

**IMPACT OF LOGISTICS AND TRANSPORTATION PRACTICES ON  
PERFORMANCE OF KENYA COOPERATIVE CREAMERIES**

**BY**

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**DECLARATION**

This research project is my original work and has not been presented for any other degree in any other University.

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## **DEDICATION**

To my parents who sacrifices, prayers and continuous support have brought me this far.

My boys, Prosper and Prospect - my sources of strength, your presence in my life have given me the motivation for continuous improvement.

Mommy loves you.

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## **LIST OF ABBREVIATIONS**

KCC	:	The Kenya Cooperative Creameries
KDB	:	The Kenya Dairy Board
Kshs	:	Kenya Shilling
NKCC	:	New Kenya Cooperative Creameries
RBV	:	Resource-based view
SCM	:	Supply Chain Management
TOC	:	Theory of Constraints

## ABSTRACT

Recent changes in business dynamics necessitates organizations to recognize the importance of strategically re-looking at their business processes. This has seen entrepreneurs and managers constantly coming up with strategies aimed at minimizing operational costs and boosting returns. Particularly, logistics and transportation has emerged to have huge potential in enhancing production and distribution of goods and material in firms. Understanding this is very important especially in the milk industry where each and every part of supply chain is essential for the profitability of the entire organization. The study sought to determine the impact of logistics and transportation on operational performance of Kenya Cooperative Creameries (KCC). The company was chosen because it has not been performing well as expected despite its renationalizing in June of 2003 and repurchase to New KCC. The study was guided by the following specific objectives; to establish the level of implementation of logistics and transportation strategies by KCC, to determine the challenges in implementation of logistics and transportation strategies to operations at KCC and to determine the relationship between logistics and transportation and operational performance at KCC. This study adopted the descriptive research design in obtaining information about the study topic. The study's population comprised of all the 17 licensed processing factories of KCC which were selected using a census sampling approach. The data was collected using questionnaire and analysed using descriptive and inferential analysis. The study found out that transport management practices were implemented to a large extent, logistics information practices were implemented to a low extent, and inventory control was implemented to a moderate extent while distribution management was implemented to above average extent. The study further found out that there exist a strong positive relationship between transportation and logistics and performance at KCC. The study also found out that there are challenges that limit the effectiveness of the implementation process with lack of adequate funds being the most experienced. The study thus concludes that increase in the transport and logistics operations would result in enhanced performance. The study thus recommends that the management at KCC conduct an evaluation of these strategies, and how exactly they are implemented. The study also recommends that proper budgetary considerations and plans be considered before undertaking any transportation and logistics practices.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background of the Study

Recent changes in business dynamics necessitate organizations to recognize the importance of strategically re-looking at their business processes (Nyaberi & Mwangangi, 2014). Particularly, every company aims at gaining part in the growing global market and taking advantage of the advancement in technology. Thus the need for supply chain practices in operations has increased immensely as it has been established to impact positively in gaining competitive advantage. Logistics and transportation being among these supply chain practices that enhance proper coordination of activities in organization (Lai *et al.*, 2008).

Management in logistics and transportation is termed as the coordination of activities in a firm aimed at ensuring smooth operations from the initial production processes to the final distribution processes (Fawcet & Magnan, 2001). The positive impact that logistics and transportation has on firms is supported by the available theories such as Theory of Constraints that states integrating the transport and logistics in the supply chain management will ensure all the elements in the firm act as a single unit. While Transactions Theory holds that transport and logistics will improve the organization performance at the milk industries by not only increasing the efficiency but also minimizing the costs in operations.

Logistics and transportation as an organizational strategy has gained increase popularity in the recent past largely due to its benefits in organization (Ballou, 2004). The management of logistics caters for how information and products flow while transportation enhances other supply chain activities such as customer service, procurement and inventory management (Harrison & Hoek, 2008). Transportation on

the other hand ensures efficient product delivery to the final consumer and that the ultimate customer needs are served better and the organization yields maximum returns (Shankar, 2001).

Kenya Cooperative Creameries constitutes one of the leading milk processing firms in Kenya. The company enjoyed monopoly till 1992 when milk marketing was liberalized (Rosemary & Karuti, 2005). This entry of new players into the milk processing industry led to intensified competition leading to diminished returns. This necessitates the management to constantly evaluate its operation strategies, such as transport and logistics management to remain dominant. However, the effects that these strategies have on performance aren't well established by the existing literature. Therefore, establishing the link that exists is necessary to provide possible future directions for coordination and operational performance improvement at KCC.

### **1.1.1 Logistics and Transportation Practices**

Logistics is termed as the part of supply chain management that is involved with flow of information, products and services (Stevenson, 2009). In a similar way, Kiraga (2014) offers the definition of logistics to be planning, implementation and control of procedures for effective supply chain management practices. While transportation on the other hand entails those methods and techniques that ensure timely and well-coordinated delivery of goods (Stock & Lambert, 2001).

Through logistics and transportation, the operational performance is enhanced through reduced cost, reduced capital and improved service delivery (Onyango, 2011). A robust and efficient supply chain enables an organization gain a competitive advantage through superior customer service (Stevenson, 2009). The customers'

demands as well as their feedbacks are well addressed thus increasing their loyalty and dependability on the organization.

The transport and logistics practices that are employed in organizations include transport management, logistics information system, inventory control and distribution management. Transport management refers to the channels through which raw materials and finished products are moved to and from the organization. Logistics information system relates to how information concerning the transactions is both conveyed and stored (Mathur, 2010). Inventory control entails keeping up to date with the current assets to determine whether it is sufficient enough in undertaking the desired operations. Distribution management on the other hand ensures that the specified goods reach the desired destinations within the required time.

Proper coordination of all these activities will translate in improved supply chain performance. However, the concept of transport and logistics is relatively new in Kenya, especially in the milk processing companies. As such, it still has low levels of acceptance in most firms. This is largely due to most managers fearing having to incur additional costs in integration of transport and logistics practices thus tend to prefer the old manual ways. Additionally, the implementation of these strategies proves to be difficult to most firms despite the strategies being well formulated. This brings up challenges which may be solved through closely evaluating the supply chain practices which are best suited for each firm (Shepherd & Günter, 2006).

### **1.1.2 Operational Performance**

Performance refers to the ability of an organization to accomplish the goals and targets it has set. It is the efficiency and effectiveness of the organization (Letting, 2009). Specifically, operational performance of a firm determines how well the

business is doing in wealth creation and acquiring of resources (Komppula, 2004). Operational performance is also termed as the efficiency of an organization with relation to its internal operations such as product quality, productivity and satisfaction of its customers (Terziovski et al., 2007).

Qualitative measures of operational performance may include the non-financial measures such as flexibility, efficiency, responsiveness and quality (Green Jr. et al., 2008). All these aspects aim at accessing how well the organization is able to conduct itself with the available resources in attaining competitive advantage. Enhancing the operational performance is vital in improving the overall performance of the organization. Firms that have low operational performance have been established to struggle in terms of remaining profitable (Vijayaraghavan & Raju, 2008).

There are different perspectives as to the actual performance of dairy industry. One perspective is that the dairy sector worldwide has continued to grow expansively due to the increased global demand for a variety of milk based products (Jayne *et al.*, 2010). While the other perspective is that the sector experiences below expected thresholds of performance (Ranaweera, 2009). This indicates challenges in estimating and calculating the actual performance of these enterprises.

### **1.1.3 Relationship between logistics and transportation practices and operational performance**

Improving on operational performance forms the key priority of all businesses (Narasimhan & Das, 2001). This has seen entrepreneurs and managers constantly coming up with strategies aimed at minimizing operational costs and boosting the returns. Particularly, logistics and transportation has emerged to have huge potential in enhancing production and distribution of goods and material in firms. If well

integrated, it will significantly improve the supply chain performance and enable the firms to attain competitive edge (Narasimhan & Das, 2001).

Despite the hypothesized importance that logistics and transportation has in organizations, the studies conducted have achieved mixed results on its impact on operational performance. While some scholars established that efficiency in logistics and transportations will result in improved returns, others hold that implementation processes always result in additional expenses being incurred and thus a negative influence on operational performance (Baiya, & Kithinji, 2010; Nyaberi & Mwangangi, Kiraga, 2014).

This shows inconsistency in the exact effect that exists. Understanding this is very important especially in the milk industry where each and every part of supply chain is essential for the profitability of the entire organization. Efficiency in managing the supply chain practices may lead to lowering costs and delivering a high volume of the defined services in milk production (Baiya & Kithinji, 2010). Logistics and transportation in particular will ensure timeliness in milk related product delivery.

