94 percent that was considered adequate to make generalization of all oil companies in Kenya. This response rate is concurrent to Bolo and Wainaina (2012) who indicated that a response rate that exceeded 80% was sufficient to make generalization of the entire population.

4.3 General Information

This section of data analysis covers an analysis that involves the respondents and the oil companies' background information. This information was important in understanding the respondents and establishing the duration that the organisation had been in operation.

4.3.1 Duration of Operation

The study determined the duration that oil companies had been within the boundaries of Kenya. The outcome is depicted in Table 4.1

Table 1: Duration of Operation

Duration	Frequency	Percent
Less than 10 years	00	00
More than 10 years	30	100
Others	00	00
Total	30	100.0

Source: Research data, (2016)

Respondents agreed that oil companies operated for a duration that exceeded 10 years. This was a sign that oil companies had implemented ICT systems for a long duration of time.

4.3.2 Position in the Company

The Researcher determined the position held by the respondents in the company to find out if they qualified to give accurate responses as per the study objectives. The outcome is depicted in Table 4.2.

Table 2: Position in the Organization

Position	Frequency	Percent
Head of ICT	3	10
Managers	12	40

Position	Frequency	Percent
Assistants	15	50
Total	30	100.0

Source: Research data, (2016)

The outcome indicated that 50% of the respondents were assistants, 40% were managers and only 10% were heads of ICT. This meant that majority of the respondents were managers and their assistants.

4.3.3 Duration of Service in the Present Positions

The respondents were told to indicate the duration that they had served in their present positions. This was intended to find out if they had attained an experience in use of ICT in managing logistics. The outcome is depicted in Table 4.3

Table 3: Length of Service in the Current Position

Period	Frequency	Percent
Less than 5 years	8	27
5-10 years	10	33
10-15 years	8	27
Above 15 years	4	13
Total	30	100

Source: Research data, (2016)

The output depicts that 33% of the respondents were aged between 5-10 years, there was a tally of 27% of the respondents who had served for less than 5 years and the other group served between 10-15 years. 13% of the respondents served in a duration that exceeded 15 years. This was a sign that majority of the respondents had a relevant experience in ICT and managing logistics.

4.4 Information Technology Systems

The study established the extent to which oil companies implemented IT systems such as EDI, ERP, E-procurement, JIT and RFID systems.

4.4.1 Electronic Data Interchange

Respondents were asked to tick the extent to which EDI was utilized in their company. The outcome is presented in Table 4.4.

Table 4: Use of Electronic Data Interchange

	N	Mean	Std. deviation
The firm has integrated its systems	30	4.05	.789
The firm share information with other firms	30	4.03	.675
The firm is efficient in making decisions	30	3.92	.876
The firm has improved coordination with its stakeholders	30	3.67	.765
Average	30	3.92	.776

Source: Research data, (2016)

Oil companies integrated their systems, shared information with other firms, made efficient decisions and involved their stakeholders in decisions to a great extent. The

mean scores included 4.05, 4.03, 3.92 and 3.67 respectively. The standard deviation included .789, .675, .876 and .765 respectively. Average mean (3.92) showed that Oil companies implemented EDI to a great extent.

4.4.2 Enterprise Resource Planning

Respondents were told to indicate the extent to which their firm used an ERP. Results are shown in Table 4.5

Table 5: Use of Enterprise Resource Planning

	N	Mean	Std. deviation
Use of ERP improves firms planning	30	4.21	.871
Use of ERP enhances connectivity	30	4.09	.885
Use of ERP enhances integration with stakeholders	30	3.97	.887
ERP has led to improved inventory accuracy	30	3.75	.875
Average	30	4.00	.879

Source: Research data, (2016)

Oil firms used ERP to improve their planning, enhance connect, achieve integration and improve accuracy to a great extent. The mean scores were as follows: 4.21, 4.09, 3.97, and 3.75 respectively. This was a suggestion that oil firms implemented ERP to a great extent. The overall mean score is 4.00 and standard deviation as .879.

