

**MASENO UNIVERSITY**  
**S.G. S. LIBRARY**

**EFFECT OF STRATEGIC LOGISTICS PRACTICES ON PERFORMANCE  
OF KIBOS SUGAR COMPANY, KISUMU, KENYA**

**BY**

**SEBASTIAN MULONGO**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULLFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE IN SUPPLY  
CHAIN MANAGEMENT**

**DEPARTMENT OF MANAGEMENT SCIENCE**

**MASENO UNIVERSITY**

© 2017

## ABSTRACT

Sugar processing industries have in the recent past suffered continuous losses arising from mainly operational challenges attributed to poor planning of logistics management practices. Sugar is an important commodity though the cost of producing sugar in Kenya is higher compared to other producing countries in East Africa and COMESA member states. Report by The Kenya Sugar Industry Strategic plan (2010-2014) indicated the challenges such as irregular factory maintenance, low crushing capacity, low sugar extraction rates, slow adoption of new and appropriate technology, inadequate industrial research and high cost of sugar production, and dilapidated processing equipment. The study aimed at investigating the effects of strategic logistics management on performance of Kibos Sugar Company. The specific objectives of the study were; to establish the effects of reverse logistics on performance of Kibos Sugar Company, to establish the effects of inventory management on performance of Kibos Sugar Company and to establish the effects of strategic warehousing on performance of Kibos Sugar Company. The study was guided by a conceptual framework where independent variable was strategic logistic practices while dependent variable was performance. The research design adopted was a case study using Kibos Sugar Company Limited as the unit of study. The targeted population for the study included 250 staff from selected departments of Kibos Sugar Company. Stratified random sampling technique used to select the predetermined sample size of 62. In testing the validity and reliability of questionnaires, questionnaires were pre-tested outside the sample population using the test re-test method and validity was gauged using pilot study. The data was collected through primary data collection with the use of questionnaires which were administered on personal basis. In addition, secondary data was collected from libraries and the internet. Frequencies and percentage were used to describe individual indicators of strategic logistics practices on performance. The results of the study were presented using tables and graphs. The regression result was  $R^2 = 0.25$  which indicates that overall strategic practices explains 25% of the changes in firm performance,  $R^2 = 0.63$  which indicates that only 6.3% of the dependent variables is explained by the strategic logistic practices in Kibos sugar manufacturing company. Finding of the study revealed that strategic logistic practices, reverse logistic, inventory management and strategic warehousing have significant positive influence on firm performance ( $r=0.06$ ,  $r=0.049$  &  $r=0.019$ ). The study provides ways in which the logistics management systems can be strengthened to become more efficient and effective to an organization, it also helps upcoming companies in the industry in designing logistic strategies that would see their success. The study recommends further study should be conducted to assess the effects of reverse logistic on performance of manufacturing firms in Kenya.

## **CHAPTER ONE: INTRODUCTION**

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

### **1.1 Background of the study**

According to the council of logistic management, Logistic is the process of planning, implementing and controlling the efficient and effective flow of goods, services and related information from point of origin to point of consumption in order to meet customer requirements.

Logistic is the part of supply chain management that plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirements.

Strategic are the decisions or plans designed to impact favorably the key factors on which the desired outcome of an organization, game, system, venture.

Strategic logistic is an organizational management activity that is used to set priorities, focus energy and resources, strengthen operations, ensure that employees and other stakeholders are working towards common goals, establish agreement around intended outcome/ results.

In logistics studies which have adopted a resource-based approach, some have focused on the outcome of logistics such as cost, quality, flexibility, innovation, and delivery while others have focused on the behavior of logistics such as integration, agility, and measurement. Those which have focused on the outcome of logistics have often viewed indices, such as cost or quality, as manufacturing strategies and employed these items as performance indices. In contrast, those which have focused on the behavior of logistics have found that firms' logistics behavior leads to performance difference. Therefore, as far as the logistics and SCM field is concerned, analysis of behavior-based competencies

would appear to be the more appropriate research direction. Additionally, in the last decade, Taiwan, the Republic of China, a small, resource-absent, densely populated island, has become a world-class supply source of electronic hardware products. Nevertheless, how top manufacturing firms can maintain their success in an extremely competitive market is an ongoing question (Anderson, 1988).

Moreover, even though many researchers may have demonstrated that variant logistics capabilities and competencies are positively associated with the effects of logistics competency on performance. It is thus time for the logistics discipline to shift towards greater hypothesis testing, more rigorous data analysis and measurement of validity or reliability. In this regard, structural equation modeling is a rigorous and powerful statistical research technique, which can easily assess validity and reliability and rigorously test the hypotheses. Given the importance of testing for validity when conducting rigorous theoretical research, logistics research needs to more fully utilize this methodological tool. Consequently, in the present study, structural equation modeling will be the main data analysis method applied in the practical analysis (Kahn, 1995).

The efficiency and effectiveness of the logistics operation has a considerable influence not only on the business performance of manufacturers but also on the customer's perception of the quality of the products and services provided by the plant. If inbound material flows from the supplier are erratic, the firm's internal operation will not be able to sustain their production strategies without a high level of safety stock. Similarly, if the flows of finished goods to the customer are unreliable, the firm's customer base will be dissatisfied. Accordingly, logistics is strategically important in many industries as it is central to achieving competitive advantage. Logistics knowledge is highly specialized and so external logistics organizations, i.e. logistics service providers or 3PL's, are often engaged by firms to provide transportation and warehousing services, and sometimes to guide the development and implementation of best practices for both the transportation service itself as well as management of the transportation companies providing the service (Hannon, 2008).