#### **1.1.4 Kenya Cooperative Creameries (KCC)**

The post-world war one depression led to reduction of milk prices which ultimately forced various creameries that were in existence to merge. This led to the formation of Kenya Cooperative Creameries (KCC) in 1925 with the task of facilitating the production, processing and eventual marketing of the dairy products to insulate the farmers from the impact of the depression (Hornsby, 2013).The cooperative also became an agent through which statutory controls in milk prices could be implemented.



In 1970, KCC however, began to experience trading losses which was characterized by farmers having their payments delayed and irregular too. By late 80s, the cooperative could not cope with the growing demand. Some of the farmers had stopped supplying milk to KCC and had taken up the option of selling their milk to emerging private companies and cooperatives. This further strained KCC financial position (Kaitibie *et al.*, 2008).

The government proceeded to launch an initiative in the dairy sector to bring KCC back to ownership by the public. This led to its renationalizing in June of 2003 and the repurchase was completed in February 2003 and the cooperative was renamed 'New KCC'. After the takeover finalization, a new board was chosen to run the New KCC and revitalize other smaller dairy cooperatives while improving on management (KCC, 2017). The company is keen in efficiency and with the recent introduction of transport and logistics services as an operational strategy, the company is expected to performance even better.

## **1.2 Research Problem**

Operation management practices have drastically change in organizations in the recent past which necessitates organizations to look for alternatives in the strategic operational management (Rotich et al, 2015). Particularly, logistics management has received much attention over the past decade from practitioners and government (Tilokavichai *et al.*, 2012). This is attributed to the fact that the importance of sustainability in logistics and transportation management is critical for competitive advantage. This has seen most organizations yearn to incorporate these strategies in their operations.

KCC has played a vital role in the Economic Revival Strategy for Kenya as the dairy company registered a non-tax estimated profit of half a billion Kenyan shillings in 2007/08 financial year from an astounding eight million shillings' loss in 2005/06 financial year (Ngati, 2009). However, the company has not been performing well as expected despite even renationalizing in June of 2003 and its repurchase in February 2003 to New KCC. Though the company has opted to invest highly on logistics and transportation practices, the exact impact these practices will have on the firm operational performance is not well established by the available literature. Particularly, the studies conducted have shown mixed results on the relationship that exists between the transport and logistics on the measures of firm operational performance.

Lai *et al.* (2008), established a positive relationship between logistics and transportation on returns in the milk industries. Similarly, Kiraga (2014) conducted a study on the transport management practices in the humanitarian organisations in Kenya and found out that performance indicators were enhanced by improvements in the logistics chain. On the contrary, other studies established minimal to no significant relationship between logistics and transportation on the firm performance. Whereas, Baiya and Kithinji (2010) who did a study on transforming the Dairy Sector in Kenya found out that integrating logistics and transportation into the milk industries led to incurring additional expenses which resulted in decreased returns.

These studies have thus left a research gap on examining the impact of logistics and transportation on operational performance, which need to be bridged to ensure that the milk industries in Kenya gain maximally from their logistics and transportation practices. The existing literature thus cannot be adequate enough in establishing the impact of logistics and transportation on operational performance in the Milk

Processing Industry in Kenya due to the inconclusive findings obtained. This study will be an effort to examine these factors and address this gap. The study will aim to answer the research question; what is the impact of logistics and transportation on operational performance at KCC?

### **1.3 Research Objectives**

#### **1.3.1 General Objective**

To determine the impact of logistics and transportation on operational performance of Kenya Cooperative Creameries (KCC).

#### **1.3.2 Specific Objectives**

- i) To establish the level of implementation of logistics and transportation strategies by KCC.
- ii) To determine the challenges in implementation of logistics and transportation strategies to operations at KCC.
- iii) To determine the relationship between logistics and transportation and operational performance at KCC.

### **1.4 Value of the Study**

The research findings will enable the evaluation of the effectiveness of logistics and transportation of KCC and other industries as well. In particular, the study will be beneficial to the management of KCC, government, stakeholders, general public, researchers and scholars.

To the industries management and more so the Milk Processing Industry in Kenya, the study findings will demonstrate the effect of logistics and transportation on firms' profitability. By the management adopting the study findings, they will be able to

improve the performance of the firm. The study will also be of help to the industries and open doors to improvement of productivity and performance through the aid of good supply chain management practices.

The government will benefit from the study, as government agencies will be able to formulate policies that ensure logistics and transportation measures implementation in industries meet the minimum standards that will ensure effective implementation. This will enable maximum gain from the practices.

To the stakeholders and general public, the study will enlighten them on the importance that logistics and transportation has in organizations. This will help them in accepting and helping in its implementation process. The study will also contribute to theory by establishing the impact of logistics and transportation on the performance of organizations. It will thus bridge the gap in existing literature. In addition, the study will suggest areas for future research and hence provide basis for future studies.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter constitutes an overview of the available literature related to transportation and logistics and its impacts on the organizational performance. The chapter is structured into the theoretical framework, the concept of logistics and transportation on operational performance of firms while giving evidence from empirical literature. The chapter concludes with the conceptual framework and the knowledge gap.

### **2.2 Theoretical Foundation**

The study adopts three main theories namely; Resource Based View Theory, Transactions Theory and Theory of Constraints.

#### **2.2.1 Resource-based view (RBV)**

This theory was introduced by Wernerfelt (1984) and later enhanced by Barney (1991). The theory holds that the resources available in a particular organization, both tangible and intangible are the ultimate sources of competitive advantage (Tukamuhabwa, Eyaa & Derek, 2011). According to the theory, these resources should be well aligned such that they complement each other in attaining the desired outcomes. The organization should also yearn to diversify and increase the amount of resources owned to benefit the most.

The theory makes the assumption that each firm has resources that are unique to that firm and if well utilized, will lead to an additional advantage in competition. However, this is not usually the case as the resources are heterogeneous as companies are prone to have their resources being imitated by the rivals. Hence operational

advantage will only be obtained when the available resources are unique and have low possibility of being copied (Karia & Wong, 2011).

With the advancement in logistics and transportation strategies, business operations are well integrated (Seuring *et al.*, 2010). The resources created through integration in logistics and transportation are of higher value than individual firm's resources. The theory's proposition is that companies involved in resource integration are granted with more benefits. The impact that these logistics and transportation strategies will have on the operational performance will however be limited to the available resources in the firm.

### **2.2.2 Theory of Constraints**

The theory of constraints (TOC) was proposed by Goldratt, and has been used in various management disciplines (Cyplick, Hadaś & Domański, 2009). The theory postulates that there exists at least one constraint in any particular organization that hinders it from attaining its set targets and goals. The theory thus acts to not only initiate but also implement breakthrough improvement.

The theory's proposition is that the organizations have difficulties in transporting their products between the involved parties. Hence, integrating the transport and logistics in the supply chain will ensure the partners are integrated. TOC is therefore useful in measuring the influence of transport management, inventory management and order processes on performance of milk processing at the KCC.

### **2.2.3 Transactions Theory**

The Transactions Theory was originally proposed by Williamson (1985). The theory aims at enhancing vertical integration and trust in firms. The theory holds that during

implementation of operations, there are various costs which are incurred. These cost if not well managed may lead to losses being obtained rather than the expected profits (Gunasekaran & Kobu, 2007). Operational efficiency will only be obtained when cost is reduced mainly through assets specificity and minimization of uncertainty (Williamson, 1985).

The theory's importance is that it shows the benefit that may be accrued from incorporating logistics and transportation strategies in organizations. Hence transport and logistics will improve the operational performance at the KCC by not only increasing the efficiency but also minimizing the costs in operations.

### **2.3 Logistics and Transportation Practices**

Logistics and transportation has emerged as one of most used supply management practice is most firms. Logistics activities entail all the production activities undertaken to ensure all the goods are effectively produced while transportation covers how the consumer gets the final product at the right time. These two concepts do not exists as separate entities but ought to be well coordinated as successful transportation will be achieved when the logistics was well managed (Ketchen & Hult, 2007).

Logistics activities are incorporated in organizations mainly to improve the entire supply chain practices. Some organization may lack the required expertise and resources to fully perform the desired logistical activities hence end up outsourcing logistics (Stevenson, 2009). All these are aimed at promoting the supply chain performance at the firm which will results in proved performance.

Transportation plays a connective role of both service delivery and customer satisfaction. The transportation costs that are aimed to be achieved include low cost, timely delivery and increased transportation velocity while making optimum use of the firm's resources. Transport and logistics targets to properly merge and organize all the activities in cost proficient manner (Byrne & Markham, 1991). This is essential in the current business environment whereby any slight mistakes or delays are likely to result to large amount of losses being incurred (Shankar, 2001).