4.4.3 E-procurement

Respondents were asked to tick the extent to which their firm used e-procurement systems in managing logistics. The outcome is showed in Table 4.6

Table 6: Use of E-procurement

	N	Mean	Std. Deviation
Use e-procurement has improved connectivity with suppliers	30	3.87	.976
Use of e-procurement has minimized operational costs	30	3.82	.879
Use of e-procurement has led to real time processing of data	30	3.79	.961
The firm has improved transparency in its tendering processes	30	3.73	.881
Use of e-procurement has improved customer satisfaction	30	3.65	.719
Average	30	3.77	.883

Source: Research data, (2016)

Oil firms utilized e-procurement to: improve connectivity with stakeholders, minimize costs of operations, achieve real-time processing of data, transparency and improve customer satisfaction to a great extent. The mean scores were as follows: 3.87, 3.82, 3.79, 3.73 and 3.65. Standard deviation included: .976, .879, .961, .881 and .719 respectively. This means that e-procurement was utilized by oil firms to a great extent. Mean score is 3.77 and standard deviation is .883 respectively.

4.4.4 Just-in-Time

To find out the extent of implementation of JIT by oil companies, respondents were told to tick their level of agreement. The output is depicted in Table 4.7

Table 7: Use of Just-In-Time

	N	Mean	Std. Deviation
Use of JIT has improved quality	30	3.65	.775

	N	Mean	Std. Deviation
Use of JIT has improved reliability of suppliers	30	3.63	.879
The company uses JIT system to improve customer service	30	3.57	.645
Use of JIT has improved on-time delivery of goods and services	30	3.52	.793
Average	30	3.593	.773

Source: Research data, (2016)

Oil companies used JIT to: improve their services, enhance reliability of suppliers, improve customer service and ensure delivery of products and services on time to a great extent. Mean scores were 3.65, 3.63, 3.57 and 3.52. Standard deviation included .775, .879, .645 and .793. This alluded that oil companies implemented JIT systems to great extent. Mean value is 3.59 and standard deviation is .773.

4.4.5 Radio Frequency Identification Systems

To determine the extent to which RFID systems were utilized, the respondents were requested to indicate their agreement level. The outcome is depicted in Table 4.8.

Table 8: Use of Radio Frequency Identification Systems

	N	Mean	Std. Deviation
The firm uses RFID for efficient management of records	30	3.61	.676
Use of RFID had improved effectiveness in stock management	30	3.57	.579

	N	Mean	Std. Deviation
Use of RFID have minimized theft	30	3.54	.781
Use of barcodes in tracking stock items has enhanced availability of items	30	3.52	.679
The use of RFID has improved efficiency in records management	30	3.45	.816
Average	30	3.54	.706

Source: Research data, (2016)

Oil companies utilized RFID systems to a great extent in: efficient managing of records, stock management, reduction of theft and tracking stock items using barcodes. Mean scores values attained were 3.61, 3.57, 3.54 and 3.52. Standard deviation values were .676, .579, .781 and .679 respectively. Oil companies utilized RFID systems to a moderate extent in management of records. Mean value is 3.45 with a standard deviation of .816. This was an indication that Oil firms implemented RFID systems to a great extent. Overall score was 3.54 with a standard deviation of .706.

4.5 Benefits of Information Technology Systems

The study determined the benefits that were derived from usage of IT systems by oil companies in Kenya. The output is depicted in Table 4.9

Table 9: Benefits of IT

	N	Mean	Std. Deviation
The firms has increased information sharing	30	4.10	.787
The firm is able to receive accurate timely information for decision making	30	4.05	.659
The firm has improved its level of competitiveness	30	3.97	.753
The firm has improved the level of its accuracy and reliability	30	3.83	.674
The firm understands its customer needs and buying trends	30	3.75	.516
The firm has streamlined its business operations to be more efficient	30	3.65	.789
The firm has improved its level of efficiency	30	3.61	.675
The firm adopts real-time processing of transactions	30	3.58	.654
Average	30	3.18	.726

Source: Research data, (2016)

To a great extent, the findings showed that oil companies derived several benefits from utilization of ICT, they included information sharing, time information, competitiveness, accuracy and reliability, understanding customer wants, streamlining business processes, efficiency and real-time transaction processing. Mean values were 4.10, 4.05, 3.97, 3.83, 3.75, 3.65, 3.61 and 3.58 respectively. Standard deviation included: .787, .659, .753, .674, .516, .789, .675 and .654.

