

**LOGISTICS MANAGEMENT STRATEGY AND THE
PERFORMANCE OF THE PETROLEUM INDUSTRY IN THE EAST
AFRICAN COMMUNITY**

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DECLARATION

I declare to the best of my knowledge that this project is my original work and has not been presented to any other examination body.


Signature:  Date: **November 11, 2021**

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Declaration by the supervisor

This project has been submitted with my approval as The University of Nairobi supervisor.

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I acknowledge the grace of the Almighty God who has kept me alive. I also recognize the valuable academic supervisory of my supervisor Dr. Kennedy Ogollah.

DEDICATION

I dedicate this project to my family and friends for their unending socio and psychological support.

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ACRONYMS AND ABBREVIATIONS

AfDB: African Development Bank

EAC: East African Community

EPRA: Energy and Petroleum Regulatory Authority

ERC: Energy Regulatory Commission

EREA: Energy Regulators Association of East Africa

EWURA: Energy and Water Utilities Regulatory Authority

GDP: Gross Domestic product

KCC: Kenya Cooperative Creameries

Ken Gen: Kenya Electricity Generating Company

KPLC: Kenya Power and Lighting Company

MEM: Ministry of Energy and Mines

MW: Megawatt

PAU: Petroleum of Uganda

RURA: Rwanda Utilities Regulatory Authority

SSEC: South Sudan Electricity Corporation

ABSTRACT

The petroleum industry has a great opportunity of increasing its productivity owing to the increased global demand for oil. However, this increased demand for oil has made the management part of the supply chain and especially logistics more complex. The petroleum industry continues to suffer challenges relating to logistics management that is not present in many other sectors. The purpose of the research was to assess the relationship between logistics management strategy and performance of petroleum industry in the East African Community. The study adopted the adopted the descriptive research design that is used in explaining the current situation regarding the study variables. The target population was six nations in the East African community, namely South Sudan, United Republic of Tanzania Kenya, Republic of Uganda, Rwanda, the Republics of Burundi. Data analysis was based on qualitative approach using Nvivo software version 12. The study found that adoption of effective logistic strategy in the petroleum industry is a critical step seeking to ensure that the vital product is effectively and timely supplied to all regions in the country. The regulators had the mandate of ensuring that petroleum supply companies are capable of achieving goals linked to economic that are short term and be proactive in supplying petroleum products to consumers as required. Effective logistic channels ensure that the vital products are supplied to consumers at timely and at affordable prices. Some of the product based strategies include innovative oil based products targeting various industry sectors like manufacturing and production, automotive and agricultural sector. The petroleum products should be tailored to serve the needs of the customers and environmentally friendly. The study concludes that effective logistic strategy in the petroleum industry is a critical step seeking to ensure that the vital product is effectively and timely supplied to all regions in the country. The study recommends doe coordinated management of the petroleum logistic supply management system supported by technological integration of key parties in the system. The study also recommends collaborative coordination of petroleum supply chain by including all key parties in decision making. The parties include petroleum processing companies, petroleum supply companies, government, retailers and consumers. The East African governments, with the understanding of how logistics management strategy affects performance of the petroleum sector may need to come up with joint polices that harmonize the logistics strategies in the petroleum industry. The policies may be implemented in respective countries through the petroleum regulating associations.

Keywords: *Logistics, Management, Strategy, Petroleum, Community.*

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Technological developments have led to the evolvement of logistics management strategy that performs a very significant role in the supply chain management. Kluyver and Pearce (2016) assert that the utmost purpose of strategy is sustainable and superior performance. Globally, logistics management has played an important role in increasing competitiveness in a business environment that is very dynamic and competitive (Agyabeng-Mensah, Afum & Ahenkorah, 2020). The purpose of logistics management strategy is to reduce the costs, to enhance the operational efficiency and also increase competitiveness. According to Sumah, et al. (2020), logistics management strategy is linked to superior performance in an organization. Logistics management strategy basically aims at reducing costs and improving organizational performance (Rahayu, Purnomo & Malawani, 2020). Therefore, the adoption and implementation of logistics management strategy serves a great role in increasing efficiency and effectiveness of supply chain management, competitiveness, creating added value and ultimately leads to improved overall performance (Tukamuhabwa, Mutebi & Kyomuhendo, 2021).

A number of theories have been developed that aim at explaining the concept of logistics management strategy. Systems theory, transactions theory and coordination theory will form the basis for this study. The transactions theory is concerned with the extra costs that arise when a principal gets an agent to do their work. The theory asserts that the

management outcome in a governance system will be based on the net effect of the external and internal transactions and not on the shareholders (Coase, 1937). The systems theory on the other hand emphasizes on both organizations' relationships and components interdependence and also relationships between organization and environment (Boulding, 1956; von Bertalanffy, 1951). Coordination theory is about coordinated organizational activities for harmonious attainment of goals. It explains that the overall goal should be made into simpler actions and the resources and information shared to all actors in order to achieve the overall goal (Crowston, Rubleske & Howison, 2015).

The petroleum industry has a great opportunity of increasing its productivity owing to the increased global demand for oil. However, this increased demand for oil has made the management part of the supply chain and especially logistics more complex (Waters, 2021). The petroleum industry continues to suffer challenges relating to logistics management that is not present in many other sectors. However, there still exist opportunities for cost saving and increasing the effectiveness of the logistics in the supply chain (Tarei, Chand, Gangadhari & Kumar, 2021). This study therefore sought to examine some of these opportunities by investigating how logistics management strategy and performance of petroleum industry relate.

1.1.1 Logistic Management Strategy

According to Dianova, et al. (2021), logistics is the forward and reverse flow of all information and materials such as cash as well as services. Logistics involves handling of all transportation materials, inventories, processing and distribution of orders and also managing of third-party logistics and reverse logistics (Waters, 2021). Alshawi (2020) defined logistics as the whole process of handling and transporting commodities from the

incoming of raw materials to the end of production process, sales handling and waste disposal. Logistics management on the other hand is defined by Klimecka-Tatar, Ingaldi, and Obrecht (2021) as the process of management of the transportation of commodities, information and capital from the beginning when sourcing raw materials to the end when delivering to consumers. Another definition is that it is the act where the flow of information commodities is planned for implemented and controlled for efficiency and to ensure that customer needs are met (Lapkina, Semenchuk & Shutenko, 2020). Logistics management plays the role of ensuring the right product, right quality products are delivered at the right time and at the right price to the right customer.

Logistics management is a priority for all firms and is measured through effectiveness, efficiency, as well as differentiation (Fugate, Mentzer & Stank, 2016). Management of logistics strategy therefore plays a role in ensuring better service to customer needs (Rodrigues, Stank & Lynch, 2019). Logistic management has significantly gained prominence due to technological developments. Successful logistics management is achieved through integrated activities through cooperation, coordination and sharing of information (Rahayu, et al., 2020). The logistics management strategy for a firm must be based on the satisfaction of customers by ensuring prompt and efficient delivery of goods and products. A company that better meets the needs of the customer stands out competitively and becomes more profitable.

Logistic management strategy can be categorized into three as defined by Bowersox and Bowersox (2014) as process-based strategy, market-based strategy and channel-based

strategy. Process-based strategy emphasizes on the improved efficiency of all logistical activities. Market based strategy on the other hand is concerned with only a limited group of logistical activities carried out by different units and its aim is facilitating sales and logistical coordination. Channel based strategy aims at improving the management of logistical activities of joint supply chain partners.