The logistics and transportation practices incorporated in organizations are also through inventory management and distribution management. The inventory control aims to enhance credibility and transparency in the milk operations and transactions. Without proper inventory control, the entire transportation scheme will not achieve its intended purpose (Mathur, 2010). While distribution ensures that the goods reach the specified destinations at the specified time. It also enables tracking and tracing of goods to prevent any loss of goods (Phelan, 2009).

#### **2.4 Operational Performance**

The performance of an organization refers to a detailed analysis of not only the organization's productivity but also the efficiency in conducting operations. This may include all the measures undertaken to ensure that the operation costs are minimized while attaining the organizations objectives (Hackman, 2008). This includes the ability to maximize the available resources, balancing the outputs and inputs and scaling up the efficiency in how the activities are conducted.

Performance measurements are used to gauge the extent to which an organization meets its set targets. Most organizations have been established to evaluate their performance based on cost and efficiency (Jayne et al., 2010). This includes doing all



the expected duties at the best quality whilst incurring the least costs. Through this, the operations costs are minimized and thus the gains accrued are boosted. However, in addition to the financial measures, there are non-financial measures which aim at capturing the entire effectiveness of the firm (Onyango, 2011).

These non-financial measures of performance include profitability, quality responsiveness, effectiveness, flexibility and reliability (Bwari *et al.*, 2016). These are used to determine the how effective the organization is in accomplishing its tasks and operations. Additionally, ratios may also be incorporated in the organizations in controlling the financial affairs. The ratios portray the relationships between two financial balances or calculations in determining how well a certain entity performs.

These measures ensure comprehensive determination of operational performance in all aspects (Neely, 2005). This is important as it enables the management and stakeholders to determine the organization's progress and capability to improve (Skinner, 1971). Therefore, competitive advantage is easily attained giving the organizations an upper hand against its competitors.

## **2.5 Relationship between Logistics and transportation Practices and Operational Performance**

Logistics and transportation involves efficiency in integration of all materials in the supply chain from the initial start point of production to the final destination point of the goods (Özovaci, 2016). The importance that this brings to the firms has been growing with it being recognized in both small and large firms. This is largely because, through logistics and transportation, the already existing production and management practices are enhanced without the need to acquire any additional

resources. Therefore it promotes the efficiency and competitiveness of a particular enterprise (Kahia, 2014).

The key emerging trends influencing logistics and transportation include increased focus to manage the logistics costs and emphasis on execution excellence in the overall supply chain model. This has seen firms irrespective of the industries they belong to invest largely in logistics with the aim of improving their sales (NSDC, 2010). A well-executed logistics and transportation plan will save the organization a lot in terms of cost and loss of valuable resources hence positively influencing the organization performance (Green, Turner, Roberts, Nagendra & Wininger, 2008).

## **2.6 Empirical Literature**

The impact that logistics and transportation has on firms has been supported by several studies conducted. However, the studies show mixed results how logistics and transportation practices affect the performance of an organization.

Hyvönen (2007) conducted a study on the logistics in Finland firms. Descriptive statistics was used in data collection and analysis. The findings of the study were that when information technology is applied to logistics management, it resulted in increased sales and customer satisfaction. The study however, was not able to establish the influence the other aspects of logistic management had on performance other than information technology.

Vijayaraghavan and Raju (2008) conducted a study on the influence of transport and logistics on performance, taking a case of Indian Based Firms. The study analysed a ten year period to determine any significant changes before and after implementation of transport and logistics practices. The findings of the study revealed that there was a

positive relationship between the logistics capabilities and performance of the firms. This study will aim at determining whether the same positive relationship exist in the locally based firms.

Green Jr. et al. (2008) investigated transport and logistics in US manufacturing firms and its impact on the performance. The study was carried out as a cross sectional survey with data being collected by primary means. The results of the study were that efficiency in the transport and logistics practices resulted in improved organizational performance and product innovation. Hence, this increased more innovations in the supply chain. The study however, was not able to determine the nature and strength between the research variables.

Bwari *et al.* (2016) conducted a study on supply chain in East African Breweries Limited. The study adopted descriptive research design. The study targeted all the 1653 employees in EABL. From each stratum, the study took a 10% sample to give a sample size of 165 respondents. The study found out that inventory control, distribution management, transportation management influenced supply chain performance to a great extent but warehousing management services influenced supply chain performance to a moderate extent. The study however did not investigate the relationship that existed between the research variables.

Mugo (2013) investigated logistics and transportation in the mobile service providers in Kenya. The study sampled all the mobile phone companies in Kenya with the descriptive statistics being used in the analysis. The study established that logistics aid the efficiency in the operations through enhancing business activities, reducing aggregate costs and minimizing the business risks and enabling the companies to gain competitive advantage. However, the study's findings may not be used in explaining

the impact that logistics and transportation has in the milk industry due to differing organizational structures with the mobile service providers.

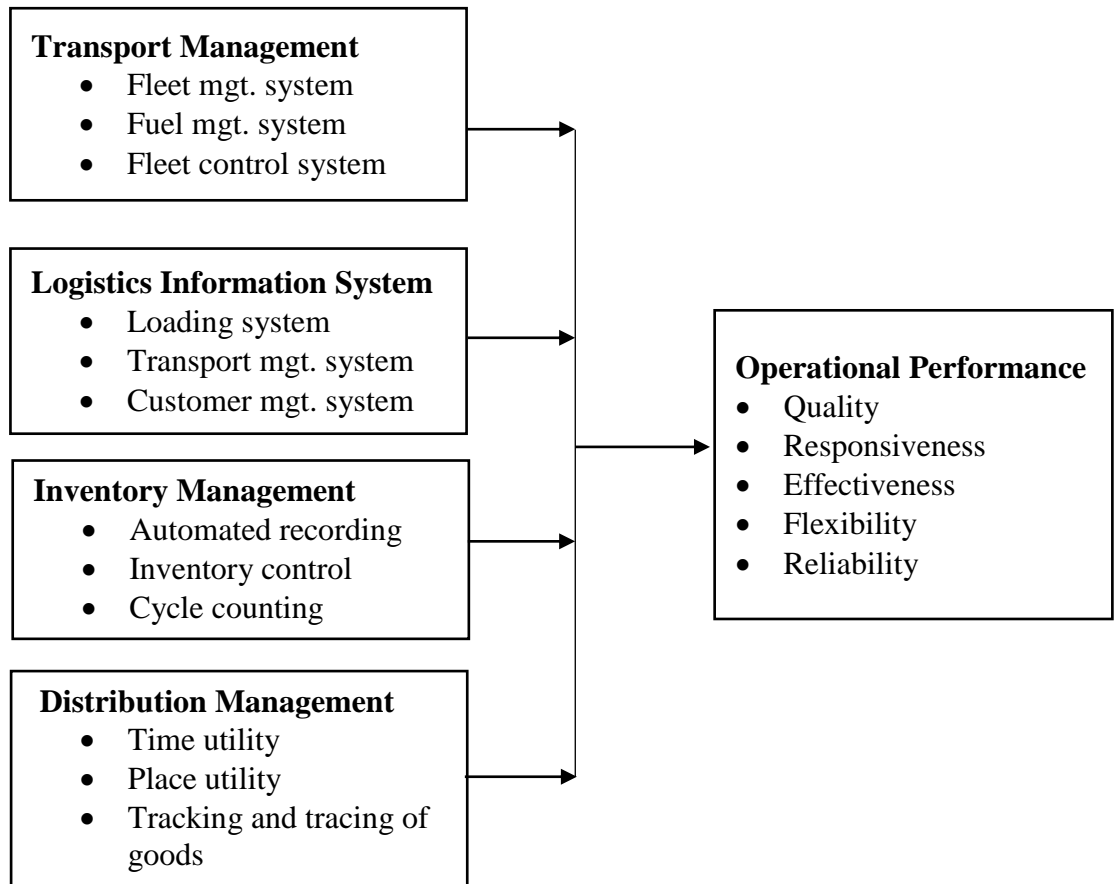
Kiraga (2014) conducted a study on the transportation at the humanitarian organisations in Kenya. The population comprised of all the humanitarian logistics firms that make appeals for assistance and are actually involved in the distribution of the aid received to the intended beneficiaries. The study concluded that any set of performance metrics should represent performance indicators in the logistics chain, include financial and control elements, distinguish between different levels in the organisation, indicate the relationship between logistics functions and be capable for use as a calculation model in order to obtain quantifiable results. The exact transportation strategies were however not identified by the study.