4.6 Challenges Faced in the Implementation of Information

Technology Systems

The study sought to determine challenges that were faced by oil companies in the implementation of IT systems. The outcome is depicted in Table 4.10

Table 10: Challenges in Implementation of IT Systems

	N	Mean	Std. Deviation
Inadequate funding as IT systems require huge capital investments	30	4.15	.762
Poor technical expertise by system in-house and IT implementers	30	4.11	.659
Inadequate support from the users of the system this exposes weaknesses in their departments	30	4.01	.822
Lack of clear IT standards and processes to refer and fall back to	30	3.96	.564
Inadequate employee training and development programs to enable them adequately and accurately utilize IT systems and tools.	30	3.91	.726
Poor sensitization of employees on the importance of IT to the firm	30	3.59	.792
Lack of a good user interface to enable users to easily interact and utilize IT resources	30	3.54	.691
Resistance to change	30	3.49	.655
Average	30	3.845	.716

Source: Research data, (2016)

To a great extent, oil companies faced the following challenges in the implementation of IT systems; inadequate funding, poor technical expertise, inadequate support from system users, lack of clear IT standards and processes, inadequate employee training

and development programmes, poor sensitization of employees and lack of a good user interface. Mean score values comprised of: 4.15, 4.11, 4.01, 3.96, .391, 3.59, 3.54 and 3.49. Standard deviation values were: .762, .659, .822, .564, .726, .792, .691 and .655.

4.7 Relationship between Information Technology Systems and Logistics Management of Oil Companies

The study utilized a regression model to test the link between information technology systems and logistics management of oil companies.

Table 11: Summary of the Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.854 ^a	.756	.670	.03211

a. Predictors: (Constant), Electronic Data Interchange, Enterprise Resource Planning, E-procurement, Just-in-Time, Radio Frequency Identification Systems.

Coefficient of determination had a value of .756 which implies that IT systems explained 75.6% variance in logistics management.

Table 12: Analysis of Variance

		ANOVA ^a				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.101	5	.020	10.000	.000 ^b
	Residual	.041	24	.002		
	Total	.142	29			

a. Dependent Variable: transportation lead time

The regression model was found to be significant which imply that it had predictive values. The p-value was less than 5%, .000.

Table 13: Coefficients of the Model

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.045	.021		1.340	.070
Electronic data interchange=X ₁	.021	.004	.184	2.041	.020
Enterprise resource planning=X ₂	-.051	.005	-.514	-2.182	.007
E-procurement=X ₃	.005	.003	-.003	-.435	.272
Just-in-time=X ₄	-.070	.009	-.812	-2.679	.000
Radio frequency identification systems=X ₅	.010	.011	.096	1.055	.098

Source: Research data, 2016

a. Dependent Variable: transportation lead time

Regression model is presented below:

$$Y = .045 + .021X_1 - .051X_2 - .070X_4 + \varepsilon$$

Where:

Y=transportation lead time

X₁= Electronic data interchange

X₂= Enterprise resource planning

X₄= Just-in-time

E-procurement and RFID were omitted from the regression equation because they were insignificant. Their p-values exceeded 5%, .272 and .098. EDI, ERP and JIT were significant in explaining the nexus between IT systems and logistics management since their p-value were less than 5%, .020, .007 and .000.

The Research also noted that the t values for ERP and JIT had negative values. This is due to the fact that the ERP in the oil companies only implemented the financial reporting module and whereas the oil companies had implemented JIT systems, the oil companies only obtain stock for sale once the ERC announces price adjustments done on the 14th of every month. The oil companies did not fully benefit from the implementations of the ERP and JIT systems.