Outsourcing all or part of the logistics function is a popular practice in industry, especially in prominent companies that consider logistics a strategically important function. Firms typically outsource a variety of activities in order to achieve specific objective, which includes reducing costs improving product quality, improving flexibility increasing market coverage, or perhaps to gain ready access to additional capacity. "In most cases the objective of outsourcing is a targeted 20% cost reduction, with actual savings coming from direct labor and variable costs." Yet there is relatively little empirical inquiry into the factors associated with successful cost reduction when outsourcing logistics. Our purpose is to better understand the conditions under which logistics outsourcing is beneficial or detrimental to plant cost performance on a key dimension, the cost of goods sold (Koufteros, 2005).

## **1.2 Statement of the Problem**

Sugar is an important commodity and there are numerous challenges and opportunities that exist in Africa as a whole for this industry. Most Sub-Saharan Africa countries still heavily rely in the agricultural sector as a source of economic livelihood for most of its population. Hence, in an effort to improve the sector, various interventions have been adopted. The Cost of producing sugar in Kenya is higher than those in other producing countries in East Africa and COMESA member states. Report by The Kenya Sugar Industry Strategic plan (2010-2014) indicated the challenges such as irregular factory maintenance, low crushing capacity, low sugar extraction rates, slow adoption of new and appropriate technology, inadequate industrial research and high cost of sugar production, narrow product base, dilapidated processing equipment, inefficient factory operations and wastage in cane yard. Kibos Sugar Company has been experiencing low sugar output and decreased profits which have been blamed on poor logistics management and fall in cane supply. Other scholars have tried to address the problem in the past by researching on the challenges facing sugar industries in Kenya. However, there has been knowledge gap as to whether these factors can affect organizational performance. This study opted to fill this gap by assessing how strategic logistics management influences the performance of Kibos Sugar Company.

### **1.3 Objectives of the study**

The general objective of this study was to investigate the effect of strategic logistics practices on performance of Kibos Sugar Company.

#### **The specific objectives were:**

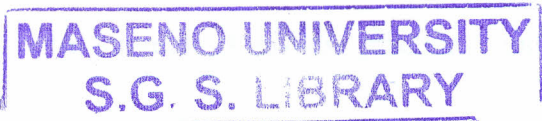
- i. To establish the effects of reverse logistics on performance of Kibos Sugar Company.
- ii. To establish the effects of inventory management on performance of Kibos Sugar Company.
- iii. To establish the effects of strategic warehousing on performance of Kibos Sugar Company.

### **1.4 Research questions**

- i. What is the influence of reverse logistics affect performance of Kibos Sugar Company?
- ii. What is the influence of inventory management affect performance of Kibos Sugar Company?
- iii. What is the influence of strategic warehousing affect performance of Kibos Sugar Company?

### **1.5 Significance of the study**

The study would help the management of Kibos Sugar Company with information about the needs and expectations of the customers. The study will also motivate employees in the organization in contributing some information which may help in developing the organization. The study is aimed at providing ways in which the logistics management systems can be strengthened to become more efficient and effective. This study will also help upcoming companies in the industry with its outcome in designing strategies that would see their success.



**1.6 Scope of the study**

The study was to investigate the effect of strategic logistics practices on the performance of manufacturing industries, with a reference to Kibos Sugar Company, Kisumu. The Company is located next to Kibos Main Prison 5 km away from the CBD of Kisumu town, Kisumu East Sub-County in Kisumu County. The study was done from

September 2016 to December 2016. The study established the influence of reverse logistics on performance of Kibos Sugar Company, established the influence of inventory management on performance of Kibos Sugar Company and established

The influence of strategic warehousing on performance of Kibos Sugar Company

**1.7 Conceptual Frame work**

This is a diagrammatical representation which conceptualizes the relationship between variables; independent and dependent variables.

**Independent Variable**

**Dependent Variable**

**Strategic logistics practices Operational Performance**

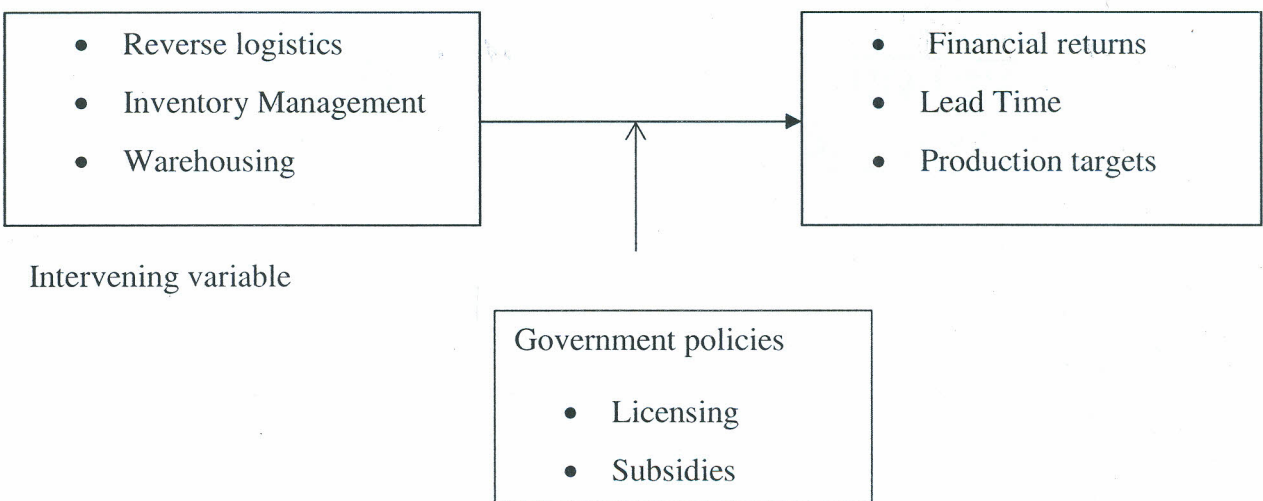


Figure 1.1: The relationship between strategic logistics practices and operational performance

MASENO  
S.G.S.