Wathe (2016) investigated the influence of logistics being the independent variables, on the performance of manufacturing firms being the dependent variable. The study used both descriptive and explanatory research designs. A semi-structured questionnaire was administered through e-mail survey and hand delivery. The study found out there is a positive relationship between logistics and the performance of manufacturing companies in Kenya. This current study aims at determining whether the same positive relationship exists in the milk processing industries.

## **2.7 Conceptual Framework**

In this study, the independent variables were the various logistics and transportation measures namely; transport management, logistics information system, inventory management and distribution management while the dependent variable was operational performance. The conceptual frame work is shown in figure 2.1.

**Figure 2.1: Conceptual Framework**



*Source: Researcher*

## **2.8 Research Gap and Summary**

The use of transport and logistics has been supported by the Transactional cost theory, Theory of Constraints and Resource Based Theory among other theories. The studies conducted have also shown great importance accrued from incorporating supply management strategies in operations. However, most studies have been conducted mostly in developed countries where companies have extensively adopted or hired logistics service providers while minimal studies have been conducted locally. Additionally, the available theoretical framework is not sufficient enough in explaining the relationship that exists between the variables.

This shows that despite logistics and transportation as well as operational performances been widely studied, few studies have revealed consistent results on the impact that logistics and transportation has on firms. Also there are few studies on the impact of logistics and transportation on operational performance of milk firms in Kenya. This study seeks to address this knowledge gap by establishing whether transport and logistics affects operational performance by conducting a study of the effect of logistics and transportation on operational performance of KCC.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter explains the research methodology that was used in addressing the research objectives. Specifically, the chapter constitutes the research design, population of the study, the sample design, data collection instruments and the data analysis technique.

### **3.2 Research design**

This study adopted the descriptive research design in obtaining information about the impact of logistics and transportation on operational performance of KCC. Descriptive study is concerned in establishing the way things are and thus aids in determination of the current nature of a phenomenon under study (Cooper and Schindler, 2003). Moreover, the research design enables close association between the variables while ensuring minimal interference by the researcher, hence the most appropriate for the study.

### **3.3 Population**

The study's population comprised of all different licensed processing factories of KCC which are registered under the Company's Act. These include all the 17 New KCC Branches that are located in different parts of the country as per Table 2.1. This population was chosen to enable comparing operational performance among all the New KCC branches. The target population for the study comprised of the senior managers in procurement, operations/production, distribution, marketing and finance staffs of KCC. The population is preferred as they are directly involved with

transportation and logistics at their respective organizations thus the most conversant with the study topic.

A census approach targeted all the 17 different licensed processing factories of KCC. The use of the census approach was justified to enable comprehensive determination of the phenomenon with equal representation of all the study elements. This is also supported by the assertion of Mugenda and Mugenda (2003) who states that a census approach is appropriate where the sample is small and manageable to minimize biasness and ensure completeness in the findings.

### **3.4 Data Collection**

The study used primary data in obtaining information pertaining to logistics and transportation practices at KCC. The data was collected by the use of questionnaires which are preferred due to their efficiency in collecting a wide range of data within a short period of time. The questionnaires were semi-structured having both open ended and close ended questions. This ensured that the data collected were not only quantitative in nature, but also qualitative.

The questionnaires were structured into sections, each addressing a specific research objective. Section A captured the background information of both the organization and the respondents, Section B was on the logistics and transportation practices at KCC, Section C covered the challenges experienced during implementation of the transportation and logistics strategies while Section D highlighted the operational performance at the firm. The respondents were the senior managers in procurement, distribution and finance at KCC.



### 3.5 Data Analysis

Before analysis, data was cleaned to eliminate discrepancies and thereafter, data coded and keyed in to the computer. The data was sorted, tabulated and summarized using descriptive statistics such as means, standard deviations and factor analysis tests. Factor analysis reduced independent variables at the same time indicate the direction and strength of the relationship for each variable. Tables and graphs were used for presentation of findings. Regression model was used to determine the relationship between the variables.

A regression analysis model was used to determine the relationship between logistics and transportation on the operational performance of KCC.

The multiple regression model was in the form of:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

Y = Dependent Variable (Firm Performance)

$\beta_0$  = Constant

$\beta_1, \dots, \beta_4$  = Coefficient of the independent variable

$X_1, X_2, X_3,$  and  $X_4$  are the research control variables and represent:

$X_1$  = Transport Management

$X_2$  = Logistics Information System

$X_3$  = Inventory Management

$X_4$  = Distribution Management

$\epsilon$  = error term

The significance of the model in explaining the relationship that exists between logistics and transportation and operational performance at KCC was tested using the analysis of variance. Additionally, t-tests, and F-tests were conducted at the 95% confidence level. The co-efficient of determination was used to show the nature and direction between the research variables. The analyzed data was presented using tables.

## CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

### 4.1 Introduction

This chapter presents the results of the data that was collected from the study, analysed and interpreted. The overall objective of the study was to determine the impact that logistics and transportation has on the operational performance at KCC. The chapter contains the study response rate, reliability analysis, descriptive analysis and inferential analysis, correlation and regression analysis. The chapter finalizes with the discussion of the key findings.

### 4.2 Response Rate

The population of the study constituted all the 17 licensed processing factories of KCC. As such, 54 questionnaires were issued to the respondents who included the senior managers in procurement, distribution and finance staff of KCC. Forty two (42) of the questionnaires were dully filled and returned. This translates to a response rate of 78% as shown by Table 4.1. This response rate is considered very good to enable the determination of the phenomenon that exists as it is in line with Mugenda and Mugenda (2008) assertion. They state that a response rate of above 75% is recommended for the generalization of the study findings.

**Table 4.1: Response Rate**

<b>Response Rate</b>	<b>Frequency</b>	<b>Percentage</b>
Responded	42	78
Not Responded	12	22
<b>Total</b>	<b>54</b>	<b>100</b>

*Source: Research Data*

### 4.3 Reliability Analysis

Reliability refers to the consistency of results across items in the questionnaire. Cronbach's alpha was used to determine the reliability in measurement of the study variables. The findings obtained are presented in Table 4.2.

**Table 4.2: Reliability Analysis**

<b>Variable</b>	<b>Cronbach's Alpha</b>
Transport Management	0.7626
Logistics Information System	0.8542
Inventory Management	0.7458
Distribution Management	0.7374

*Source: Research Data*

As shown, Transport Management had a Cronbach's Alpha of 0.7626, Logistics Information System Cronbach's Alpha of 0.8542, Inventory Management Cronbach's Alpha of 0.7458 while Distribution Management Cronbach's Alpha of 0.7374. This thus shows that all the variables had Cronbach Alpha greater than 0.7 and hence the research instrument was reliable and valid.

### 4.4 Descriptive Analysis

This section represents the descriptive statistics in relation to the study namely; category of the respondents, gender, age, education, experience and success in implementing logistics and transportation practices.

#### 4.4.1 Gender of Respondent

This section sought to determine the gender of the respondents based. This was important as it enabled determination of whether there was gender balance and diversity among the managers employed. The results are presented in Table 4.3.

**Table 4.3: Gender of the Respondents**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
Male	23	55
Female	19	45
<b>Total</b>	<b>42</b>	<b>100</b>

*Source: Research Data*

The results obtained showed that 55% were male, while the remaining 45% were female. This shows that there was equal representation of both genders, thus no biasness.

#### **4.4.2 Position at KCC**

This section sought to establish the position held by the respondents. This was used as a measure of their involvement with the organization's activities. The results obtained are presented in Table 4. 4.

**Table 4.4: Position of the Respondents**

<b>Position at KCC</b>	<b>Frequency</b>	<b>Percentage</b>
Procurement	20	48
Distribution	8	19
Finance Staff	14	33
<b>Total</b>	<b>42</b>	<b>100</b>

*Source: Research Data*

The findings obtained showed that 48% were in the procurement department, 33% in the finance department while 19% in the finance department. This shows that the respondents were directly involved in the transport and logistics operations, therefore more conversant with the study topic.

#### 4.4.3 Duration at the current position

This section aims at the duration the respondents have been in their current positions as a measure of the experience. The results are presented in Table 4.5.