1.1.2 Industry Performance

According to Vonortas and Auger (2012), a number of indicators can be used to measure industry performance. Industry performance indicators are categorized into first line indicators, second line indicators and third line indicators depending on the breadth of applicability. First line indicators are the most basic measures of industry performance and include productivity and market shares. Second line indicators on the other hand incuse the measures that measure the socio-economic situation of an industry and include unit labor costs, relative prices, rate of investment, capital costs, portfolio investment, foreign direct investment and rate of exposure to foreign competition. Further, third line indicators measure the evolution of the industry and the changes in capabilities and include those related to competition and market structure (Hill & Brennan, 2017).

Productivity can be assessed using two measures that is labor productivity indexes and multifactor productivity indexes (Bartelsman & Doms, 2014). Labor productivity indexes finds the ratio of change in output to change in labor used during production activity while multifactor indexes provide the ratio of change in output to change in a combination of labor, capital and other intermediate outputs used in production process. Multifactor productivity eliminates the limitation of substituting capital and other intermediate inputs

with labor but data requirements increases but is theoretically appropriate while labor productivity is more measurable (Wolff, 2019). Market shares on the other hand provide a measure for competitiveness and indicate the capacity of the industry to win new markets. Market share can be foreign or export market shares or domestic/ import market shares (Hatzichronoglou, 2016). This study is going to focus on the first line indicators of industry performance that is industry productivity measures (labor productivity indexes and multifactor indexes and market shares (export market share and import market share.

1.1.3 The East African Community

This is regional intergovernmental organization consists six partner states namely South Sudan, United Republic of Tanzania Kenya, Republic of Uganda, Rwanda, the Republics of Burundi. The Community is purposed on, among other things, widening and deepening economic, integration to enhance the living standard of its citizens by production of value added, investment and trade among other efforts.

It covers a land area of 2.5 million square kilometers. According to expanse's statistics for 2019, and is home to some 177 million people with a combined GDP of US\$ 193 billion. The section is indeed a well thought out and purposed outfit whose realization has better geopolitical a strategic prospects and importance.

1.1.4 Petroleum Industry in East Africa

The petroleum industry is a global economic sector that involves activities ranging from exploration, extraction, refining, transportation and marketing of products of petroleum.

Majorly, the petroleum industry produces fuel oil and petrol as the main products (Newton, 2015). The petroleum industry also touches on other sectors as it provides the raw material (petroleum) for many products of chemicals such as solvents, fertilizers, pharmaceuticals, pesticides, plastics and synthetic fragrances. The petroleum industry has three major components downstream, upstream and midstream (Stanley, 2018).

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In the EAC, the petroleum industry is constituted of a supply chain that covers the oil in the upstream and exploration of gas midstream development of infrastructure of petroleum and downstream marketing of products of petroleum.

Oil, upstream and gas exploration activities abound which include marketing of acreage exploration, gas management as well as data exploration and its management of petroleum laboratories among responsibilities of attendant.

Upstream activities are the most in expertise. The same are extremely minimal in the expanse. Although there are substantial oil deposits whose extraction has not been a success. Midstream is mainly about development of petroleum infrastructure projects include the establishment of Strategic Petroleum Reserves (SPR), the development of an

offshore floating jetty technically known as a Single Buoy Mooring (SBM) and the crafting of a Petroleum Development Master Plan for the region.

Downstream business segment has the retail networks spread throughout the region, resellers, industrial and government businesses and several innovative products and services including LPG Brands, a series of industrial lubricants and motors, vibrant optional unit that work with non-fuel linked businesses and electronic fuel management systems It is the more visible part of the industry and the end where usage of the petroleum products take place.

The region imports all of its requirements of petroleum products from the Arab Gulf and the Mediterranean. South Sudan actively produces crude oil, but exclusively for export due to incapacity to refine. All refined petroleum products into the region follow the Indian Ocean waterways docking at the ports of Mombasa, Kenya and Dar-es-Salam, Tanzania. The products are then trucked to the end users both locally within Kenya and Tanzania and across borders to the landlocked partner countries. Logistics management and synergy thus becomes a critical issue in this industry in this region so that the importance of logistics management strategy cannot be understated.

1.2 Research Problem

Globally, logistics management has played an important role in increasing competitiveness in a business environment that is very dynamic and competitive (Agyabeng-Mensah, et al., 2020). The purpose of logistics management strategy is to reduce the costs, to enhance the operational efficiency and also increase competitiveness. According to Sumah, et al. (2020), logistics management strategy is linked to superior performance in an organization.

Logistics management strategy basically aims at reducing costs and improving organizational performance (Fugate, Mentzer & Stank, 2016). The petroleum industry has a great opportunity of increasing its productivity owing to the increased global demand for oil. However, this increased demand for oil has made the management part of the supply chain and especially logistics more complex. The petroleum industry continues to suffer challenges relating to logistics management that is not present in many other sectors. This has greatly affected the overall performance of the petroleum industry (Hussain & Khorramshahgol, 2016).

Although there has been research that have been conducted in the sector of logistics management, little has been documented on how logistics management strategy affect performance. Ristovska, Kozuharov and Petkovski (2017) conducted their study in the Republic of Macedonia and found that logistics management practices lead to increased performance. The study however focused on logistics management and not logistics management strategy. The study by Kirui (2017) focused on shipping firms in Mombasa County Kenya and found that logistics management has an effect on organizational performance. Nonetheless, the research done among shipping firms and failed to focus on logistics management strategy. Ajoke et al (2019) investigated logistics management and performance of organization in Nigeria's flour mills and found a useful linkage between the two concepts. The research was however focused on logistics management among flour millers and not in the petroleum industry. Nuahn (2017) further assessed logistics and transportation practices and performance of Kenya Cooperative Creameries and found a positive relationship. However, the study was conducted in the Kenya Cooperative

Creameries and focused on logistics and transportation practices. It is therefore evident that none of the above studies have been conducted to assess logistics management strategy and performance in the petroleum industry and none has focused on the East African Community. This study further addressed logistic management strategy as opposed to just logistic management that provide more understanding on the concept than what is available.

This research bridged the above gap by assessing the relationship between logistics management strategy and performance of petroleum industry in the East African Community. The study was conducted among East African Community member countries and therefore provides additional literature regarding logistics management strategy among the different countries. This research sought to address the question; what is the relationship between logistics management strategy and performance of petroleum industry in the East African Community?

1.3 Research Objective

The objective of this study was to assess the relationship between logistics management strategy and performance of petroleum industry in the East African Community.

1.4 Value of the Study

This investigation proved valuable to a number of parties. First, the research aid scholars and investigators who can use the study findings as a basis for their theoretical framework. Since the information that has been document regarding logistic management strategy and performance has been scanty, this study adds to this existing literature which is useful to

future researchers. Future researchers who undertake studies in this field are also able to compare their findings with the findings of this study and hence make useful conclusions. The study also provides recommendations for future studies which future researchers would adopt for their studies.

The study is also beneficial to the governments in the East African community member states. The governments, through the understanding of how logistics management strategy affects performance of the petroleum sector is able to come up with joint policies that informs how the logistics strategies are implemented in the respective states. The individual governments would also adopt the study findings and come up with regulations and policies through the petroleum regulating associations that ensure optimal performance in the petroleum industry.

Moreover, managers in the petroleum industry players find the study to be useful since they can adopt the study findings to come up with proper strategies that will ensure improved logistics management and ultimate performance of their respective organizations. The study provides recommendations for practice base on the study findings, these organizations would also find it useful to adopt and implement the recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this section, a review of theories linked to the research is provided. The theories discussed here include transaction theory, systems theory and coordination theory. The chapter then discusses some factors that determine firm performance which include assets tangibility, firm size, firm age and ownership structure. A review of recent and related empirical literature is also provided in this chapter. The chapter then provides the conceptual framework and finally summary of literature reviewed.

2.2 Theoretical Review

This investigation was anchored by the following theories; transaction cost theory, systems theory and coordination theory. This subsection discusses the three theories in order to understand their applicability in this study. The section discusses the proponents of the theory and what they argued, criticism and finally the applicability of the theory.