Source: self-conceptualization {2017}

This is a figure that conceptualizes the relationship between the independent and Dependent variables as follows: reverse logistic which affect performance, inventory management which affect performance and strategic warehousing which affect performance of the organization.

MASENO UNIVERSITY  
S.G. S. LIBRARY



## CHAPTER TWO: LITERATURE REVIEW

This chapter discusses theoretical literature review, empirical literature review and gaps to be filled and summary.

### 2.1 Theoretical literature review

The efficiency and effectiveness of the logistics operation has a considerable influence not only on the business performance of manufacturers but also on the customer's perception of the quality of the products and services provided by the plant. If inbound material flows from the supplier are erratic, the firm's internal operation will not be able to sustain their production strategies without a high level of safety stock. Similarly, if the flows of finished goods to the customer are unreliable, the firm's customer base will be dissatisfied. Accordingly, logistics is strategically important in many industries as it is central to achieving competitive advantage. Logistics knowledge is highly specialized and so external logistics organizations, i.e. logistics service providers or 3PL's, are often engaged by firms to provide transportation and warehousing services, and sometimes to guide the development and implementation of best practices for both the transportation service itself as well as management of the transportation companies providing the service (Hannon, 2008).

Outsourcing all or part of the logistics function is a popular practice in industry, especially in prominent companies that consider logistics a strategically important function. It has been estimated that over 70% of these firms use a 3PL to manage at least a portion of their logistics activities. Firms typically outsource a variety of activities in order to achieve specific objective, which includes reducing costs improving product quality, improving flexibility increasing market coverage, or perhaps to gain ready access to additional capacity. "In most cases the objective of outsourcing is a targeted 20% cost reduction, with actual savings coming from direct labor and variable costs." Yet there is relatively little empirical inquiry into the factors associated with successful cost reduction when outsourcing logistics. Our purpose is to better understand the conditions under which logistics outsourcing is beneficial or detrimental to plant cost performance on a key dimension, the cost of goods sold (The Council of Logistics Management, 2013)

### **2.1.1 Reverse logistics and performance**

For a company that accepts return as a strategy to gain customer loyalty through repeat buyers, reverse logistics is a fundamental process to recover re-usable for gaining additional revenue which inherently reduces cost of goods. Other than completing the supply chain loop so that products are handled at the benefit of environment, it is also important that products are recovered to cater to demand of after sales services so that cost of purchasing parts can be minimized (Rogers et al., 2010). According to Yang et al, (2011), the cost, knowledge and inconsistent inputs are factors that inhibit the development of reverse logistics among consumer electronics manufacturers in environmental and operational performance, such as environmental regulatory compliance, improved customer relations, assets recovery, cost containment, improved profitability and reduced inventory investment (Abdullah, 2014).

Reverse logistics requires integration of various business functions especially product design department to maximize the value of recoverable. As sales growth is not applicable to disposal, only environmental outcome and profitability as performance indicators are measured, because disposal is a cost-oriented activity that reflects firms' environmental responsibility (Khor and Udin, 2012). Managing new and used returns allows an organization to influence environmental well-being but at the same time, provides an opportunity for the organization to recover some cost of inventories. Manufacturers not only create demand for cleaner products in existing and secondary market but also develop long term consumer relationship that sets barriers for competitors. Moreover, some companies are utilizing online business portal, such as eBay and Amazon to build the market for remanufactured products across the globe (Achieng, 2011).

Research on organizational structure has also indicated that logistics innovations and capabilities play an important role in business performance of firms. Thus, efficiency and effectiveness of reverse logistics may have important impacts on firms' strategic performance in terms of customer satisfaction, cost reduction, and improved profitability. It has occurred in practice because of firms' changes of awareness, strategies, and resource

investments for environmentally oriented reverse logistics management and customer services in doing business (Aino, 2010).

### **2.1.2 Inventory management and performance**

The supply, production and distribution system were organized according to separate functions that were moderate to the different departments of a firm. The policies and practices of the different areas were elevating the departmental objectives without evaluating the consequence that they would have in other parts of the system. While each system took resolutions that were the best ones for themselves, the general objectives of the company were prejudiced. Arnold (1999) mentions the Physical supply Planning and production Control Physical distribution 3following instance; the transport department could send the largest possible amounts, to maximize the transport costs. However, that procedure made the inventory grow and as a result higher inventory and shipment costs (Badenhorst, 2013).

The logistics use planning, organization and effective movement control of activities and storage to provide the best service level for the customers. The logistics organizes the acquisition, movement and materials storage in the attempt of maximization of the profitability. Therefore, it understands that should be provided to a customer the best service level to maximize the profitability, the lowest production costs, the smallest investment in inventory and the smallest distribution costs. Arnold (1999) affirms that the company just produces enough any time to assist exactly to the demand. In some section, this is the only strategy that can be preceded. The postal service needs to process correspondences during the rush of Christmas and also in periods of small demand. Restaurants have to serve meals when the customers want. This kind of company cannot store or to keep their products and services and they should be capable to assist to the demand when it happens. In these cases, the company needs to have enough capacity to respond to the peak of the demand. In this point, it is important that the managers apply strategic actions in the sense to enlarge and to reduce their capacities rapidly in response to the demand. Following this strategy, they can obtain significant advantages, because the inventory can be in minimum levels. The goods are produced when the demand happens

and they are not kept. Therefore, the pertinent costs to inventory storage are avoided (Bowersox, 2000).