**Table 4.5: Duration at Current position**

<b>Duration</b>	<b>Frequency</b>	<b>Percentage</b>
Less than 1 year	4	10
1 – 3 years	17	40
4 - 6 years	13	31
More than 6 years	8	19
<b>Total</b>	<b>42</b>	<b>100</b>

*Source: Research Data*

The findings show that 40% had been in that position for a duration of 1 – 3 years, 31% for a duration of 4-6 years, 19% for a duration of more than 6 years, while only 10% for a duration of less than a year. This implies that the respondents had been working at their current positions for a considerable length of time and therefore were knowledgeable of the nature of operations in their respective positions.

#### 4.4.4 Duration worked at KCC

This section aims at determining the duration that the respondents had worked at KCC. This was used in assessing their experience and familiarity in the transport and logistics operations at KCC. The results are shown in Table 4.6.

**Table 4.6: Duration worked at KCC**

<b>Duration</b>	<b>Frequency</b>	<b>Percentage</b>
Less than 1 year	1	2
1 – 3 years	18	43
4 - 6 years	14	33
More than 6 years	9	21
<b>Total</b>	<b>42</b>	<b>100</b>

*Source: Research Data*

The findings show that 43% had worked for a period of 1 – 3 years, 33% for a period of 4-6 years, 21% for a period of more than 6 years and only 2% for less than 1 year. This shows that majority of the respondents had been working at KCC for a long period of time (more than 3 years) hence were well informed on the available practices and performance of the firm.

#### **4.4.5 Academic Background**

This section aims at determining the academic background which was obtained through assessing their highest level of education. The results are shown by Table 4.7.

**Table 4.7: Education Level**

<b>Qualification</b>	<b>Frequency</b>	<b>Percentage</b>
Diploma	6	14
Degree	24	57
Postgraduate degree	12	29
<b>Total</b>	<b>42</b>	<b>100</b>

*Source: Research Data*

The findings indicate that majority of the respondents at 57% had undergraduate degrees, 29% had postgraduate degrees while only 14% had diploma. This therefore shows that the respondents were well qualified for their respective positions.

#### 4.4.6 Success in Supply Chain Implementation

This section aims at determining the extent of success in implementation of supply chain implementation. The results are presented in Table 4.8.

**Table 4.8: Success in Supply Chain Implementation**

<b>Extent</b>	<b>Frequency</b>	<b>Percentage</b>
Not successful	1	2
Somewhat successful	12	29
Successful	21	50
Very successful	8	19
<b>Total</b>	<b>42</b>	<b>100</b>

*Source: Research Data*

The findings show that 50% were successful, 29% were somehow successful, 19% were very successful while only 2% were not successful. This implies that most of the milk processors were able to successfully formulate and implement the transport and logistics operations. However, a great number of the companies also (31%) indicate that the process was yet to be successful. This could be due to the fact that though the strategies have been put in place, the desired outcomes are yet to be achieved.

This relates to Mwilu (2013) who studied the impact SCM practices in Kenya and found out that majority of the practices have been implemented to a moderate extent. The differences in the extent of implementations of the transportation and logistics operation are explained by the Resource Based View Theory. That holds that



organizations have different resources which act as a great determinant on how they implement their practices.

#### **4.5 Transport and Logistics Practices**

The study sought to determine the extent of implementation of the transport and logistics practices at KCC. Specifically, the study investigated four main practices namely; transportation, logistics information system, inventory control and distribution.

To achieve this, a five-point likert scale was used where 4.55, 4.52 and 4.17 = very large extent, 3.93 = large extent, 3.52 = least extent. The findings are presented in the tables below:

##### **4.5.1 Transport Management**

**Table 4.9: Transport Management**

<b>Transport Management</b>	<b>Mean</b>	<b>Std Dev</b>
Departmental Organization	4.55	1.4632
Proper Supplier Coordination Practices	4.52	1.3269
Customer Orientated Transportation Schemes	4.17	1.0492
Vehicle maintenance policy	3.93	0.7503
Fuel Management Practices	3.43	0.6423
Automated Transportation System	3.52	0.7496
<b>Average</b>	<b>4.01</b>	<b>0.9969</b>

*Source: Research Data*

The findings show that departmental organizations, proper supplier coordination practices and customer oriented transportation schemes were implemented to a very large extent as they had means of 4.55, 4.52 and 4.17 respectively. Vehicle maintenance policy was implemented to a large extent with a mean of 3.93 while automated transportation system was implemented least with a mean of 3.52.

This shows though the transport management had enhanced the coordinations with the suppliers, automation was yet to be embraced and fully implemented in the firms. This ought to be improved as automation results in reduction in the transportation costs that are aimed to be achieved include low cost, timely delivery and increased transportation velocity while making optimum use of the firm's resources. Transportation targets to properly merge and organize all the activities in cost proficient manner (Byrne & Markham, 1991).

#### 4.5.2 Logistics Information System

**Table 4.10: Logistics Information System**

<b>Logistics Information System</b>	<b>Mean</b>	<b>Std Dev</b>
Information sharing with the supplier	4.40	1.2333
Better quality of information	3.74	0.6740
Organization uses information to aid business decision making	3.64	0.6767
Organization provides training for employees to utilize information system effectively	3.62	0.6093
Organization invest resources heavily on the infrastructure of an information system	3.48	0.8295
Better quantity of information	3.21	0.4492
Organization trains employees on information system future maintenance support	2.83	0.4053
Use of SCM applications software	2.21	0.4523
<b>Average</b>	<b>3.39</b>	<b>0.6661</b>

*Source: Research Data*

The findings show that Information sharing with the supplier was the most implemented practice with a mean of 4.40. Better quality of information, trainings, and usage of information in aiding business decision making were also implemented to a large extent with a mean of 3.74, 3.62 and 3.64 respectively. However, organization investing resources heavily on the infrastructure of an information system and better quantity of information had moderate extents of adoption with means of 3.48 and 3.21. While the organizations training the employees on utilizing the information system and use of the Supply Chain Software had the least extent of adoption with means of 2.83 and 2.21.

This implies that the use of supply chain management softwares and information system was still a fairly new concept in the firms, reason for its low implementation levels. The information systems have numerous advantages to the organizations through enhancing transparency and accountability. This relates to Hyvönen (2007), who conducted a study on the logistics in Finland firms and established that when information technology when applied to the logistics management, it resulted in increased sales and customer satisfaction.

### 4.5.3 Inventory

**Table 4.11: Inventory**

<b>Inventory</b>	<b>Mean</b>	<b>Std Dev</b>
Regular Inventory Check	4.14	1.0603
Improved inventory control	4.05	0.9301
Automated recording	3.21	0.5746
Improved cycle counting	2.88	0.4385
<b>Average</b>	<b>3.57</b>	<b>0.7508</b>

*Source: Research Data*

The findings show that there were four main inventory management practices in place at KCC. These include regular inventory check, improved inventory control, automated recording and improved cycle counting. Out of which, regular inventory checks and improved inventory control had the largest extent of implementation with means of 4.14 and 4.05. This was followed by automated recording with moderate extent of adoption whilst improved cycling counting had the least extent of implementation with the lowest mean of 2.88.

Therefore implying that the organization used mostly the inventory checker and controls to keep track of their goods. This coincides with Green Jr., et al., (2008) who investigated transport and logistics in US manufacturing firms and its impact on the performance. The results of the study were that efficiency in the inventory control resulted in improved organizational performance and product innovation. However, there was still low implementation of automated recordings in the firms which could be due to the advanced technicalities required.

#### 4.5.4 Distribution Management

**Table 4.12: Distribution Management**

<b>Distribution Management</b>	<b>Mean</b>	<b>Std Dev</b>
Proper tracking and tracing of goods	4.31	1.1713
Real time delivery of goods and services	4.24	1.0638
Scheduling pickups at regional distribution Centers.	3.76	0.8221
There is place utility	3.62	0.5799
Time utility Enhancement	3.60	0.5708
Scheduling drop-offs at regional distribution Centers	3.31	0.7230
Avoidance of product reject/return	3.38	0.5240
<b>Average</b>	<b>3.74</b>	<b>0.7792</b>

*Source: Research Data*

The results obtained show that proper tracking and tracing of goods, and Real time delivery of goods and services had means of 4.31 and 4.24 indicating that they had very large extent of adoption. Scheduling pickups at regional distribution centers, time utility enhancement and place utility also had large extent of adoptions having means of 3.76, 3.60 and 3.62 respectively. While avoidance of product reject/return and scheduling drop-offs at regional distribution centers had moderate extent of implementation with means of 3.38 and 3.31.

This shows that proper tracking and tracing of goods was implemented the most while majority of the other distribution practices had moderate extents of adoption. Kiraga (2014) on his study on the transportation at the humanitarian organizations in Kenya, further states that the organizations should have well aligned distribution management schemes to ensure smooth flow of operations and commodities. Through this the speed and efficiency of goods and raw materials will be significantly enhanced.