2.2.1 Transaction Cost Theory

This was modelled by Coase (1937) and posits that an organization should adopt an organizational structure that minimizes costs in order to achieve economic efficiency. According to the transaction cost theory, costs will always arise when a firm gets someone else to carry out activities of the firm such as directors who run a firm. Transaction costs

are costs of running an economic system of a firm (Williamson, 1986). These costs that are related with the dealings with the parties external to the organization include; search and information costs that are incurred when searching for suppliers, bargaining and decision costs that are incurred when purchasing the component and policing and enforcing costs incurred when monitoring quality (Coase, 1993). According to Coase (1937), conducting transactions is very costly and involves such activities as negotiating contracts, performance monitoring and conflict resolutions and different costs are incurred for different modes of organizing transactions.

Coase (1937), argued that an organization can reduce transactions and hence costs by internalizing transaction as much as possible to do away with these costs as well as the risks and uncertainties about quality and prices. According to Williamson (1986) however, a firm should compare the transaction costs and the internal costs of production to see which costs are highest. Williamson (1979) argued that transactions that require a huge amount of assets, that have high degree of uncertainty and that occur frequently incur huge costs due to irrationality of actors who sometimes act opportunistically. Benkler (2017) argues the transactions cost theory through technology proposing that firms adopt technology as an alternative that would reduce transactions costs.

A number of critiques have criticized the transaction cost theory. One critique Dow (1987) asserts that bounded rationality as explained in the theory that the rational choices made with respect to governance structures as well as rational choices makes the choices imperfect and therefore argues that it should not be an assumption. In contrast, according

to knowledge-based writers such as March and Simon (1958), all organization theories include bounded rationality and that the different capabilities result in production costs that are also different and that affect the decision to make or to buy. Such decisions make firms use internal resources to carry out activities at costs that are lower than other firms (Kogut & Zander, 1992).

The theory is appropriate to this study in explaining how logistics managers would reduce the transactions costs involved in the logistics process. Reduction of such costs would result in efficiency and eventually improve the performance of the firms. Logistics managers in the petroleum industry in the East African Community should therefore seek to come up with a strategy that would enable them do away with the extra costs of transaction.

2.2.2 Systems Theory

Von Bertalanffy (1951) developed the systems theory. The theory emphasizes on maximization of interactions in an organization which would result in the manifestation of natural systems and democratic governance. According to Von Bertalanffy (1951), a system is a group of components that interact and conserves some set of relations that are identifiable. Systems theory considers an organization an organism and came into use due to the continuous changes in the organizational environments (Ashmos & Huber, 1987).

Generally, systems theory focuses on the social organization as a system, the environment and human participants within the company (Boulding, 1956). According to this theory, in

an organization, systems work to interconnect the inputs and outputs and that the outputs provide the energy that is needed to activate the system again when the inputs are depleted. As such organizations work as open systems and operate in exchanges of materials with their external environment. However according to Emery and Trist (1960) organizations have two components that is the technical component that consist of the machines and the technology and the social component that is composed of human beings.

The critiques of systems theory refer to it as pseudoscience and its aim is nothing more than a holistic way of doing things. However, the critiques ought to understand that the systems theory is a paradigm or a framework and that it would play a very great role in developing actual theories that are scientific. Systems theory is applicable in this study to explain how interactions of the various systems in a petroleum firm can result in better performance.

2.2.3 Coordination Theory

Coordination theory was modelled by Malone and Crowston (1994) and is about finding the dependencies among tasks carried out by different group members and the coordination mechanism they have employed then adopting an alternative coordination mechanism. Such dependencies include resources dependencies when different tasks performed by different members of a group require the same resources and producer consumer dependencies, task subtask relations and simultaneity constraints. Malone and Crowston (1994) work had an interest on computer science and how groupware or software

developed to help groups of people working together might help them better coordinate their activities. Chandler (2012) defined coordination as structuring and facilitating transactions between interdependent group components.

The main assertion of coordination theory is that both dependencies and mechanisms for managing tasks are general and that the given dependency and mechanism are found in a number of organizations. Coordination theory is about coordinated organizational activities for harmonious attainment of goals. It explains that the overall goal should be made into simpler actions and the resources and information shared to all participants for them to gain the all-round desired ambition (Crowston, et al., 2015).

The critiques of coordination theory argue on the fact that the coordination theory is both a law and a theory (Kaplan, 1998). This theory would therefore be applicable in this study to explain the dependencies among various tasks performed in logistics. Various organizational goals can be fulfilled through the same activities and coordinating such activities would result to customer service that is profitable (Huberman, 1988).

2.3 Empirical Review

Globally, Ristovska, Kozuharov and Petkovski (2017) investigated logistics management and performance of Macedonian companies. The study sought to investigate if inventory management, Transportation, warehousing and storage management lead to effectiveness and efficiency in the researched companies. The data was obtained from both high level

and middle level managers from 80 companies through questionnaires. The analysis found that inventory management, warehousing, information management, storage management and transportation management lead to reduced costs, enhance efficiency and increase competitiveness of firms while increasing customer satisfaction.

Another study was conducted by Shang and Marlow (2017) regarding logistic competency and Taiwan manufacturing firms' performance. Specifically, the study intended to examine the impact of logistics competency and logistics performance on performance of a company. The study targeted 1200 manufacturing firms and used structural modelling technique to analyze the data and exploratory design. The data was achieved from presidents of all 1200 manufacturing companies using questionnaires. The study established that logistics competency was indirectly positively related to organizational performance but directly positively related with logistics performance.

Ajoke et al (2019) conducted their study in Nigeria on organizational performance and logistics management. The study assessed the following relationships; transport management and organizational effectiveness, inventory management and organizational productivity and information flow and employee's efficiency. The study adopted descriptive design and collected data from 115 employees of Dangote flour mills that were sampled out by simple random sampling technique. Gathering of data was done using a questionnaire that was structured and examined using frequency tables, regression analysis and Pearson's product moment correlation. The study established that the relationships were useful and remarkable statistically. The study therefore concluded that transport

management enhances organizational effectiveness, inventory management improves organizational productivity and information flow management increases employee's efficiency.

Green, Whitten and Inman (2018) assessed the effect of logistics performance and supply chain logistics strategy on marketing and financial performance in the context of supply chain. The study was carried out among 142 plant and operations high level managers who were sampled from 1461 firms. The data was obtained through questionnaires which were distributed through mails. The study established a chain of effects where supply chain management strategy was found to positively affect logistics performance. Both logistics performance and supply chain management strategy usefully and directly affected performance of marketing. Finally, marketing performance affected financial performance but supply chain management strategy and logistics performance did not have a direct effect on financial performance.

Hajiesmaeili, Rahimi, Jaber and Hosseini (2016) also conducted a study on logistics and organizational performance. Performance was measured through marketing and financial aspects. The target population was the employees of Goldiran electronic company and a questionnaire was applied to gather the relevant data. The collected data was analyzed through confirmatory factor analysis which was applied to test the association that exist between logistics and organizational performance. The study established that supply chain

management strategy directly affects performance of logistics. Improvement of logistics performance ultimately lead to increased market performance.

Locally, Nuahn (2017) assessed the effect of logistics and transportation practices on performance of Kenya Cooperative Creameries using a descriptive research design. The populations of the research were 177 processing firms of KCC which was sampled using a census. A questionnaire was adopted to gather the relevant data which was then examined using inferential and descriptive statistics. The research findings were that a very strong positive linkage exist between logistics and transportation practices and performance and concluded that logistics and transportation practices would result in enhanced performance.