The Just in Time (JIT) contemplated a set of manufacture procedures, purchases and distribution used by Toyota to restructure its productive system in the 40's decade-end. Just in Time observes reaction logic to the demand. The philosophy or the basic mechanics is that the work cannot continue until a need in the following station is identified. The JIT Logic works appropriately when stay inventory among the work stations as protection against the unbalanced inventory and the processing time variability. The great success of Toyota in the reduction of inventory costs, parallel to the production of vehicles with high quality, with short time of response, it formed the base for defense of Just in Time among academics and practical. There are good reasons to maintain and to reduce inventory. Reduce inventory is justified; therefore to growing diversification of the line of products of the companies it demands that they uses their financial resources in the possible most productive way. On the other hand, it is necessary to maintain inventory, because restrictions exist in the chain of provisioning, between the installed working power and market demand, they persist the causes of the uncertainties and flotation in the offer and in the demand, the lack of materials can commit the service, reducing the revenue, and allowing the customer to seek alternatives in the competition. It understands each other, therefore, that the decision to increase or to reduce inventory is a dilemma that will always implicate in service and the readiness of the product inside the period of delivery (Carter, 1996).

According to Gasnier (2002) when it is failed in the administration of this dilemma there is an "unbalanced inventory", in other words, it is noticed that "have what we didn't need and we don't have what we needed", so there aren't sales. Gasnier (2002) still presents that a simple method to identify the inventory unbalanced consists of the evaluation of the correlation coefficient between the report of Revenue and the balance of the working capital in inventory of that family of items. If this coefficient is less than 0.80, so there are indications that the inventory is unbalanced. What can affect the profitability of a firm is the agility with that it adjusts the inventory to respond to the changes of the market, the higher profits can be related to the speed of the change and reaction observed in the

inventory management. Therefore, the companies that increase the inventory level quickly to respond to the largest demand, or they reduce them when the demand decreases, they can be more profitable (Chopra and Meindl, 2004).

### **2.1.3 Strategic warehousing and performance**

Warehousing refers to the activities involving storage of goods on a large-scale in a systematic and orderly manner and making them available conveniently when needed. Warehousing is one of the important auxiliaries to trade. It creates time utility by bridging the time gap between production and consumption of goods. According to Lambert et al. (1998) they contribute to a multitude of the company's missions, like; Achieving transportation economies (e.g. combine shipment, full-container load), achieving production economies (e.g. make-to-stock production policy), taking advantage of quality purchase discounts and forward buys, supporting the firm's customer service policies, meeting changing market conditions and uncertainties (e.g. seasonality, demand fluctuations, competition), overcoming the time and space differences that exist between producers and customers, providing temporary storage of material to be disposed or recycled (Chopra and Meindl, 2004).

The typical warehouse functional areas and flows as; receiving, staging for cross-docking, reserve, forward and shipping. Receiving, transfer and put away, order picking, cross-docking, and shipping. Order picking is the most labor-intensive and costly activity of most warehouses. The primary function of a warehouse control system is to receive information from the upper level host system, most often being the warehouse management system, and translate it for the daily operations. A common goal is to ensure a situation where warehouse employees never have to retype information because it already lies in one system or is collected automatically. Warehouse control system is usually the interface that is used to manage processes, people and equipment on the operational level. Based on warehouse control system, literature distinguishes three types of warehouse management systems. This system is apt to support stock and location control only. It is mainly used to register information. Storing and picking instructions may be generated by the system and possibly displayed on RF terminals. The warehouse management information is simple and

focuses on throughput mainly. Put away Cross docking Put away Replenishment Storage in the reserve area Inspection and receiving Shipping Case picking broken case picking Sortation. Approximately 55% of the total warehouses operating expenses are related to order-picking operations. The most common order picking system is picker-to-parts systems, in which the order pickers walks or drives along the aisle to pick items (Larson, 2001).

Warehouse layout is also important in achieve greater efficiencies. Minimizing travel time between picking locations can greatly improve productivity. However, to achieve this increase in efficiency, companies must develop processes to regularly monitor picking travel times and storage locations. Warehouse layout is one important factor affecting the order picking process. The warehouse layout has a considerable effect on order picking travel and also finds the relationship between warehouse layout and order picking travel distance. Warehouse operations that still use hard copy pick tickets find that it is not very efficient and prone to human errors. To combat this and to maximize efficiency, world class warehouse operations have adopted hand-held RF readers and printers. Companies are also introducing pick-to-light and voice recognition technology (Huscroft, 2010).

## **2.2 Empirical Literature Review**

### **2.2.1 Reverse logistic and performance**

According to Miroslava Rakovska (2013) many scholars such as Scannell, Vickery & Droge (2000) discussed the relationship between Supply Chain Management in the link with direct suppliers and competitiveness but the analysis is focused on one link in the chain and only three Supply Chain Management characteristics are measured suppliers development, partnerships with suppliers and just-in-time purchasing. Vonderembs & Tracey (1999) also examine the impact of some supply chain management practices in the link with suppliers on the competitiveness of production companies. Other researchers such as Alvarado & Kotzab, (2001), focus on the outbound part of the chain, the links between manufacturers and distributors. Vickery, Calantone (1999) investigate the relationship between supply chain flexibility and performance related to financial indicators. However they failed to discuss how good distributed to customers can be brought back to the firm

for repairs, exchange in case of damage, disposal and how it affects the performance of the firm. Therefore this study is to investigate the effects of reverse logistic on performance of a firm.