#### 4.6 Operational Performance

**Table 4.13: Operational Performance**

<b>Performance</b>	<b>Mean</b>	<b>Std Dev</b>
Better operational efficiency	4.45	1.2121
There is increased sales	4.14	1.1293
Services offered are good	4.12	0.8764
There has been an overall reduction in costs incurred	4.05	1.1942
Improvement of rapid handling of customer complaints	3.67	0.8001
Improvement of customer orders	3.40	0.6102
Customers' requirements are met in terms of quality	3.38	0.5884
Flexibility in operation	2.48	0.3724
<b>Average</b>	<b>3.71</b>	<b>0.8478</b>

*Source: Research Data*

As shown by Table 4.13, in terms of better operational efficiency, offering good services, reduction in costs incurred and increased sales performance were very good having means of 4.45, 4.12, 4.05 and 4.14 respectively. The performance was also good in improvements in handling the customer’s complaints with a mean of 3.67. While improvement in customer orders and meeting the customers’ requirements, the performances were moderate having means of 3.40 and 3.38. However, the performance at these firms was the lowest with regards to flexibility in operations. This thus shows that overall, the performance at KCC was relatively good in meeting the organization’s set objectives as an average mean of 3.71 and standard deviation of 0.8478 was obtained.

#### **4.7 Challenges Experienced in Transport and Logistic Implementation**

The study also aimed at determining as to whether there were any challenges experienced during the implementation process of the transport and logistics practices. The findings are shown by Table 4.14.

**Table 4.14: Challenges Experienced in Transport and Logistic Implementation**

<b>Challenges</b>	<b>Mean</b>	<b>Std Dev</b>
There is an increase in the number and types of intermediaries in the milk supply chain	4.48	1.2053
There is lack of adequate funds to advance from the manual transport and logistics operations	4.40	1.2583
Increased cost in implementation process	4.26	1.0855
The managements are reluctant in venturing into new logistics and transportation practice	4.21	1.0605
There is low acceptance levels for the logistics and transportation practices by the employees		
The employees lack the adequate training to coordinate new logistics practices	4.17	0.9775
	3.45	0.7308

*Source: Research Data*

The results show that there were a number of challenges that were experienced at KCC in the implementation process. This includes, lack of adequate funds with a mean of 4.4, increased number of intermediaries in the supply chain with a mean of 4.48, increased implementation cost with a mean of 4.26, reluctance in venturing in the implementation process with a mean of 4.21 and low acceptance levels with a mean of 4.17. However, employees lacking the adequate training to coordinate new logistics practice were the least experienced challenge with a mean of 3.45. This therefore confirms that there are challenges present which limit the overall implementation process of the transport and logistics practices. To benefit the most out of these transport and logistics practices, these challenges ought to be addressed and appropriate solutions provided.

#### **4.8 Relationship between transportation and logistics and Performance**

This section consists of correlation and regression analysis. The section was meant to achieve both general and specific objectives in establishing the relationship that exists between the study variables.

##### **4.8.1 Correlation Analysis**

Correlation analysis was done to achieve the study specific objectives which were to establish the influence of transport management, logistics information system, inventory and distribution management on operational performance at KCC. The findings are presented in Table 4.15.

**Table 4.15: Correlation analysis**

		ROA	Transport	Logistics	Inventory	Distribution
Transport	Pearson					
Management	Correlation	0.333**	1			
	Sig. (2-tailed)	0.0024				
Logistics						
Information	Pearson					
System	Correlation	0.462	0.145	1		
	Sig. (2-tailed)	0.231	0.173			
Inventory	Pearson					
Management	Correlation	0.658**	0.163	-0.07	1	
	Sig. (2-tailed)	0	0.126	0.51	0.892	
	Pearson					
Distribution	Correlation	0.242**	0.135	0.0948	0.1015	1
	Sig. (2-tailed)	0.0011	0.1283	0.1216	0.1082	
	N	42	42	42	42	42

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source: Research Data**

As shown by Table 4.15, Transport Management has a positive and significant influence on the performance of KCC ( $r(41)=.333$ ,  $P=.0024$ ). This implies that increase in the transportation management practices will greatly improve the performance at the organization. This coincides with Wathe (2016) who investigated the influence of logistics on the performance of manufacturing firms. He found out that the organizations that had well developed transport management practices had



better performance compared to the others. Therefore investing in the transportation management practices will result in positive outcomes being achieved.

The study established that Logistics Information System has a positive influence on the performance of KCC  $r(41)=.462$ ,  $P=.231$ ). However, the effect was not significant at the 5% confidence level. This implies that Logistics Information System alone cannot be used in predicting the changes in the performance at any particular time. It has to be combined with other measures of the transport and logistics practices. This is attributed to the fact that the logistics information systems are yet to gain full approval in most organizations due to the technicalities required.

The findings revealed that Inventory Management has a positive and significant influence on the performance of KCC  $r(41)=.658$ ,  $P=.00$ ). Additionally, compared to the other three variables, the inventory management has the strongest and significant effect on operational performance. The literature identified inventory management as one of the key drivers that influences firm's performance positively (Stevenson, 2009). This is through ensuring consistency, accountability, smooth flow of operations in the firms. The findings of this study support this observation.

The findings also show that Distribution Management has a positive and significant influence on the performance of KCC  $r(41)=.242$ ,  $P=.0011$ ). This implies that increase in the distribution management practices will result in improved returns. Efficient and reliable distribution management is crucial for not only ensuring timely deliveries, but also building trust among the suppliers and consumers. Jayne et al. (2010) argues that distribution management practices should be designed while taking consideration of the organization's structure so as to be successful.

#### 4.8.2 Regression Analysis

The regression analysis was used to establish the relationship that exists between the research variables. The independent variables were the transport and logistics dimensions, while the dependent variable was operational performance at KCC. The regression model summary result obtained is shown by Table 4.16.

**Table 4.16: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763a	0.698	0.632	1.218

a. Predictors: (Constant), Transport Management, Logistics Information System, Inventory Management Distribution Management

*Source: Research Data*

The coefficient of determination R square is 0.698 and R is 0.763. The coefficient of determination R square indicates that 68.9% of the variation in the performance is explained by the logistics and transportation factors. Thus, only 31.1% of the variations in performance are accounted for by other factors not present in the model. The study further conducted an Analysis of Variance to check the significance of the Model. The findings were as shown in Table 4.17.

**Table 4.17: Model ANOVA**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	42.208	4	10.552	17.882	.000
	Residual	19.313	38	0.508		
	Total	61.521	42			

a. Predictors: (Constant),Transport Management, Logistics Information System, Inventory Management Distribution Management

b. Dependent Variable: ROA

*Source: Research Data*

The ANOVA result for regression coefficients indicate that the model is significant at the 95% level of confidence as the pvalue is 0.000 which is less than both 0.01 and 0.05. This shows that the model was highly significant in explaining the relationship that exists between the study variables. Hence, implying a good fit for the model since it shows a significant impact of; Transport Management, Logistics Information System, Inventory Management Distribution Management and Performance. The model coefficients obtained by the study are shown in Table 4.12.

**Table 4.18: Model Coefficients**

	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	T	
(Constant)	8.76	1.881		13.268	0
Transport Management	0.502	0.116	0.471	3.406	0.0145
Logistics Information System	0.4689	0.1378	0.5138	2.7082	0.1764
Inventory Management	0.7358	0.1596	0.5566	2.0104	0.0203
Distribution Management	0.2027	0.1814	0.5994	1.3126	0.2372

*Source: Research Data*

From the analytical model developed show that Transport Management ( $\beta_1 = 0.502$ ,  $P = 0.0145$ ), Logistics Information System ( $\beta_2 = 0.4689$ ,  $P = 0.1764$ ), Inventory Management ( $\beta_3 = 0.7358$ ,  $P = 0.0203$ ) and Distribution Management ( $\beta_4 = 0.2027$ ,  $P = 0.2372$ ) have a positive relation on the performance. Specifically, inventory management had the highest impact while distribution management had the least. This shows that increase in the dimensions of the transportation and logistics practices will cause increased performance. This positive relationship is in line with Stevenson, (2009) who states that robust and efficient transportation and logistics practices

enable an organization to gain a competitive advantage through superior customer service. However only inventory management and transport management were significant at the 5% confidence level as their p-values were less than 0.05. The constant variable was also significant. The predictive model developed by the study is  $Y = 8.76 + 0.502X_1 + 0.4689 X_2 + 0.7358X_3 + 0.2027X_4$  Where; Y is Performance,  $X_1$  is Transport Management,  $X_2$  is Logistics Information System,  $X_3$  is Inventory Management and  $X_4$  is Distribution Management.