In the study on logistics management and organizational performance, Kirui (2017) sought to assess the performance of shipping firms in Mombasa and how it is influenced inventory management, transportation management and warehousing. The population of the research was all 16 shipping firms located in Mombasa town. The study adopted a census for all the 16 shipping lines and collected data using a questionnaire. The design that was used for the study was descriptive survey while data was examined by both descriptive statistics (frequencies) and inferential statistics (chis square test). Research results were that logistics management practices which includes, warehousing, transportation management and inventory management are statistically significant and positively related with organizational performance.

Similarly, Mangala and Moronge (2019) assessed logistics management among oil marketing companies in Kenya and sought to investigate its effect on performance. The study targeted 1430 employees of 64 downstream oil marketing companies located in Nairobi County and sampled 164 employees from these firms. The study used a questionnaire to collect quantitative and qualitative data. Data analysis was by linear regression and content analysis for quantitative and qualitative data respectively. The study established a relationship between transport management, warehousing management, information management, supplier management and performance.

The same investigation was carried out by Mwangangi (2016) among manufacturing firms in Kenya to investigate logistics management and performance. Descriptive and explanatory designs were adopted and the population comprised all manufacturing firms in Kenya. The study gathered the relevant information from both primary and secondary through questionnaires for primary data and published reports for secondary data. Multiple regression and factor analysis were applied to examine the quantitative data. The results of the investigation were that management of transport , management of flow of information , management of order processing and inventory management are predictors of firm performance and information flow system is a statistically significant moderator.

Mulongo (2017) also conducted a study on strategic logistics practices and performance of Kibos Sugar Company in Kisumu. Specifically, the research assessed reverse logistics, inventory management strategies and strategic warehousing and how they affect performance. A target population of 25 staff of Kibos Sugar Company was applied and stratified simple random sampling used in choosing a sample size of 62 staff. Data was

gathered from staff through questionnaires and secondary data obtained from the company libraries and website. Descriptive and regression analysis were applied to examine the data. Results indicted a useful and statistically remarkable effect of strategic logistics practices on firm performance.

2.4 Summary of Literature Review and Knowledge Gaps

A review of the above studies has indicated that logistics management can have either a negative or positive influence on performance. Studies by Ajoke et al (2019), Hajiesmaeili, Rahimi, Jaberi and Hosseini (2016), Kirui (2017), Mangala and Moronge (2019), Mulongo (2017), Mwangangi (2016), Ristovska, Kozuharov & Petkovski (2017) and Shang and Marlow (2017) Nuahn (2017) found a positive effect on performance. However, in some cases, logistics management did not affect directly the performance of a firm however indirectly affected firm performance through logistics performance (Green, Whitten & Inman 2018; Shang and Marlow (2017)). The above studies however presented gaps that this study seeks to address. Although the study by Mulongo (2017) was on the impact of strategic logistic practices and performance, the context of the study was Kibos Sugar which is a manufacturing industry player and not the petroleum industry. The study by Mwangangi (2016) was also conducted in the manufacturing firms and also did not focus logistics strategy but logistics management. This research seeks to answer the question of the research by assessing the relationship between logistics management strategy and performance of petroleum industry in East African Community.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

In this segment, the technique to be applied while conducting the study is described. It first gives an explanation for the research design that was applied to do the whole research, then the population that targeted and the respondents and how they were selected. The data collection procedure and tools are then discussed and the procedure for gathering the relevant data an examination of data methods.

3.2 Research Design

This is the strategy used by the analyst to integrate various components of the research logically and coherently thereby making sure problem of the research is clearly addressed (Akhtar, 2016). This study used a descriptive research design that is applied in explaining the current situation regarding the study variables (Dulock, 2013). This design is applied to explain what, where and how questions but does not answer the why question.

This design is suitable for this investigation because the researcher is not permitted to manipulate the information obtained regarding the study variables. The study obtained data concerning the current situation of the logistic management strategy and the performance of petroleum industry. The study then sought to examine the linkage between logistics

management strategy and industry performance but did not seek to know why the relationship exists. Therefore, the descriptive research design is appropriate for this study.

3.3 Population of the Study

This is the entire set of units used to make inferences for the study (Lavrakas, 2018). In this study, the target population was the petroleum industry regulators in East African Community member countries. There are six nations in the East African community, namely South Sudan, United Republic of Tanzania Kenya, Republic of Uganda, Rwanda, the Republics of Burundi. Hence, the target population for this study was 6 petroleum industry regulators (EAC, 2020). A case by case study of the six regulatory organizations was carried out.

The study respondents were the managers from the industry regulating organization. These were purposively selected since they are the once involved in direct strategizing and therefore have valid information regarding the logistic management strategy adopted in their organization. The general managers were also used in the study as they receive the reports regarding the performance of the industries and were therefore be appropriate in providing data for the industry performance variable. A census for all the 6 petroleum industry regulators was therefore applied to do the research.

It involves the procedure of obtain data from the selected sources and then measuring it on the targeted variables for research. Data in this study were gathered through an interview.

It was made in a way that questions were asked regarding all the study variables. The interview then conducted through online platforms or over the phone. All the interviewees were asked similar questions

Interviews have the advantage of using less time to collect data, being flexible and can be conducted in private place. Interviews also have the advantage of having better response rate over questionnaires and the interviewer can control the order of the questions while judging about the spontaneity of the respondent. An interviewer can also judge the non-verbal behavior of the respondent.

3.4 Data Analysis

The data was then examined first through analysis of content. The responses provided were analyzed under themes reflecting the study variables. The study examined words, concepts and themes in the respondent's responses and tabulate them under themes reflecting the study variables. Content analysis is advantageous since it allows for both quantitative and qualitative analysis and provides insight into complex human thoughts.

While analyzing the responses provided from the interview, the responses were recorded under themes of the different logistics management strategies. Inferences were made on the correlation between logistic management strategy and industry performance by comparing the responses provided with the performance responses.

Finally, there was comparative analysis of the findings from the six different cases.

The identity of the participants will be kept anonymous by using uniquely generated codes Key Informant Interviews KII1 to KII8. Table 3.1 shows coding system to be used to represent key informant interviewees.

Table 3.1: Coding System

In-depth interviewee	Code
Energy and Petroleum Regulatory Authority Manager	KII 1
Energy and Water Utilities Regulatory Authority Manager	KII 2
South Sudan Electricity Regulation Authority Manager	KII 3
Petroleum of Uganda Manager	KII 4
Ministry of Energy and Mines Manager	KII 5
Rwanda Utilities Regulatory Authority Manager	KII 6

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This section highlights the findings of the primary data that the analysts collected using through in-depth interviews. The results are presented and highlighted according to the objectives of the study. The data collected were analyzed through content analysis and the findings compared research objectives and theories anchoring the investigation. The data collected via in-depth interview was analyzed qualitatively. The method used to analyze data was analysis of content. This was carried out by the analyst by translation of information to written from audio form. As shown by Ryan, Coughlan and Cronin (2009) analysis of content is watchful, systematically and knowing well the written document, with an aim of knowing patterns, means and themes. Krippendorff (2018) stated that this is suitable in getting participants' words in a text

4.2 Participation Rate

Interview occurred at the respective petroleum industry headquarters of the six East Africa countries. The study sought to investigate the logistic management strategy employed by the six East African petroleum regulators. The interview was conducted between the months of July and October 2021 after seeking consent from the regulators. All the six (6) of the study participants/ managing directors of the petroleum industry regulators took part in the interview. This was a 100.0% rate of reaction showing rate of return that is accepted. As shown by Kothari (2004) a participation rate of over 50 percent is satisfactory for analysis.