### **2.2.2 Inventory management and performance**

According to Jimoh, M, Olakunle A.O. and McNAY B.D (2015) Inventory is employed by organizations in order to; cope with random or unexpected interruption in supply or demand (buff all products simultaneously (cycle inventory), cope with planned fluctuation in supply or demand (anticipatory inventory), cope with transportation delays in the supply network (pipeline inventory).

Simchi-Levi, Kaminsky and Simchi-Levi (2008) stated that inventory is one of the major costs for any organization or industry and its importance as a key performance measure was highlighted by Waller, Johnson and Davis (1999) when they stated that end-of-the month inventory level is a key performance measure for most retailers; thus inventory management is very important for the success of any organization. However, it is known that one of the objectives of inventory control is to maximize the level of customer satisfaction by avoiding under-stocking. According to Waller, Johnson and Davis, (1999) Success in supply chain management usually derives from understanding and managing the relationship between inventory cost and the customer service level.

Many studies have been carried out on the impact of effective inventory management. For instance, Vastag and Whybark (2005) explored the relationship between the use of effective inventory management practices (as reflected in inventory turnover) and the implementation of other manufacturing practices. There results show that inventory turnover is significantly related to the implementation of other techniques and weakly related to an index of overall company performance. The results suggest a positive knock-on effect, but that it takes more than inventory management to achieve high levels of performance. Therefore this study is to establish the influence of inventory management on performance of firm.

Lau, Xie and Zhao (2008) used simulation model to investigate the effects of information sharing and early order commitment on the performance of four inventory policies used by

retailers in a supply chain of one capacitated supplier and four retailers. Subsequent analyses showed that the inventory policy used by the retailers, information sharing, and early order commitment can significantly influence the performance of the supply chain but she failed to explain how it affect performance of manufacturing industry .

Mazhar (2008) advocated inventory right sizing has to do with identification of precise location where inventory is out of balance and bringing same under control in order to minimize uncertainty in purchasing cycles. But he did not highlight how it affects performance.

### **2.2.3 Strategic Warehousing and performance**

De Koster, R., Le-Duc, T., and Roodbergen, K.J. (2007) state that warehouses form an important part of a firm's logistics system. They are commonly used for storing or buffering products (raw materials, goods-in-process, finished products) at and between points of origin and points of consumption. The term warehouse is used if the main function is buffering and storage. If additionally distribution is a main function, the term distribution center is commonly used, whereas transshipment, cross-dock, or platform center are often used if storage hardly plays a role. Lambert et al. (1998) state that more than 750,000 warehouse facilities exist worldwide, including state-of-art, professionally managed warehouses, as well as company stockrooms and self-store facilities.

According to ELA/AT Kearney (2004), warehousing contributed to about 20% of the companies' logistics costs in 2003 other activities distinguished are value added services, administration, inventory costs, transportation and transport packaging. Therefore the aim of this study is to find at what percentage transportation and other activities contribute to logistic cost. According Tompkins et al. (2003) the main strategic warehouse activities include: receiving, transfer and put away, order picking/selection, accumulation/ sortation, cross-docking, and shipping but he did not discuss how they affects performance of a firm. De Koster, R., Le-Duc, T., and Roodbergen, K.J. (2007) only studied order picking and how it improves logistic cost, therefore this study will focusing on cross-docking and shipping and how they affect performance of the firm.



According to Miroslava Rakovska (2013) Just after 2001 more extensive studies begin to appear. They include more measures of supply chain management and encompass the links with suppliers and customers. Tan (2002) studies 25 supply chain management practices and analyses their impact on competitiveness determined with quality, the competitive position and customer service levels. Likewise Elmuti (2002) analyses the influence of 12 supply chain management decision areas (inventory management, transport, production, new product development and etc.) on effectiveness measured with manage productivity, quality and flexibility. Suhong, Rao, Ragu-Nathan & Ragu-Nathan(2005) conceptualize, develop and validate 6 dimensions of supply chain management practices, strategic partnership with suppliers, customer relationship, information sharing, quality of information, internal “ another comprehensive research Suhong, Rao, Ragu-Nathan & Ragu-Nathan(2005) consider several aspects of supply chain management application in practice: information systems, supply chain relationships, human resources practices, measurement, alignment and design mechanisms and process change mechanisms (Fawcett, Magnan & Ogden, 2007). The relationship between these practices and performance are not examined.

Research conducted by Daniel M. Wanyoike (2015) on assessment of the effect of logistics management practices on operational efficiency at Mumias Sugar Company limited, Kenya showed that effective management of information flow improves the company's internal and external processes. Automation of warehousing activities greatly enhances accuracy, speed of operations and reduces wastage. Transport management and physical distribution practices on the other hand allows faster and cost effective flow of goods and raw materials thus improving operational efficiency. However, there has been knowledge gap as to whether these factors can affect organizational performance in terms of increasing profitability and market share.