#### **4.9 Discussion of findings**

The study sought to determine the extent of implementation of the transport and logistics practices at KCC. Specifically, the study investigated four main practices namely; transportation, logistics information system, inventory control and distribution. With regards to transportation management, all the practices were established to be implemented to a large extent. However, automated transportation system was implemented least. On the extent of implementation of logistics information system, there was low extent of implementation which may be due to information system being a fairly new concept in the firm.

On the extent of implementation of inventory controls, a moderate extent of implementation was obtained. While on the extent to which distribution management was implemented, an above average extent of adoption was established. This implies that the most implemented practice was transportation management while the least was logistics information system. This could be attributed to the fact that having efficient transport management practices is perceived to ensure efficient movement and coordination of goods and commodities, to and fro the organization (Mugo, 2013).

The findings therefore reveal that transportation management practices had the largest extent of adoption. This is an indication that the management placed more emphasis on the movement of goods and commodities to and from the organization. Inventory and distribution management practices had moderate extents of adoption, indicating that they were yet to attain their full potential. Logistics Information System on the other hand had the least extent of adoption in the organization. This implies either neglect to these practices or lack of the required resources to implement it. Owing to the fact that each and every part of the transportation and logistics practice plays a crucial role in how the organization performs it suggested that equal attention should be given to all of them. It is also suggested that frequent evaluations to be undertaken to identify and rectify any shortcomings that may arise from using these practices.

The study also aimed at determining whether there were any challenges experienced during the implementation process of the transport and logistics practices. The findings show that there were a number of challenges that were experienced at KCC in the implementation process. The challenges experienced deter the organizations from fully implementing and benefitting from the transportation and logistics practices. It is in line with Jayne et al. (2010) who conducted a study on the Challenges Confronting Smallholder Agriculture in Sub-Saharan Africa and established that lagging in the technological advancement is a huge barrier to outputs at the sector. The challenges may be solved through closely evaluating the supply chain practices which are best suited for each firm (Shepherd & Günter, 2006).

The study also sought to determine the relationship between logistics and transportation and operational performance at KCC. To achieve this, both correlation and regression analysis were employed. The correlation analysis found out that based on the positive correlations obtained, the variables had a positive impact on the performance. Hence an increase in these transport and logistics operations would result in improved returns. The regression analysis further showed that 68.9% of the variation in the performance may be explained by the logistics and transportation factors in the study. Therefore confirming the strong positive relationship that exists between the research variables which was significant at the 95% level of significance.

The positive relationship is based on a well-executed logistics and transportation plan that will save the organization a lot in terms of cost and loss of valuable resources hence positively influencing the organization performance (Green, Turner, Roberts, Nagendra & Wininger, 2008). The positive effect that transportation and logistics has on performance is supported by the available theories such as Transactions Theory which states that transport and logistics will improve the organization performance at the milk industries by increasing the efficiency and also minimizing the costs in operations. While Theory of Constraints states that integrating the transport and logistics in the supply chain management will ensure all the elements in the firm act as a single unit.

In similar way, Vijayaraghavan and Raju (2008) conducted a study on the influence of transport and logistics on performance, taking a case of Indian Based Firms. Mugo (2013) investigated logistics and transportation in the mobile service providers in Kenya. The study established that logistics aid the efficiency in the operations through enhancing business activities, reducing aggregate costs and minimizing the business risks and enabling the companies to gain competitive advantage. On the contrary, Kiraga (2014) conducted a study on the transportation at the humanitarian organizations in Kenya but was not able to establish any significant relationship among the study variables. While Baiya and Kithinji (2010) found out that integrating logistics and transportation into the milk industries led to incurring additional expenses which resulted in decreased returns.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter summarizes the findings of the study as reported in chapter four upon the data analysis. More specifically, the chapter covers a summary of the findings, conclusion, policy recommendations and lastly suggestion of the areas for further studies.

### **5.2 Summary of the Findings**

The study sought to determine the impact of logistics and transportation on the operational performance of Kenya Cooperative Creameries (KCC). The company was chosen because it has not been performing well as expected despite the renationalizing in June of 2003 and its repurchase to New KCC. The study adopted the descriptive research design in obtaining information about the study topic. The study's population comprised of all the 17 licensed processing factories of KCC which were selected census sampling approach. The data was collected using questionnaire and analysed using descriptive and inferential analysis. The findings obtained are summarized below as per the study's specific objectives.

#### **5.2.1 Level of implementation of logistics and transportation strategies by KCC.**

The study sought to determine the extent of implementation of the transport and logistics practices at KCC. Specifically, the study investigated four main practices namely; transportation, logistics information system, inventory control and distribution management. On transportation management, all the practices were established to be implementing to a large extent at an average mean of 4.01 and standard deviation of 0.9969 was obtained. However, automated transportation system was implemented least which may be due to the technicalities required. On the extent



of implementation of logistics information system, an average mean of 3.39 and standard deviation of 0.6661 were attained. This implies a low extent of implementation which may be due to information system being a fairly new concept in the firm.

On the extent of implementation of inventory controls, a moderate extent of implementation was obtained as the mean average was 3.57 and standard deviation of 0.7508. This shows that though the inventory controls practices were implemented in the organization, full implementation was yet to be achieved. While on the extent to which distribution management was implemented, a mean average of 3.74 and standard deviation of 0.7792 were attained thus showing an above average extent of adoption. These findings therefore reveal that the most implemented practice was transportation management while the least was logistics information system.

### **5.2.2 Challenges in implementation of logistics and transportation strategies to operations at KCC**

The study also aimed at determining whether there were any challenges experienced during the implementation process of the transport and logistics practices. The findings show that there were a number of challenges that were experienced at KCC in the implementation process. The most experienced challenges were inadequate funds and increased implementation cost, while the least experienced was employees lack the adequate training to coordinate new logistics practices. This concurs with Mahulo (2015) who conducted a study on Supply chain management practices and organizational performance among cement companies in Kenya. He found out that lack of proper budgetary allocations to the implementation processes of the supply chain practices acted as a big barrier to their success. To benefit the most out of these

transport and logistics practices, these challenges ought to be addressed and appropriate solutions provided.

### **5.2.3 Relationship between logistics and transportation and operational performance at KCC**

The study also sought to determine the relationship between logistics and transportation and operational performance at KCC. To achieve this, both correlation and regression analysis were employed. The correlation analysis found out that based on the positive correlations obtained the variables had a positive impact on the performance. Hence an increase in these transport and logistics operations would result in improved returns. In addition, all the variables except logistics information system were significant at the 5% confidence level as their p-values were less than 0.5. This shows that at any particular time changes in the transport and logistics practices would result in changes in the performance.

The regression analysis further showed that 68.9% of the variation in the performance may be explained by the logistics and transportation factors in the study. Therefore confirming the strong positive relationship that exists between the research variables which was significant at the 95% level of significance. From the model coefficients obtained, all the variables had positive coefficients with inventory management having the highest impact while distribution management being the least. This thus confirms that transport and logistics does have a positive and significant impact on the performance.

This is because, through these practices, the operational performance is enhanced through reduced cost, reduced capital and improved service delivery (Onyango, 2011). This concurs with Vijayaraghavan and Raju (2008) who established a positive

relationship between the logistics capabilities and performance of the firms. However, Baiya and Kithinji (2010) did a study on transforming the Dairy Sector in Kenya found out that integrating logistics and transportation into the milk industries led to incurring additional expenses which resulted in decreased returns.

### **5.3 Conclusion**

The study found out that transport management practices were implemented to a large extent, logistics information practices were implemented to a low extent, and inventory control was implemented to a moderate extent while distribution management was implemented to above average extent. The study therefore concludes that there are variations among the level of implementation of the practices. Hence the extent of implementation is concluded to base largely on the desired outcomes or the managements' preferences. The study also found out that there are challenges that limit the effectiveness of the implementation process. The study thus concludes that for the implementation to be successful these challenges have to be addressed.

The study further found out that there exist a strong positive relationship between transportation and logistics and operational performance at KCC. The study thus concludes that increase in the transport and logistics operations would result in enhanced operational performance. This is because it results in increased speed and flexibility of transactions and knowledge transfer allow for more efficient coordination, and eventually higher revenues and profits.