4.8 Discussion of Findings

Oil companies implemented ICT systems to a great extent. These systems were EDI, ERP, e-procurement, JIT and RFID. Their grand mean scores were 3.92, 4.00, 3.77, 3.59 and 3.54. These results are in harmony with a study by Lucas and Introna (2014) who concluded that IT systems were utilized to a large extent.

Oil companies derived several benefits from utilization of IT systems, these included sharing of information, getting timely information, competitiveness, accuracy,

addressing customer wants, integrating business processes, efficiency and real-time business transactions. The overall mean score attained was 3.18 and the standard deviation was .726. This assisted oil companies to effectively manage their logistics. These findings are in harmony with Sanders & Premus (2013) who observed that use of IT system enhances efficiency in sharing of information, which resulted into competitiveness and cost reduction.

The most common challenges that faced oil companies in the implementation of IT systems were inadequate finances, lack of technical expertise, inadequate backing from system users, unclear IT set standards and procedures, inadequate training and development. These attained an aggregate mean of 3.845 and a standard deviation of .716. These outcomes are in agreement with Munyasya (2014) who indicated that the main impediments that hindered implementation of IT systems by oil firms were inadequate funds, lack of technical skills and inadequate training and development programmes.

The regression model utilized for the study was found to be reliable because IT systems explained 75.6% variance in management of logistics. The regression model was found to be significant. These results tally with the findings by Atieno and Odhiambo (2014) who indicated that the regression model adopted was significant. EDI, ERP and JIT were significant because their p-values were less than 5%, .020, .007 and .000. The results conform to Ndeda (2014) who concluded that JIT module and ERP were significant.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter presents a discussion concerning major findings, conclusion that have been drawn, recommendation made and areas that future researchers might be interested to investigate.

5.2 Summary of Findings

With regard to the extent of use of It systems by oil companies, the results showed that all the systems were implemented to a great extent. These systems included enterprise resource planning, e-procurement; electronic data interchange just-in-time and Radio frequency identification systems. These results are supported by with Sanders & Premus (2013) who argued that service firms utilized IT systems to a large extent.

The benefits realized by oil companies from use of IT systems were integration, quick decision making, accuracy, easy access to information and real-time business transactions. This minimized transportation cost and enhance on-time delivery of products and services. These results concur with the conclusion made by Lucas and Introna (2014) who contended that use of IT systems impacted positively on efficiency, cost reduction and accessibility to information.

Major challenges that were experience by oil companies in the implementation of IT systems were inadequate finances, inadequate technical skills, unclear systems and processes and inadequate training and development programmes.

In view of this, Atieno et al. (2014) found that the limitation of finances and technical skills were the main impediments that delayed local firms to implement IT systems. The regression equation utilized for the study was found to be significant because its p-value was less than 5 percent, .00. Further, ERP, EDI and JIT were found to be significant in explaining the connection between IT systems and management of logistics. These are in agreement with Licht and Moch (2009) who found the existence of a significant link between IT and logistics management.

5.3 Conclusion

It was found that IT systems were implemented to a great extent by oil companies in Kenya. The IT systems commonly utilized by these firms included ERP, e-procurement, EDI, JIT and RFID. The benefits realized from the use of IT systems in managing logistics were improved efficiency, sharing information, real-time processes and minimized supervision costs. Further, it was found that inadequate finances, lack of technical skills, inadequate training programmes and lack of a good user interface were the key impediments that faced oil companies in implementation of IT systems.

The regression model used was found to be significant. Moreover, ERP, EDI and JIT were found to be significant. ERP, e-procurement and RFID were positively related to transportation lead time.

5.4 Recommendations

Oil companies should invest more in modern innovations in ICT. This enhances sharing of information; improve communication, tracking and on-time delivery of

goods and services. This will minimize logistical costs and boost logistics performance.

The policy makers, Energy Regulatory Commission (ERC) should set policies that encourage oil companies to utilize ICT systems in their management of logistics. This will reduce costs associate with logistics and improve coordination of activities within transport logistics system infrastructure and impact positively on efficiency.

Oil companies should sponsor training and development programmes to increase employees' knowledge and skills on the use of ICT systems, management of ICT systems and their utilization. This will motivate the employees' and boost their morale in implementation of ICT systems in managing logistics.