### 2.3 Summary of Literature Gaps

Many researchers in the past have only concentrated on other factors affecting the performance of manufacturing organizations which could not be enough. The findings from different scholars have proved that logistics management is directly related to the realization of huge profits in the organization. Research conducted by Daniel M. Wanyoike (2015) on assessment of the effect of logistics management practices on operational efficiency at Mumias Sugar Company limited, Kenya showed that effective management of information flow improves the company's internal and external processes. Automation of warehousing activities greatly enhances accuracy, speed of operations and reduces wastage. Transport management and physical distribution practices on the other hand allows faster and cost effective flow of goods and raw materials thus improving operational efficiency. However, there has been knowledge gap as to whether these factors can affect organizational performance in terms of increasing profitability and market share. According to Miroslava Rakovska (2013) Just after 2001 more extensive studies begin to appear. They include more measures of supply chain management and encompass the links with suppliers and customers. Tan (2002) studies 25 supply chain management practices and analyses their impact on competitiveness determined with quality, the competitive position and customer service levels. Likewise Elmuti (2002) analyses the influence of 12 supply chain management decision areas (inventory management, transport, production, new product development and etc.) on effectiveness measured with manage productivity, quality and flexibility. Suhong, Rao, Ragu-Nathan & Ragu-Nathan(2005) conceptualize, develop and validate 6 dimensions of supply chain management practices, strategic partnership with suppliers, customer relationship, information sharing, quality of information, internal “ another comprehensive research Suhong, Rao, Ragu-Nathan & Ragu-Nathan(2005) consider several aspects of supply chain management application in practice: information systems, supply chain relationships, human resources practices, measurement, alignment and design mechanisms and process change mechanisms (Fawcett, Magnan & Ogden, 2007). The relationship between these practices and performance are not examined.

## CHAPTER THREE: METHODOLOGY

The chapter presents methodologies and processes to be used in carrying out the study. The main concern was on the research design, target population, sample design, data collection and analysis.

### 3.2 Research Design

The research design constitutes the blue print for the collection, measurement and analysis of data, (Kothari, 2005). Descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals Orodho (2003). It can also be used when collecting information about people's attitudes, opinions habits or any other social issues (Orodho, 2003). The choice of this design was appropriate for this study since it utilizes a questionnaire as a tool of data collection and helps to establish the behaviour of employees towards embracing strategic logistic in firm's performance. This is supported by (Mugenda & Mugenda, 2003) who assert that this type of design enables one to obtain information with sufficient precision so that hypothesis can be tested properly. It is also a framework that guides the collection and analysis of data. (Kothari, 2005) observes that a descriptive research design is used when data is collected to describe persons, organizational settings or phenomenon.

### 3.3 Population

Population is an entire group of individuals, events or objects having common or observable features (Mugenda and Mugenda, 2004) Population also refers to the larger group from which a sample is taken (Orodho, 2003). Whereas Cooper and Emory (2001) define population as the total collection of elements about which the researcher wishes to make some inferences. A population can also be defined as including all people or items with the characteristic one wish to understand. The target population is the population to which the researcher wants to generalize the results (Mugenda and Mugenda, 2004). In this study, the target population consisted of 250 employees from the entire organization of Kibos Sugar Company. The population was stratified into various departments. The target population of the study comprised of the Procurement managers, Stores, Logistic, Finance

managers and any other employees from other departments at Kibos sugar comprising of a total of 250 respondents. Thus Strategic logistics and its application was relevant at this level prompting the choice of the departments. A list that contains the number of all managers and employees was sourced from the human resource department Kibos sugar company this was used as a sampling frame to identify every single element in the target population. The target population is the population to which the researcher wants to generalize the results (Mugenda and Mugenda, 2004). In this study, the targeted population consisted of 250 employees from the entire organization of Kibos Sugar Company.

**Table 3.1: Departmental distribution of population**

<b>Category</b>	<b>Target population</b>	<b>sample</b>
<b>Finance</b>	30	9
<b>Procurement</b>	50	12
<b>Store</b>	60	15
<b>Transport</b>	60	15
<b>Production</b>	50	11
<b>Total</b>	<b>250</b>	<b>62</b>

**Source: Survey Data (2017)**

### 3.4 Sample Design and Sampling Procedure

A sample is the number of items selected to represent the whole population (Kothari, 2004). Cooper and Emory (2001) defines sample size as the subject on which the measurement is being taken as the unit of study. A sampling design is the method of selecting items to be observed for given study (Kothari, 2004). Stratified sampling procedure was adopted for research study. According to Kothari (2004), it is a sampling technique where the population is divided into several sub-populations that are individually more homogeneous than the total population (the different sub-populations are called strata) and then they selected items from each stratum and by estimating more accurately each of the component parts, they got a better estimate of the whole. It was justified for this study because it resulted in a more reliable and detailed information. The sample size of 62 employees was used, which was arrived at using stratified sampling and random sampling techniques. The sample size represents 25% of the total population therefore the researcher used the percentage to arrive at the sample size of 62 respondents.

**Table 3.2: Departmental distribution of sample**

<b>Category</b>	<b>Sample</b>
<b>Finance</b>	9
<b>Procurement</b>	12
<b>Store</b>	15
<b>Transport</b>	15
<b>Production</b>	11
<b>Total</b>	<b>62</b>

Source: Survey data (2017)

### **3.5 Data Collection Instruments and Procedure**

Mugenda and Mugenda (2003) asserted that the accuracy of data to be collected largely depended on the data collection instruments in terms of validity and reliability. The data was collected through primary and secondary sources. In primary data, questionnaires were used as a tool for data collection. Mugenda and Mugenda (1999) define a questionnaire as written questions administered to the addressed, objectives etc. Questionnaires can be categorized as structured and unstructured (Kothari, 2004). Structured questionnaires are those in which there are definite, concrete, and pre-determined questions, the questions are presented with exactly the same wording and in the same order to all respondents. When these characteristics are not presented in a questionnaire, it can be termed as unstructured questionnaire (Kothari, 2004). The researcher used structured questionnaires which consist of both open ended questions and closed questions. The use of questionnaires was suited for this study since the study was concerned with other variables that cannot be directly observed such as views, opinions, perception and feelings of the respondents. Such information could be best collected via questionnaires. Secondary data was collected from the libraries, internet, company journals and other sources.