#### **5.4 Policy Recommendations**

Based on the study's findings, the study makes various recommendations. The study found out that the KCC had implemented transport and logistics practices to enhance their operations. It is therefore recommended that the other firms adopt these strategies to provide high quality services that will enable them achieve the desired objectives. The study also found out the operational performance at the KCC is predetermined by the transport and logistics strategies employed. The study thus recommends that the management at KCC monitors and evaluates these strategies more often. This will enable them formulate measures to ensure proper implementation and success of these strategies.

The study also established that implementing transport and logistics practices led to incurring of additional costs. The study thus recommends that proper budgetary considerations and plans to be considered before undertaking any process. This will enable determination of the merits and the demerits of that particular process and thus assess its appropriateness. The study further recommends that Policies and legislation bodies should consider the need for facilitating and setting up policies which will enhance implementation process of logistics and transportation strategies in the firm.

The study also recommends that logistics information system be given adequate attention as this strategy is vital to timely customer feedback, information sharing and storage in the organization.

Finally, monitoring and evaluation of all the logistics and transportation practices is crucial to excellent operational performance at KCC. Therefore, management should be keen on the timing and frequency of the evaluation process.

## **5.5 Limitation**

The research was limited by the reluctance among target respondents in giving information. This is due to the delicate nature of the study topic. Particularly, the respondents feared that the information being sought after could be used for other purposes. The problem was countered by assuring the respondents that the information would be used solely for academic purpose. Another limitation was that the top management which comprised the target population of the study wasn't readily accessed. This was due to their busy schedules and long appointment queues. This was also addressed by reaching out to respondents via emails which was more convenient. Additionally, the study was only limited to four practices namely; transport management, logistics information system, inventory management distribution management which may not be exhaustive list of all the transport and logistics practices adopted.

## **5.6 Suggestions for Further Research**

Despite the study being able to address the research questions, few areas are yet to be addressed, requiring further research. To begin with, the study found out that there were challenges faced in the implementation process of these transport and logistics practices. The study thus suggests that further studies to be conducted on how these challenges may be addressed. Also, the study only concentrated on KCC as the case study which may not be an equal representation or provide adequate information on all milk processing companies. The study thus recommends that further studies be undertaken on other firms to enable comparison.

Further research should also be conducted using a different approach in determination of the impact that transportation and logistics has on performance. This could be through using other variables other than those used by the study. This will ensure generalization of the results and fully establishing the phenomenon that exists. Future research could also be conducted using the longitudinal study designs in order to provide a better assessment of how the study variables improve over time.

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## APPENDICES

### Appendix I: Questionnaire

This study aims to gather information regarding the effect of logistics and transportation on organizational performance in the Milk Processing Industry in Kenya; Case of Kenya Cooperative Creameries (KCC). Kindly provide information as honestly as possible. The collected information will be kept as confidential and it will be used only for academic research and the individual data will not be shared with anybody under any circumstances. Please provide your responses by writing or ticking in the spaces provided.

#### PART A: DEMOGRAPHIC INFORMATION

1. What is your position at KCC? .....
2. Which branch of KCC do you work? .....
3. How long have you worked for KCC?
  - a) 1 – 3 years ( )
  - b) 4 - 6 years ( )
  - c) Less than 1 year ( )
  - d) More than 6 years ( )
4. To what extent your company is successful in managing its logistics and transportation in general?
  - a) Not successful ( )
  - b) Not successful at all ( )
  - c) Somewhat successful ( )
  - d) Successful ( )
  - e) Very successful ( )

#### PART B: LOGISTICS AND TRANSPORTATION PRACTICES AT KCC

##### 5. Transport Management

Please indicate to what extent the following transport management practices have been implemented in your organization. Use the scale 1 – 5 where 1 is Very small extent; 2 is small extent, 3 is moderate extent, 4 is great extent and 5 is Very great extent

<b>Transport Management</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Automated Transportation System					
Well-coordinated Fleet Management Practices					
Fuel Management Practices					
Departmental Organization					
Customer Orientated Transportation Schemes					
Proper Supplier Coordination Practices					
Vehicle maintenance policy					

What is your overall opinion on the transport management practices that have been put in place in your organization?

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**Logistics Information System**

To what extent have the following aspects of the adoption of Logistics Information System in the supply chain have been put in place in your department?

<b>Logistics Information System</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Better quality of information					
Information sharing with the supplier					
Organization invest resources heavily on the infrastructure of an information system					
Organization provides training for employees to utilize information system effectively					
Organization trains employees on information system future maintenance support					
Organization uses information to aid business decision making					
Use of SCM applications software					

Compared to the manual information systems, is the logistics information system more effective? Please explain

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 .....

**6. Inventory Management**

Please indicate to what extent the following inventory management practices have been implemented in your organization. Use the scale 1 – 5 where 1 is Very small extent; 2 is small extent, 3 is moderate extent, 4 is great extent and 5 is Very great extent

<b>Inventory Management</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Regular Inventory Check					
Improved inventory control					
Automated recording					
Improved cycle counting					
Communication with customers on emergency situations affecting inventory levels					

Are there any other inventory management practices at KCC?

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 .....

**7. Distribution Management**

Please indicate to what extent the following distribution management practices have been implemented in your organization. Use the scale 1 – 5 where 1 is Very small extent; 2 is small extent, 3 is moderate extent, 4 is great extent and 5 is Very great extent

<b>Distribution Management</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Real time delivery of goods and services					
Avoidance of product reject/return					
Time utility Enhancement					
There is place utility					
Proper tracking and tracing of goods					
Scheduling pickups at regional distribution Centers.					
Scheduling drop-offs at regional distribution Centers					

## **PART C: CHALLENGES IN IMPLEMENTING LOGISTICS AND TRANSPORTATION STRATEGIES AT KCC**

### **8. Challenges Experienced**

This section aims at determining the various challenges experienced in transport and logistics implementation at KCC. Please indicate to what extent the following are experienced using the scale 1 – 5 where 1 is Very small extent; 2 is small extent, 3 is moderate extent, 4 is great extent and 5 is Very great extent

<b>Challenges</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
There is an increase in the number and types of intermediaries in the milk supply chain					
Increased cost in implementation process					
The managements are reluctant in venturing into new logistics and transportation practice					
The employees lack the adequate training to coordinate new logistics practices					
There is lack of adequate funds to advance from the manual transport and logistics operations					
There is low acceptance levels for the logistics and transportation practices by the employees					

Are there any other challenges experienced in transport and logistics implementation at KCC?

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**SECTION D: OPERATIONAL PERFORMANCE AT KCC**

**9. Operational Performance**

Please indicate to what extent the following measure of operational performance at KCC have been enhanced by the use of logistics and transportation. Use the scale 1 – 5 where 1 is Very small extent; 2 is small extent, 3 is moderate extent, 4 is great extent and 5 is Very great extent

<b>Operational Performance</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Efficiency</b>					
Reduced Production costs					
Reduced Distribution costs					
Reduced Transaction cost					
<b>Flexibility</b>					
Customer satisfaction					
Delivery Flexibility					
Exceptional orders					
Volume flexibility					
<b>Responsiveness</b>					
Complaints errors.					
Delays in orders;					
Response time to customer;					
Service level;					
<b>Quality</b>					
Product quality;					
Process quality					

10. Are there any ways in which logistics and transportation enhances operational performance at KCC?

.....  
.....

11. In your own opinion, to what extent would you rate the effectiveness of logistics and transportation in enhancing operational performance at KCC?

- a) Large extent ( )
- b) Moderate extent ( )
- c) Small extent ( )
- d) Very large extent ( )
- e) Very small extent ( )

**END**

## Appendix II: New KCC Licensed Processing Factories

New KCC Branches	Location
Ainabkoi Milk Cooling Plant	Ainabkoi
	Eldama
Eldama Ravine Milk Cooling Plant	Ravine
Eldoret Sales Depot & Processing	Eldoret
Githumu Milk Cooling Plant	Muranga
Kangema Milk Cooling Plant	Kangema
Kapsabet Milk Cooling Plant	Kapsabet
Kilgoris Milk Cooling Plant	Narok
Kisumu Sales Depot	Kisumu
Kitale Processing Factory	Kitale
Lessos Milk Cooling Plant	Nandi
Molo Milk Cooling Plant	Molo
Mombasa Sales Depot & Processing	Mombasa
Nairobi Head Office, Creamery House Sales Depot & Processing Factory	Nairobi
Naivasha Milk Cooling Plant	Naivasha
Nakuru Sales Depot & Milk Cooling Plant	Nakuru
Nanyuki Sales Depot & Milk Cooling Plant	Nanyuki
Sotik Processing Factory	Sotik

*Source; New KCC*