4.3 Findings of the Study

4.3.1 Kenya

The management, regulation and utilization of petroleum and other forms of energy are under the Energy and Petroleum Regulatory Authority (EPRA). The Energy and Petroleum Regulatory Authority (EPRA) is established as the successor to the Energy Regulatory Commission (ERC) under the Energy Act, 2019. The ERC was previously tasked with regulating electricity, renewable energy, mid and downstream petroleum but under EPRA, they have an additional mandate to regulate upstream petroleum operations as well as coal and coal-bed methane value chain. The body deals with the technical and economic regulation of the electricity, petroleum, renewable and sector of petroleum. The main functions of this body are controlling the generation, importation, transmission, importation supply and distribution and application of electrical energy apart from nuclear facilities licensing; importing, refining, exporting, transporting, storing and selling of its products apart from crude oil. Producing, converting, distributing, supplying, taking part in marketing and using renewable energy, exploring, extracting, producing, processing, transporting, storage exportation, importing as well as sale of coal bed methane gas and other forms of energy; and regulate and control upstream petroleum activities in Kenya according to the law guiding the petroleum sector among other functions (EPRA, 2021).

Logistic strategy is vital in the energy sector, a logistics strategy is a set of guiding principles, attitudes and driving forces that help you coordinate plans, goals and policies between different partners across any supply chain with aim of increasing the supply chain performance. The logistics strategies can be specific to the product, to the country, or even to the customer. The EPRA employs various logistic strategies to find the most efficient

manner of distributing regulating the distribution of energy products. One key logistic strategy employed by EPRA is process based strategy. EPRA issues guidelines that monitor how energy products are efficiently distributed and supplied to consumers in the most effective way. In a KII 1 was quoted saying:

“...Adoption of effective logistic strategy in the petroleum industry is a critical step seeking to ensure that the vital product is effectively and timely supplied to all regions in the country. Process based strategy is one kind of logistic strategy adapted by EPRA to support the effective supply chain in the energy sector”. [KII 1, 2021]

The process strategies are periodically reviewed by EPRA to ensure that they are up to date and able to cope with dynamic business environment of the energy sector. The process strategies are reviewed to ensure that they address the emerging issues like environmental protection, consumer protection and sustainable socioeconomic benefits. In addition to process based strategy, market-based strategy and channel-based strategy are heavily deployed by EPRA. In terms of market based strategy, the marketing and sale of petroleum products remains the core activity that has to be monitored by EPRA. The sale of energy products is conducted by licensed energy distributes like petrol refilling stations, third partly logistics and other certified energy distributors and marketers. In terms of channel based strategy, EPRA work in collaboration with other partners in the energy sector. The key partners in the energy sector in Kenya include the Kenya Electricity Generating Company (KenGen), Kenya Power and Lighting Company (KPLC), the Kenya consumer protection agency and Ministry of Energy. In terms of coordination of sales in the petroleum industry, KII 1 said:

“...the coordination of sales of products in the petroleum industry has to be guided by ethics that include protection of consumers and environment”. [KII 1, 2021]

The coordination mechanism of the sale of petroleum products has to be guided by strategic goals of each of the petroleum company. In addition, sale coordination of petroleum is based on stipulation by the petroleum regulating authority. Accordingly, coordinating sales efforts across business area boundaries are guided by technological and product development strategies laid by the petroleum logistic company. Striving for international coherence among sales companies is the key factor that leads to geographical interdependence among sales units. Bowersox and Bowersox (2014) observed that sales coordination aims at improving the management of logistical activities of joint supply chain partners. Successful sales coordination goes hand in hand with type of marketing channels adopted by a firm. The petroleum companies adopt different type of marketing channels including direct selling, use of intermediaries, dual distribution and reverse channels. Thus, the performance of the energy and petroleum sector in Kenya is anchored on the coordination of the logistics. The performance of the petroleum industry is critical to the economy and the regulator. A nation can come up with wealth from the resources of petroleum by prudent governance of resources of petroleum, therefore it is the model of administration that assists the performance of sector of petroleum in countries that produce oil. According to KII 1 said:

“...The petroleum industry has a great opportunity of increasing its productivity owing to the increased global demand for oil. However, this increased demand for oil has made the management part of the

supply chain and especially logistics more complex making performance of petroleum industries to fluctuate”. [KII 1, 2021]

The chain of supply in the sector of petroleum keeps on changing, and therefore it is very significant to moderate its productivity to understand what to regulate and keep the firm working according to its desired ambitions. Moderating its productivity of a chain of supply will create a feature for the betterment of its performance, that supply chain in the petroleum industry is very dynamic, and thus it is very important to measure its performance to know what to control and keep the company on track of its business objectives. Measuring the performance of a supply chain will create a scope for improvement of its performance. In terms of export market share, Kenya remains the biggest exporter of energy products with significant important from South Sudan and Uganda.

4.3.2 Tanzania

In Tanzania, energy regulation is under the mandate of the Energy and Water Utilities Regulatory Authority (EWURA). This is the sovereign sector authority that was found by the EWURA Act Cap 414-2006 of the laws of Tanzania and its amendments EWURA Act (Amendments No.6 of 2019). It is obliged with economic and technical regulations of the electricity, gases that are natural, water and petroleum. Its roles are; promoting the availability of regulated services to all consumers, review tariff, promoting effective competition and efficiency of economy, licensing, monitoring performance and standards with regards to quality health, environment and safety and protecting the interests of consumers and promoting the availability of regulated services to all consumers

Tanzania has been employing various logistic strategies to streamline the petroleum energy sector. The strategies are geared toward ensuring efficient procurement of regulated goods, services and infrastructure licensing the regulated suppliers, monitoring and enforcing quality of service standards; promoting commercial viability of the regulated suppliers develop and implementing measures to protect consumers' interests. Like in Kenya, logistic strategies in Tanzania revolve around process-based strategy, market-based strategy and channel-based strategy. The process based strategy in Tanzania is undertaken by EWURA with aim of improving the coordination and supply of energy products across the country. In terms of market-based strategy, the sales of energy products includes levies to support the development and maintenance of the energy and petroleum infrastructure in the country. The coordination and distribution of the energy products in Tanzania comprise a multiagency partnership comprising the Ministry of Energy, energy and petroleum product distributors, retailers and consumers. KII 2 said:

“...Logistic management strategy represents a systemic integration of critical business processes which enables oil firms and effectively supply the product across the. This regulator has the mandate of ensuring that petroleum supply companies in Tanzania are able to reach short term economic goals and become proactive supplying petroleum products to consumers as required”. [KII 2, 2021]

The regulation in the supply of petroleum products is an important process in the oil industry. Effective logistic channels ensure that the vital products are supplied to consumers at timely and at affordable prices. Petroleum products are required in all sectors of the economy including production, manufacturing, automotive sectors, agricultural and

service industry among other sectors of the economy. Thus, any delay in the supply of petroleum products in the economy distorts the smooth operations of all sectors in the economy with result being shortages of products and services supply, rising price of fuels and release of substandard oil products to consumers.

The developments of logistics as an enhancer of sustainability arise from both suppliers making a decision about their offering and from firms making changes concerning their own processes of logistics, often seen as the levers that are strategically affecting their position in market. The trend in logistics that are sustainable provides level of unity among all participants in the chain of supply, as they have to work with standards that are rigorous, make decision on the suitable price, and work with regulations that are binding. Thus, effective logistic management strategy, employed by petroleum regulators aims to establish and control the economic, environmental and social risks involved that may arise in case of disruption of petroleum logistic operations. The results concur with Ristovska, Kozuharov and Petkovski (2017) who investigated logistics management and performance of Macedonian oil companies and found that inventory management, warehousing, information management, storage management and transportation management lead to reduced costs, enhance efficiency and increase competitiveness of firms while increasing customer satisfaction. Similarly, Mangala and Moronge (2019) assessing the logistics management among oil marketing companies in Kenya and sought to investigate its effect on performance established a relationship between transport management, warehousing management, information management, supplier management and performance. In addition, the distribution and production locations of petroleum products have to be strategically placed for access by logistic distributors. Strategic location ensures that

petroleum products can be distributed across the country faster and at reduced costs. KII 2 indicated that:

“...the strategic location of petroleum companies is to have them located in areas easily accessible by good network of transport and supply depot”. [KII 2, 2021]

The EWURA in conjunction with other players in the energy sector work collaboratively to ensure that energy products are supplied to the consumers in timely manner. The locations of the energy and petroleum supply companies are required to locate in areas accessible by good infrastructure. The performance of the petroleum energy regulator in Tanzania is pegged on labor productivity, multifactor productivity and market share.