#### **3.5.1 Validity and Reliability of the Research Instruments**

Validity as noted by Foster (2001) is the degree to which result obtained from the analysis of data actually represents the phenomenon under study. Also according to Foster (2001), reliability refers to the consistency of the results on different items in the test

Mugenda and Mugenda, (2003) defines reliability as a measure of degree to which researcher's instruments yield consistent results of data after repeated trials. They further indicated that reliability in research was influenced by random error. As random error increases, reliability decreases. Random error is the deviation from the measurements due to factors that have not been effectively addressed by the researcher. Such errors can be as a result of inaccurate coding, biasness of the researcher or respondent and researcher's fatigue. Validity is the accuracy and meaningfulness of inference which are based on the research results (Kats, 1987). It is the degree of which results obtained from analysis of the data actually represent the variable of the study. In testing the validity and reliability of

questionnaires, questionnaires were pre-tested outside the sample population using the test re-test method (Kothari, 2004).

### **3.6 Pilot study**

A pilot test is considered to be like a dress rehearsal in which a small scale trial of the study is conducted prior to the full-scale study. Hence, in this study a pilot test was carried out in order to obtain an insight on indication of the study. Firstly the pilot testing was done to test the validity and reliability of the instruments of the study. Secondly, it aimed at obtaining an insight in to the real conditions of the actual study. Thus, these enabled the researcher to anticipate and adjust to potential problems during the full-scale research.

Among the major concern of the pilot test was the instrument validity and reliability. Validity of the measuring instrument is the extent to which the instrument is measuring what it is supposed to measure. Reliability of a measure on the other hand, indicated the extent to which an instrument was error free and thus, consistent and stable across time and also across the various items in the scale when evaluated by different methods and different ratters (Sekaran and Bougie).

A pilot study was conducted with randomly selected sample of 20 respondents. This is in line with the recommendation by Malhotra (2008) that the sample size for pre-test is normally small to help establish the validity and reliability of the questionnaire. Before the final distribution of the questionnaires, the draft was submitted to my research supervisor for content validity which according to Mugenda and Mugenda (2003), is a measure of the degree to which data collected using particular instruments represents a specific content of a particular concept. This exercise provided feedback concerning the suitability, content, layout and adequacy of the items that were designed to measure the concepts the instrument intends to measure and determine if the set of items accurately represent the variables under study.

### 3.7 Data Analysis

The data was collected, inspected, cleaned then sorted and collated. To enable efficiency in recording the data matching and coding was done. The data was then entered into the computer system to generate analyzed frequencies using the statistical packages for social scientist. Multiple regression was used to determine the relationship between the dependent and the independent variables through Pearson correlation coefficient. This helped the researcher to develop the regression equation for the study.

#### 3.7.1 Pearson Correlation

Kothari (2004) defines correlation analysis as the study of joint variation of two or more variables for determining the amount of correlation between two or more variables. The value of  $r$  lies between  $+1$  and  $-1$ , where positive value of  $r$  show existence of a positive correlation between the two variables while negative value of  $r$  indicates a negative correlation between the two variables. A zero value of  $r$  indicates that there is no correlation between the two variables. A correlation value of  $+1$  indicates a perfect positive correlation between the two variables while  $-1$  value indicates a perfect negative correlation.

#### 3.7.2 Anova

The analysis of variance enables researcher to simultaneously test for significance of two different means of two or more samples. Two different estimates of the group are made, the between-group variance which entails finding the variance of the means and the within-group variance which entails computing variance using all the means. If a difference in the means does not exist, the between group variance estimate will almost be equal to the within group variance estimates and the  $F$  test value will approximately be equal to 1, meaning that the null hypothesis will not be rejected. If the between group variance estimate and the within group variance estimate differ significantly, the  $F$  test value will be greater than 1 and the null hypothesis will be rejected (Kothari 2004)



The ANOVA table shows how well the regression equation fits the data in predicting the dependent variable. The researcher tested the model with the decision below

Reject if  $p \text{ value} \geq 0.05$  (otherwise fail to reject)

### 3.7.3 Regression Analysis

It is used to determine the relationship between two or more variables. Multiple regression is done when the researcher has a single dependent variable that presumed to be a function of two or more independent variables in order to come up with the line of the best fit that defines the relationship between the dependent and the independent variables (Kothari, 2004). In the study, the researcher performed the multiple regression analysis with performance as the independence as a single dependent variable which depended on reversed logistics, inventory management and strategic warehousing.

The researcher adopted a multiple regression model below;

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

Where Y- Performance

$\beta_0, \beta_1, \beta_2, \beta_3$  are constants to be determined.

$X_1$ -Reverse logistics

$X_2$ - Inventory Management

$X_3$ . Strategic warehousing

$\epsilon$ - Error term.

## **CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSION**

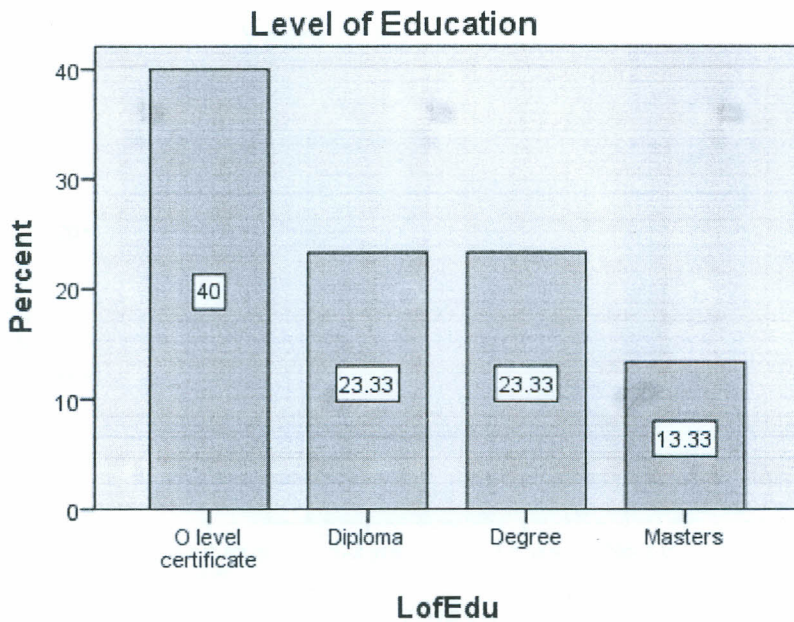
This chapter shows the results of the study and the discussion of the findings ,it has different chapters which entails the basic information like the years of experience and level of education, the second part will have the performance which is the dependent variable in our model, the third part shows results for reverse logistics, the fourth chapter shows results for inventory management, fifth part has results for strategic warehousing and finally the last chapter will show results for regression analysis between the dependent and the independent variables.