5.5 Limitations for the Study

Time constraints limited the study from carrying a comparative analysis of oil companies in Kenya with another sector such as the manufacturing sectors. This could have enriched the findings by enabling the researcher to make conclusive remarks and make relevant recommendations.

The study findings obtained and application therefore was limited to oil companies in Kenya. This implies that these results are not applicable to another sector industry other than oil companies. Readers should therefore appreciate the fact that these results can only be utilized for comparison purposes and not direct application.

The Researcher lacked control for data collection, some of the respondents gave back incomplete questionnaires and a few desisted to fill and complete the questionnaires completely on account of confidentiality. This happened even after the Researcher produced a letter as proof of permission to collect data by the University.

Some of the respondents perceived the process as non-paying and tedious causing discouragement in the participation in the data collection exercise. The Researcher had to make follow-ups to persuade the respondents to fill in and complete the questionnaires, this was not easy to achieve while it took a long duration of time.

5.6 Suggestions for Further Research

It is recommended that it would be of help for future researchers to consider investigating how other factors such as the regulations of government and the policy industry on ICT systems or other factors either as independent or moderating variables that can impact on the investment decisions of oil companies in particular when deciding on the kind of information technology system that the firms should adopt.

A replica of this study should be executed in another industry such as the manufacturing sector to ascertain the popular ICT systems used and they influence that they have on management of logistics in an organisation. Results can then be compared and more accurate findings can be established.

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APPENDICES

APPENDIX I:

RESEARCH QUESTIONNAIRE

Introduction

This questionnaire is designed for the sole purpose of collecting data on the information technology and logistics management of oil companies in Kenya. The data collected will be treated with a very high degree of confidentiality because it is for academic purposes only.

SECTION A: GENERAL INFORMATION

1. How long has your company been in operation in the Telecommunications industry?

(i). Less than 10 years []

(ii) More than 10 years []

2. What is your position in this company?

1. Head of ICT []

2. Manager []

3. Assistant /Analyst []

3. How long have you been in this position?

1. a) Less than 5 years []

2. b) Between 5 to 10 years []

3. c) Between 10 to 15 years []

4. d) Above 15 years []

SECTION B: EXTENT OF USE OF INFORMATION TECHNOLOGY SYSTEMS

6. Please indicate the extent to which Information Technology Systems (IT) systems are used in the firm.

Tick appropriately use the following rating scale: 1 – No Extent; 2 – Small Extent; 3 – Moderate Extent; 4 – Great Extent; and 5 – Very Great Extent.

No	IT systems	1	2	3	4	5
Electronic Data interchange						
1.	The firm has integrated its systems					
2.	The firm share information with other firms					
3.	The firm is efficient in making decisions					
4.	The firm has improved coordination with its stakeholders					
Enterprise Resource Planning						
1	Use of ERP had improved the firm planning					
2.	Use of ERP has enhanced connectivity with its stakeholders					
3.	Use of ERP has enhanced integration of with the firm's stakeholders					
4.	Use of ERP has led to improved inventory accuracy					
E-procurement						
1.	Use e-procurement has improved connectivity with suppliers					
2.	Use of e-procurement has minimized operational costs					
3.	Use of e-procurement has led to real time processing of data					
4.	The firm has improved transparency in its tendering processes					
5.	Use of e-procurement has improved customer satisfaction					
Just-in-Time						
1.	Use of JIT has improved quality					
2.	Use of JIT has improved reliability of suppliers					
3.	The company uses JIT system to improve customer service					

4.	Use of JIT has improved on-time delivery of goods and services					
Radio Frequency Identification Systems						
1.	The firm uses RFID for efficient management of records					
2.	Use of RFID had improved effectiveness in stock management					
3.	Use of RFID have minimized theft					
4.	Use of barcodes in tracking stock items has enhanced availability of items					
5.	The use of RFID has improved efficiency in records management					

6. Any other form of information technology not mentioned above please, outline below

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SECTION C: BENEFITS OF INFORMATION TECHNOLOGY SYSTEMS

7. Indicate the benefits that your firm gets from using Information Technology Systems.

Tick appropriately use the following rating scale: 1 – No Extent; 2 – Small Extent; 3 – Moderate Extent; 4 – Great Extent; and 5 – Very Great Extent.