4.3.3 South Sudan

South Sudan became independent in 2011 and this brought changes in its history as country that produces oil. The infrastructure of oil and its capacity of refining is all available in this country's north and instabilities linked to politics has influenced the mining as well as export of the resources of the petroleum. Oil is the backbone of economy of South Sudan as about 60 per cent of GDP in 2010 down from 98 per cent in 2008, and this has had a remarkable effect on the level of national (AfDB, 2013). Since the period of colonialism preceded by the rule of Khartoum, there has not been the transmission of electricity in South Sudan. The only available network is in three isolated distribution systems located in three urban centers of Juba, Wau and Malakal totaling about 15 km of 11 kV lines plus some electrified commercial centers. Capacity installed this nation is 30 MW of which

about 22 MW that are working. The total number of consumers linked to the network is 22,000 people. Per capita electricity consumption 1 - 3 kWh, compared to its neighboring nations it's the lowest.

The South Sudan Electricity Regulation Authority is the regulator of energy. The South Sudan Electricity Corporation (SSEC) is responsible for transmission and distribution of electricity. The nation is targeted member of the region with power pool Despite the reach oil fields, the supply and marketing of energy products in South Sudan is poorly developed. The supply logistics are underdeveloped owing to poor energy infrastructure. The marketing channels are now well developed owing to conflicts that have rocked the country for decades. Moreover, the country still depends on Sudan infrastructure to supply and market its energy products. KII 3 also said:

“...The South Sudan Oil Production and Petroleum Authority has the role of ensuring that oil products produced by the oil processing companies serve the needs of the customers and environmentally friendly. Quality and safe oil products are vital for the growth of the petroleum industry. However, the country lacks good infrastructure to support supply and management of energy products”. [KII 3, 2021]

The underdeveloped energy sector limits the sale of energy products in Sudan. Though the SSEC has been in the front line of streamlining the marketing and sale of South Sudan energy products, the sales channel is relatively ineffective.

KII 3 indicated that:

“...Sales channel strategy can be as simple as identifying potential retailers interested in Refined Petroleum Products, or it may be as complex as developing differentiated products that resellers can modify or include in larger, customized orders”. [KII 3, 2021]

Channel of sales strategy is simple as knowing the retailers that are potential in products of petroleum that are refined also it may be as complex as coming up with commodities that are differentiated that retailers can change or include in orders are customized or large. This a way that commodities like petroleum that is refined are chanelled to a consumer. Commodities may be sold via different types of establishment of retails, providers of services indirectly or directly allowed to take part in in the commodity, or close sectors which see demands of the sales for the commodity among their consumers. Knowing channels that are new and making marketing a priority.

4.3.4 Uganda

The Petroleum Authority of Uganda (PAU)’s work is to control the sector of petroleum in Uganda so as to create a value that is lasting for its people and become a destination of investment. The body is always ensuring that the environment of regulation support the accomplishment of development that is sustainable in the sector of oi resources of gas ans enhance return of investment for the sectors that are private. The important features of monitoring the sector of gas and oil in Uganda are management of resources of petroleum efficiently, making sure there is protection of health and environment during activities as well as monitoring of activities to make sure that the projects are achievable, control of the petroleum of the country, and other linked information; and expanding the country’s

participation in the sector, management of the country's petroleum, and other related data; and growing the participation of Ugandans in the sector. To supply energy products in Uganda, the country relies on process-based strategy, market-based strategy and channel-based strategy. However, these strategies are not well developed.

The Ugandan sector of oil like any other sector of gas and oil is forced to decide on outsourcing that relies on some parameters of economic that in turn influence competitiveness, profit of the company and supply chain sustenance. The PUA admits that strategy of logistics take part in the business especially in minimizing operating costs of supplying the product to consumers. In an effort to gain general goals and get desired goals. The PUA alongside other stakeholders focus at enhancing the efficiency of the energy sector in Uganda. The distinctiveness of logic is not that it is a cost element that can impact profit, strategic position and competitiveness of each company but also coming up with duties for contract with future providers to maintain supply of commodities of petroleum in Uganda. Gasoline and fuel oil are the largest volume of commodities of the industry of gas and oil. The oil products ought to be guided by quality, environmental safety, affordability and needs of the customers. KII 4 also said:

“...Key product based strategies include strategic product design and strategic packaging. In terms of strategic product design, this regulator has been undertaking continuous product improvement with key stakeholders to come up with petroleum products that are competitive and safe to the environment. In terms of strategic packaging, the petroleum companies in Uganda are mandated to package their products in material that are easily transportable, not

inflammable and safe to the consumer and environment.” [KII 5, 2021]

Designers of commodities strategies aid firms to instruct, make and introduce successful commodities commercially and strategically sound for consumers who act as well as live in live in an environment that is internationally competitive. The packing of petroleum products is done in manner to ensure that the packaging is safe to environment and do not harm the consumers. In the sector of petroleum, companies’ reaction to pressure of competition have changed such as differentiation of product by improving the quality of the commodity, services to the consumer and centric marketing. This are done to help the company to get competitive advantage over their competitors and improve future expansion and profit. Customers always go for products of oil that provide them with the value that is great. Considering the stiff completion in the sector of petroleum, the company trading in products of petroleum aim on strategies of the products to renmain relevant. Commodities in this sector are differentiated by image, price, branding, promotions, services, application of additives as well as its variants. The results concur with Muthiani (2018) differentiation of commodities strategies adopted by oil companies in Kenya who indicated that product based strategies in the petroleum industry has to be safe to environment, sensitive to consumer demands and serve the objectives of the organization.

4.3.5 Burundi

The sector of energy in Burundi is under the duty of the government but participation that is private as well as investment have been enhanced using regulations and usin processes of public tendering. The Ministry of Energy and Mines (MEM) is responsible for

developing as well as implementing policies of energy and planning according to the sector and putting in place the policies of energy and co-ordination. This directive of the ministry is answerable for planning of the project by carrying out studies of development of hydroelectric. Burundi's energy sector is influenced by several political, social, economic, technical and environmental factors. These factors have their centers of influence at the supply logistic of energy and petroleum products in Burundi.

The current organization of this energy sector in Burundi is characterized by the involvement of three types of actors whose roles complement each other in the management of the whole chain, from supply to distribution of products. The ministries and institutions responsible for playing the role of the State in the regulation and regulation of the sub-sector, institutions specializing in supporting the implementation of the Government's policy on the subsector; and private operators operating in accordance with the regulations in force. Key players in the energy sector in Burundi include the Ministry in charge of Energy, the Interministerial Committee for the Determination of Prices of Hydrocarbons and The Petroleum Products Storage Company. However, the marketing strategy of the Burundi energy sector is not developed.

The market based strategy adopted by Petroleum Company is vital in the marketing and delivery of petroleum products to customers. In addition, the type of marketing strategy is geared toward the achievement of competitive benefits of the environment. The marketing based strategy is vital to how a petroleum firm knows the dynamic market as well as environments of marketing faced with stiff competition and scarce resources for arrangement of plan that cause business problem solving and achieving competitive benefits. This strategy also knows the significance of controlling the situation in the market

faced by the pressure competition and resources that are limited towards gaining competitive advantage. In an interview with KII 5,

“...The key issues of market-based strategy have been hinged on the design and application of appropriate marketing strategy, ranging from marketing orientation, marketing planning, marketing mix decisions to market differentiation focus and innovation, market segmentation, market targeting and positioning among others to achieve competitive advantage”. [KII 5, 2021]

Market based strategy on the other hand is concerned with only a limited group of logistical activities carried out by different units and its aim is facilitating sales and logistical coordination. Channel based strategy aims at improving the management of logistical activities of joint supply chain partners. Market based strategy is applied by petroleum to development that is enhanced, palliation of resources efficiently and improved firms' capability in order to gain beneficial competition in an environment. In line with the changing business environment, the framework of strategy of marketing has become a significant ways by which the company come up with goals of marketing and use the available resources effectively to attain their goals. It is a way for companies to arrange strategies of marketing according to the dynamic environment of marketing and gain beneficial competition marketing strategically must be used to anchor activities of marketing that affect operations of the market positively. The marketing strategy adopted also focusing at ensuring that a wide area is reached. The wider market scope implies that petroleum products are supplied to many customers enhancing sales made by the petroleum companies. The results concur with Green, Whitten and Inman (2018) who assessed the

effect of logistics performance and supply chain logistics strategy on marketing and financial performance in the context of supply chain and established that logistic marketing adopted by a firm is important in the achievement of competitive advantage. Also a study by Hajiesmaeili, Rahimi, Jaberi and Hosseini (2016) on logistics and organizational performance established that marketing strategy directly affects performance of logistics.

4.3.6 Rwanda

Rwanda Utilities Regulatory Authority (RURA) was first established by the Law n° 39/2001 of 13 September 2001 with the aim of regulating some utilities of public, such as: water, distribution of gas and transport of goods and persons, telecommunications network and/or Telecommunications services, electricity, removal of waste products from residential or business premises, extraction. This was later assessed and replaced by Law N° 09/2013 of 01/03/2013 founding Rwanda Utilities Regulatory Authority (RURA) and examining its organization, power, goal and functioning. This law provides RURA the responsibility to control non-renewable as well as renewable energy, facilities of storage, industrial gases and pipelines.

The body take part in the most significant role between consumers, makers of policies and provided of licenses services. It reports to the Prime Ministers' office and it works with the ministry that is obliged with for each sector that is regulated. Also, there are huge number of instruments of regulatory that allows RURA to play their duties in a given sector to be controlled. RURA places logistic management as key to the growth and performance of energy sector in Rwanda. Logistics management plays the role of ensuring the right product, right quality products are delivered at the right time and at the right price to the

customers. The logistics management strategy for a firm must be based on the satisfaction of customers by ensuring prompt and efficient delivery of goods and products. A company that better meets the needs of the customer stands out competitively and becomes more profitable. The petroleum industry is a global economic sector that involves activities ranging from exploration, extraction, refining, transportation and marketing of petroleum products. Majorly, the petroleum industry produces fuel oil and petrol as the main products. The petroleum industry also touches on other sectors as it provides the raw material (petroleum) for many products of chemicals such as solvents, fertilizers, pharmaceuticals, pesticides, plastics and synthetic fragrances. KII 6 indicated:

“...The Rwanda Utilities Regulatory Authority in conjunction with petroleum logistic companies participate in the in the continuous quality improvement of oil based products with aim of enhancing the competitiveness of the petroleum sector. Some of the product based strategies include innovative oil based products targeting various industry sectors like manufacturing and production, automotive and agricultural sector”. [KII 6, 2021]

Successful logistics management is achieved through integrated activities through cooperation, coordination and sharing of information. The logistics management strategy for a firm must be based on the satisfaction of customers by ensuring prompt and efficient delivery of goods and products. A company that better meets the needs of the customer stands out competitively and becomes more profitable. KII 6 indicated that:

“...the ability to coordinate logistic activities of a petroleum distributor company determines its ability to distribute products on time to consumers”. [KII 6, 2021]

A chain of supply that is effective in coordination causes benefits namely; improved service level, elimination of excess inventory, decreased production cost, increased consumer satisfaction and improve flexibility dealing with fluctuations in demand. The supervision of these various roles is important to improve management of performance supply chain in the petroleum industry. Thus, when companies of petroleum supervise their chain of supply, they are capable of supervising the overstock, reduce the lead times and work with uncertainties of demands, that allows more flexibility and enhance the clients level of services. Thus, the marketing and distribution of petroleum products requires proper coordination right from the petroleum processing industry to supply logistic and finally to consumers. The results concur with Green, Whitten and Inman (2018) who assessed the effect of logistics performance and supply chain logistics strategy on marketing and financial performance in the context of supply chain coordination of logistic activities positively affect logistics performance.

4.4 Comparative Discussion of Findings

Logistics management plays the role of ensuring the right product, right quality products are delivered at the right time and at the right price to the right customer. Successful logistics management is achieved through integrated activities through cooperation, coordination and sharing of information. According to coordination theory, effective logistic management is achievable when firm tasks are carried out by different group

members guided by well-established coordination mechanism. The logistics management strategy for a firm must be based on the satisfaction of customers by ensuring prompt and efficient delivery of goods and products.

The logistic strategies adapted by the six East African Countries vary both in terms of scope of implementation and development. The process-based strategy, market-based strategy and channel-based strategy are relatively developed in Kenya, Uganda and Tanzania. However, in South Sudan and Burundi the logistic strategies are poorly developed in terms of infrastructure. The systems of logistics management strategy adopted by the countries have were noted to affect performance of the petroleum sector. The varying petroleum policy regulations guidelines across the east Africa countries impact the growth and performance of the petroleum sector. The results concur with Ristovska, Kozuharov and Petkovski (2017) who investigated logistics management and performance of Macedonian oil companies and found that inventory management, warehousing, information management, storage management and transportation management lead to reduced costs, enhance efficiency and increase competitiveness of firms while increasing customer satisfaction. According to Transaction Cost Theory an organization should adopt an organizational structure that minimizes costs in order to achieve economic efficiency. Reduction of such costs would result in efficiency and eventually improve the performance of the firms. Similarly, Mangala and Moronge (2019) assessing the logistics management among oil marketing companies in Kenya and sought to investigate its effect on performance established a relationship between transport management, warehousing management, information management, supplier management and performance.

The performance of the petroleum industry is critical to the economy. A nation can make wealth from resources of petroleum through acceptable governance of petroleum and therefore it is the model of administration that helps enhance performance of the sector in those countries producing oil. The chain of supply in the sector of petroleum changes and therefore this is significant to moderate their performance to understand what to regulate and keep the firm working according to its desired ambitions. Moderating the productivity of this chain of supply will cause a scope for enhancing its productivity, that will work with the firm profiting from competitive advantage. The sector of petroleum has a great opportunity of increasing its productivity owing to the increased global demand for oil. However, this increased demand for oil has made the management part of the supply chain and especially logistics more complex making performance of petroleum industries to fluctuate. The results concur with Green, Whitten and Inman (2018) who assessed the effect of logistics performance and supply chain logistics strategy on marketing and financial performance in the context of supply chain and established that logistic marketing adopted by a firm is important in the achievement of competitive advantage. Also a study by Hajiesmaeili, Rahimi, Jaberi and Hosseini (2016) on logistics and organizational performance established that marketing strategy directly affects performance of logistics.