No	Benefits of Information Technology	1	2	3	4	5
1.	The firm has improved its level of competitiveness					
2.	The firms has increased information sharing					
3.	The firm is able to receive accurate timely information for decision making					

4.	The firm understands its customer needs and buying trends					
5.	The firm has improved the level of its accuracy and reliability					
6.	The firm has streamlined its business operations to be more efficient					
7.	The firm has improved its level of efficiency					
8.	The firm adopts real-time processing of transactions					

8. Any other form of Information Technology adopted by your firm not mentioned above please, outline below

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SECTION D: CHALLENGES INVOLVED IN THE IMPLEMENTATION OF INFORMATION TECHNOLOGY SYSTEMS

9. Indicate the extent to which each of the following challenges is faced by the firm in implementation of Information Technology Systems.

Tick appropriately use the following rating scale: 1 – No Extent; 2 – Small Extent; 3 – Moderate Extent; 4 – Great Extent; and 5 – Very Great Extent.

No	Challenges	1	2	3	4	5
1.	Lack of clear IT standards and processes to refer and fall back to					
2.	Poor technical expertise by system in-house and IT implementers					
3.	Inadequate support from the users of the system this exposes weaknesses in their departments					
4.	Inadequate employee training and development programs to enable them adequately and accurately utilize IT systems and tools.					
5.	Inadequate funding as IT systems require huge capital investments					
6.	Poor sensitization of employees on the importance of IT to the firm					

7.	Lack of a good user interface to enable users to easily interact and utilize IT resources					
8.	Resistance to change					

10. Any other challenge faced by the firm in implementation of Information Technology, please explain

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SECTION E. INFLUENCE OF INFORMATION TECHNOLOGY SYSTEMS ON LOGISTICS MANAGEMENT

11. Kindly provide approximate figures on the variables listed in the table below for the period from 2011-2015.

Logistics Management Indicators	Unit of measure	2011	2012	2013	2014	2015
Total transport cost	Kshs.					
Transportation penalties	Kshs.					
Transportation lead time	Days					

THANK YOU FOR PARTICIPATING

APPENDIX II

LIST OF OIL COMPANIES IN KENYA

No.	Oil Company	Postal Address	Physical Location
1.	Libya Oil (K) Limited	P.O. Box 64900 – 00620, Nairobi.	2 nd Floor, Mobil Plaza – Muthaiga Road.
2.	Al-Leyl Petroleum Limited	P.O Box 1173-80100, Nairobi	Furaha Plaza, 3rd Floor, Nkrumah Road, Mombasa
3.	Kenolkobil Petroleum (K) Ltd	P.O Box 30061-00100, Nairobi	10th Floor-ICEA Building-Kenyatta Avenue
4.	Topaz Petroleum Limited	P.O Box 16236- 00100, Nairobi	Josem Trust, Bunyala Road
5.	Total Kenya Limited	P.O Box 30322-00100, Nairobi	Regal Plaza, Parklands -Limuru Road
6.	Kamkis Trading Ltd	P.O. Box 9545 - 00300, Nairobi	Kamkis House (Before Mater Hospital) ,Dunga Road
7.	Engen Kenya Limited	P.O Box 10797-00100, Nairobi	4th Floor- Victoria Towers, Kilimanjaro Road
8.	Alba Petroleum Ltd	P.O Box 97155-80112, Makupa, Mombasa	Liwatoni Tagana Rd Makupa, Mombasa, Kenya
9.	Vivo Energy Kenya Ltd	P.O Box 43561- 00100, Nairobi	Laiboni Centre, Lenana Road, Nairobi
10.	One Petroleum Limited	P. O. Box 90147 – 80100, Mombasa	Mbaraki Wharf, Mombasa
11.	National Oil Kenya Limited	P.O Box 58567- 00100, Nairobi	7th Floor-A.O.N Minet House, Mamlaka Road Off Nyerere Road
12.	Petrosun Kenya Limited	P.O Box 21953-00505, Ngong road, Nairobi	Jamhuri Crescent, Block J6 Off-Kabarnet Road.
13.	Gapco (K) Limited	P.O Box 40908-00100, Nairobi	14th Floor-Nation Center, Kimathi Street

No.	Oil Company	Postal Address	Physical Location
14.	Moil	P.O Box 3508 , Kisumu	11/124 Usoma Road
15.	Petro Oil (K) Ltd	P.O Box 90462-80100, Mombasa	Tangana Road, Mbaraki Creek
16.	Ocean (K) Ltd	P.O Box 41391-00100, Nairobi	Rangwe Road Off Lungalunga Road, Industrial Area, Nairobi
17.	Banoda Oil Ltd	P.O Box 101537-00101, Nairobi	International Life House, 10th Floor, Mama Ngina Street,
18.	Nafton Petroleum Limited	P.O. Box 101664 – 00101, Nairobi	Panari Sky Centre 1st Floor, Mombasa Road
19.	Hashi Energy (K) Ltd	P.O Box 10795- 00100, Nairobi	11th Floor- International House ,Mama Ngina Avenue
20.	East Africa Gasoil Ltd	P.O Box 3378-80100, Nairobi	IPS Building-3rd Floor, Kimathi Street, Nairobi
21.	Galana Oil (K) Ltd	P.O Box 11672-00100, Nairobi	1st Floor-Taj Tower, Upper Hill Road
22.	Dalbit Petroleum (K) Ltd	P.O Box 1931 -00200, Nairobi	Next To Kileleshwa Police Station
23.	Fossil Fuels	P.O Box 87126 - 80100 GPO, Mombasa, Kenya	Ganjoni Mombasa
24.	Samhar Petroleum Products Co. Ltd	P.O Box 10046-00101, Nairobi	Hazina Towers, 11th Floor,
25.	Oilcom (K) Limited	P.O Box 10370-00100, Nairobi	Wundanyi Road Off Lungalunga Road
26.	Regnol Oil Kenya Ltd	P.O. Box 77883 – 00622 Juja Rd	1st Floor- Jamia Mosque Plaza, Playhouse Lane Off Kipande Road
27.	Mogas Kenya Limited	P.O Box 27696-00506, Nairobi	4th Floor- Simco Plaza, Lusaka Road
28.	Finejet Petroleum	P.O Box 103329-00101, Nairobi	Trans-National Plaza, 1st Floor , Mama Ngina Street

No.	Oil Company	Postal Address	Physical Location
29.	Bakri Intl	P.O Box 19095-00501, Nairobi	Africa Re Centre, Hospital Road Upper Hill
30.	Towba Petroleum Company Limited	P.O Box 68946-00622, Nairobi	Vedic House-4th Floor, Mama Ngina Street
31.	Gulf Energy	P.O Box 61872-00200, Nairobi	4th Floor- Geminia Insurance Plaza, Kilimanjaro Avenue, Upper Hill
32.	Oilcity	P.O Box 9222-00100, Nairobi	Nginyo Towers- 7th Floor, Koinange Street, Nairobi
33.	Riva Petroleum Dealers Limited	P.O Box 16299-20100, Nairobi	5th Floor- Mayfair Suite, Opposite Impala Hotel, Parklands Road, Westlands
34.	Oil Point	P.O Box 218-00610, Nairobi	St Ellis House- 4th Floor, Off Wabera Street
35.	Kencor Petroleum Ltd	P.O Box 37142-00200, Nairobi	Parklands Plaza-7th Floor, Muthithi Road/Chiromo Road Junction
36.	Ultra Petroleum	P.O Box 25820-00100, Nairobi	Ultra Centre Parklands, Mutati Road
37.	Hass Petroleum	P.O Box 76337-00508, Nairobi	3rd/5th Floor-Hass Plaza ,Lower Hill Road
38.	Afri Oil	P.O Box 69825-00400, Nairobi	Red Commercial Complex Mombasa Rd
39.	Trojan International Ltd	P.O. Box 100339-00100, Nairobi	6th Floor-St. Ellis House, Wabera Street, Nairobi
40.	Premium	P.O Box 56672-00100, Nairobi	Room 6, Chaka Court, Chaka Road, Hurlingham, Nairobi
41.	Essar Petroleum (East Africa) Ltd	P.O .Box 45742-00100, Nairobi	Essar House Africa, Muguga Green Lane, Westlands
42.	Ranway Traders Ltd	P.O Box 56022- 00200, Nairobi	197 Lenana Plaza- 3rd Floor, Lenana Road, Nairobi
43.	Olympic Petroleum Limited	P.O Box 24457- 00100, Nairobi	Barclays Plaza Mezzanine 4, Loita Street Nairobi