The key performance parameters in the petroleum industry include labor productivity, multifactor productivity, export market share and import market share. Labor productivity indexes finds the ratio of change in output to change in labor used during production activity while multifactor indexes provide the ratio of change in output to change in a combination of labor, capital and other intermediate outputs used in production process. Multifactor productivity eliminates the limitation of substituting capital and other

intermediate inputs with labor but data requirements increases but is theoretically appropriate while labor productivity is more measurable. Market shares on the other hand provide a measure for competitiveness and indicate the capacity of the industry to win new markets. From the interview, it was found that multifactor productivity was highly developed in the Kenyan petroleum industries compared to the peers. In terms of labour productivity, the petroleum industry in Rwanda and Tanzania were relatively established. Export market share was higher in South Sudan compared to other East African countries. Import share was higher in Uganda and Burundi.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The section highlights the summary of study. The chapter also outlines the conclusions, recommendation for policy and practice. In addition, it ends with limitations of the study and suggestions for further study.

5.2 Summary

The purpose of the research was to assess the relationship between logistics management strategy and performance of petroleum industry in the East African Community. The study adopted the descriptive research design that is used in explaining the current situation regarding the study variables. The target population was six nations in the East African community, namely Rwanda, South Sudan, United Republic of Tanzania Kenya, Republic

of Uganda, the Republic of Burundi. Data analysis was based on qualitative approach using Nvivo software version 12.

The matter of act of harmonizing framework as well as policies is known as the most important strength in the East African Community development and is well captured on the agreement of EAC. This is also applied in the sector of petroleum and the agreement includes statements that are explicit on the application of policies that are common for exploitation as well as exploration of fossils in the area. The act of harmonizing the the legal framework and institutional of the sector of the petroleum in the region of EAC is vital to moderate to encourage he act of integration. The Energy Regulators Association of East Africa (EREA) is an association that is multilateral of National Energy regulators of the East Africa Community countries. It was established through a Memorandum of Understanding of 28th May 2008, requiring these National regulatory institutions of the East Africa Countries to work together to promote Energy.

The study found that adoption of effective logistic strategy in the petroleum industry is a critical step in seeking to ensure that the vital product is effectively and timely supplied to all regions in any member country and region at large. The regulators had the mandate of ensuring that petroleum supply are capable to attain goals linked to economy that are short term and be proactive in supplying petroleum products to consumers as required. Effective logistic channels ensure that the vital products are supplied to consumers at timely and at affordable prices.

Some of the product based strategies include innovative oil based products targeting various industry sectors like manufacturing and production, automotive and agricultural sector. The petroleum products should be tailored to serve the needs of the customers and

environmentally friendly. Quality and safe oil products are vital for the growth of the petroleum industry. Key product based strategies include strategic product design and strategic packaging. In terms of strategic product design, this regulator has been undertaking continuous product improvement with key stakeholders to come up with petroleum products that are competitive and safe to the environment. In terms of strategic packaging, the petroleum companies are mandated to package their products in material that are easily transportable, not inflammable and safe to the consumer and environment.

The study also established that the market based strategy adopted by Petroleum Company is vital in the marketing and delivery of petroleum products to customers. The type of marketing strategy is geared toward the achievement of benefits that are competitive in the environment. The marketing based strategy is vital to how a petroleum company knows the dynamic market and environment of marketing faced with intense competition and resources that are scarce for arrangement of strategy that cause problem solving in business and gaining beneficial competitive. The marketing strategy adopted also focusing at ensuring that a wide area is reached. The wider market scope implies that petroleum products are supplied to many customers enhancing sales made by the petroleum companies. Thus, coordination of petroleum logic supply chain has to be efficient and effective. The coordination mechanism of the sale of petroleum products has to be guided by strategic goals of each of the petroleum company.

5.3 Conclusion

The research concludes that effective logistic strategy in the petroleum industry is a critical step seeking to ensure that the vital product is effectively and timely supplied to all regions in the country. The regulators had the mandate of ensuring that petroleum supply

companies are capable of meeting goals linked to economic that are short term and be proactive in supplying petroleum products to consumers as required. Effective logistic channels ensure that the vital products are supplied to consumers at timely and at affordable prices.

5.4 Recommendations

Logistic management forms a core practice in the petroleum industry. The adoption and implementation of logistics management strategy serves a great role in increasing efficiency and effectiveness of supply chain management, competitiveness, creating added value and ultimately leads to improved overall performance. Logistics management strategy aims to reduce the costs, to enhance the operational efficiency and also increase competitiveness. The study recommends doe coordinated management of the petroleum logistic supply management system supported by technological integration of key parties in the system. The study also recommends collaborative coordination of petroleum supply chain by including all key parties in decision making. The parties include petroleum processing companies, petroleum supply companies, government, retailers and consumers. The East African governments, with the understanding of how logistics management strategy affects performance of the petroleum sector may need to come up with joint polices that harmonize the logistics strategies in the petroleum industry. The policies may be implemented in respective countries through the petroleum regulating associations.

5.5 Limitations of the Study

The investigation was coupled with certain limitation. One limitation was cost constraint that involved travelling to each of petroleum regulators in east Africa. However, this was

mitigated by requesting online interviews with managers. Another major limitation was related to methodological issues. The study relied much on qualitative data which made it hard to quantitatively measure the linkage between logistics management strategy and performance of petroleum industry in the East African Community. This because the sample size was relatively small that could now allow the use of quantitative models like regressions.

5.6 Suggestions for Further Research

The research heavily relied on qualitative data that made it hard to quantitatively measure the linkage between logistics management strategy and performance of petroleum. This because the sample size was relatively small that could now allow the use of quantitative models like regressions. Future research may consider conducting a panel study to enable the quantification of result findings. This would help expand the sample size and thus allow in examining the effect of logistics management strategy and performance of petroleum industry in the East African Community.

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APPENDICES

Appendix I: Introductory Letter for Research



UNIVERSITY OF NAIROBI
COLLEGE OF HUMANITIES & SOCIAL SCIENCES
FACULTY OF BUSINESS AND MANAGEMENT SCIENCES

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4 November 2021

P.O. Box 30197
Nairobi, KENYA

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

INTRODUCTORY LETTER FOR RESEARCH
MOLETE K. O – REGISTRATION NO.D61/73042/2009

This is to confirm that the above named is a bona fide student in the Master of Business Administration degree program in this University, He is conducting research on ***"International Business Logistics Management Strategy And The Performance of The Petroleum Industry in The East African Community."***

The purpose of this letter is to kindly request you to assist and facilitate the student with necessary data which forms an integral part of the research project. The information and data required is needed for academic purposes only and will be treated in **Strict-Confidence**.

Your assistance will be highly appreciated.

Thank you.


Jane Muturi

**For: MSc. Human Resource Management Co-Ordinator,
Faculty of Business**

WN/jkm

Appendix II: Interview Guide

Introduction

This to humbly ask your genuine help in giving information to the questions asked on the questionnaire. This is helping on my masters of the University of Nairobi study on the **LOGISTICS MANAGEMENT STRATEGY AND THE PERFORMANCE OF THE PETROLEUM INDUSTRY IN THE EAST AFRICAN COMMUNITY.**

1. Which logistic management strategy has been employed in your industry?

.....

.....

2. Explain the product-based strategies that your industry has adopted

.....

.....

3. How has your industry implemented the following strategies?

- i. Strategic product design

.....

.....

- ii. Strategic packaging

.....

.....

4. Which logistic market-based strategy has your industry implemented?

.....
.....

5. How is coordination and sales enhanced in your industry?

.....
.....

6. What marketing channels does your industry use?

.....
.....

7. How do you ensure you cover a wide area of market?

.....
.....

8. How do you ensure coordination of the jointly performed logistic activities?

.....
.....

9. Are your distribution and production locations strategically placed? Please explain

.....
.....

10. How has your industry been performing lately in terms of;

i. Labor productivity

.....
.....

ii. Multifactor Productivity

.....
.....

iii. Export Market share

.....
.....

iv. Import Market share

.....
.....
.....

Thank You