No.	Oil Company	Postal Address	Physical Location
44.	Metro	P.O Box 35198-00200, Nairobi	9th &12th Floor-View Park Towers , Utalii Lane
45.	Keroka Petroleum Limited	P. O. Box 8034 – 00300, Nairobi	Chai House-8th Floor, Koinange Street
46.	City Oil Limited	P. O. Box 32078 – 00200, Nairobi	Mayfair Centre, 2nd Floor Ralph Bunche Road, Nairobi
47.	Fast Energy Limited	P. O. Box 22712 – 00400, Nairobi	International House-10th Floor, Mama Ngina Street
48.	Addax	P.O Box 12403-00100, Nairobi	9th West Building, Westlands
49.	Stabex International Ltd	P.O. Box 35227- 00100, Nairobi	5th Floor, Post Bank Building, Market Street, Nairobi
50.	Ainushamsi Energy Limited	P.O Box 5134 - 00506, Nairobi	Geminia Insurance Plaza-7th Floor, Kilimanjaro Avenue, Upperhill
51.	Tiba Oil Company Ltd	P.O Box 16330-00610, Nairobi	Lonrho House, 11th Floor, Standard Street,
52.	Oceanic Oil Limited	P.O Box 42483- 00100, Nairobi	Jubilee House, 2nd Floor, Wabera Street
53.	Amana Petroleum	P.O Box 105093-00101, Nairobi	Tulip House, 5 th Floor, Wing B, Mombasa Road Nairobi
54.	Emkay	P.O Box 1100-00517, Nairobi	Aberdeen Plaza, Off Kitengela Road, Langata
55.	Energy Solution (K) Ltd	P.O Box 90148-80100, Mombasa	Crown Plaza, Msa-Nbi High Way, Kwa Jomvu Area.
56.	Mgs International (K) Ltd	P.O Box 27695-00506, Nairobi	Simco Plaza , Lusaka Road
57.	Jade Petroleum Limited	P.O Box 34725- 00100, Nairobi	6th Floor, Shimmers Plaza Westlands
58.	Intoil Limited	P.O Box 70701-00400, Nairobi	Kimathi Street Nairobi

No.	Oil Company	Postal Address	Physical Location
59.	Tosha Petroleum Ltd	P.O Box 28433-00100, Nairobi	3rd Floor-Geminia Insurance Plaza, Kilimanjaro Avenue, Upperhill
60.	Eco Oil Limited Kenya	P.O Box 27580- 00506, Nairobi	Mayfair Business Centre, Second Floor, Parklands Road Westlands, Nairobi, Kenya.
61.	Kosmoil Petroleum (EA) Ltd	P.O Box 16880-00100, Nairobi.	Panari Sky Center, Mombasa Road
62.	Axon Energy Ltd	P.O. Box 20256-00100, Nairobi	Commodore Office Suites, Suite 5H, Kindaruma Road, Kilimani
63.	Futures Energy Company Ltd	P.O Box 34725-00100, Nairobi	6th Floor, Suite No.1c, Mayfair Centre, Ralph Bunche Road,
64.	Global Petroleum	P.O Box 30621-00100, Nairobi	Baba Ndogo Road, Chandaria Industries Ruaraka

Source: Pipecor (2016)