### **4.1 Level of Education and Years of Experience**

The level of education determines how well the employees who are the respondents in this case understands the concept of logistics which is our main interest in the above study. The years of experience indicates how well the respondent is conversant with the day to day activities of the company hence giving the right information as per the study is concerned.

Figure 4.1.0 below shows the results for the level of education

Fig 4.1.0 Bar chart of level of education of the respondent



From the fig 4.1.0 above it is clear that all our respondents are informed and were in a position to give reliable information required in the study. It also follows the normal distribution curve hence reducing the level of biasness in the study as per level of education is concerned.

MASENO UNIVERSITY  
S.G. S. LIBRARY

Fig 4.1.1 Years of Experience

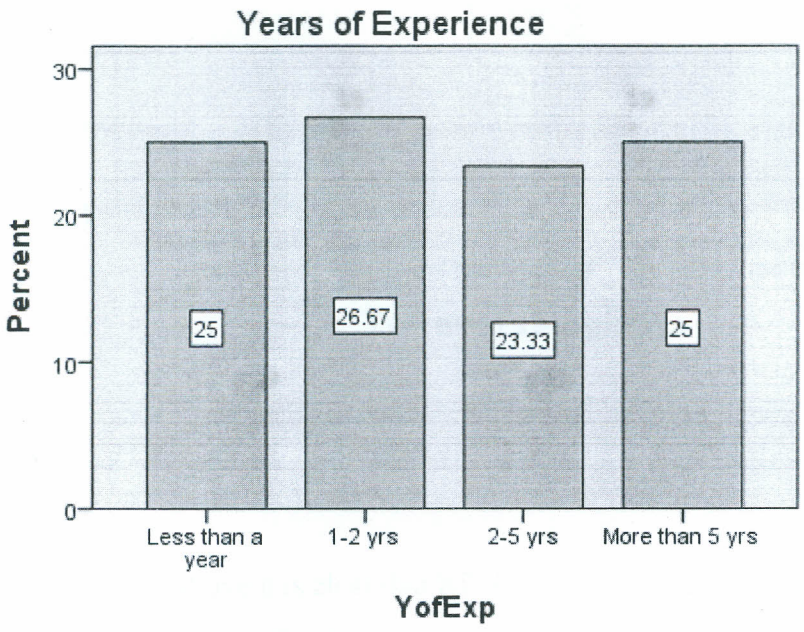
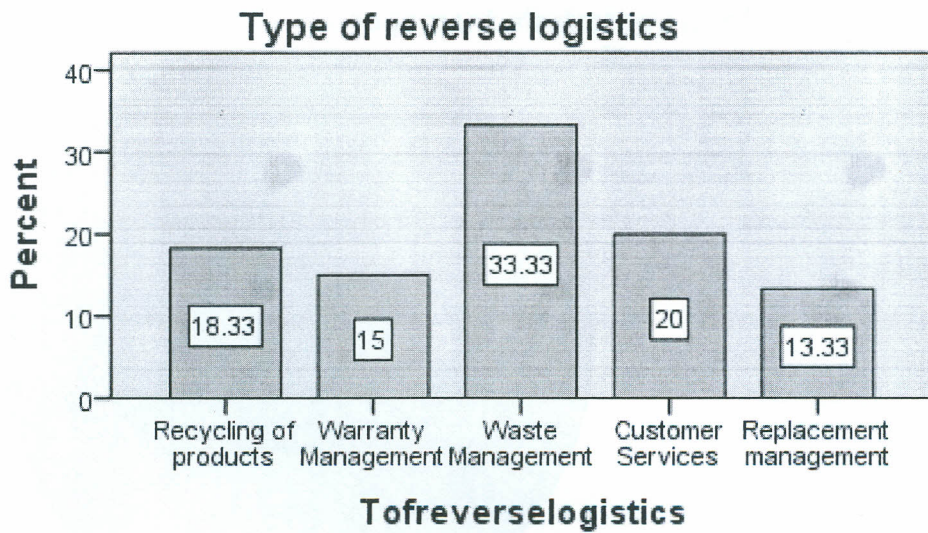


Fig 4.1.1.above shows the numbers of years of experience for our respondents. Experience is a key variable on research, it indicates how well respondent is well conversant with the organization and different departments and their functionalities. From the bar chart above most of our respondents had 1-2 years of experience with Kibos sugar.

#### 4.2. Reverse Logistics

This are all activities associated with product/services after the point of sales, the ultimate goal is to optimize or make more efficient aftermarket activity, thus saving money and environmental resources. The interest of the study was to know the type of reverse logistics in Kibos sugar.

Fig 4.1.1 shows what type of reversed logistics used in Kibos sugar.



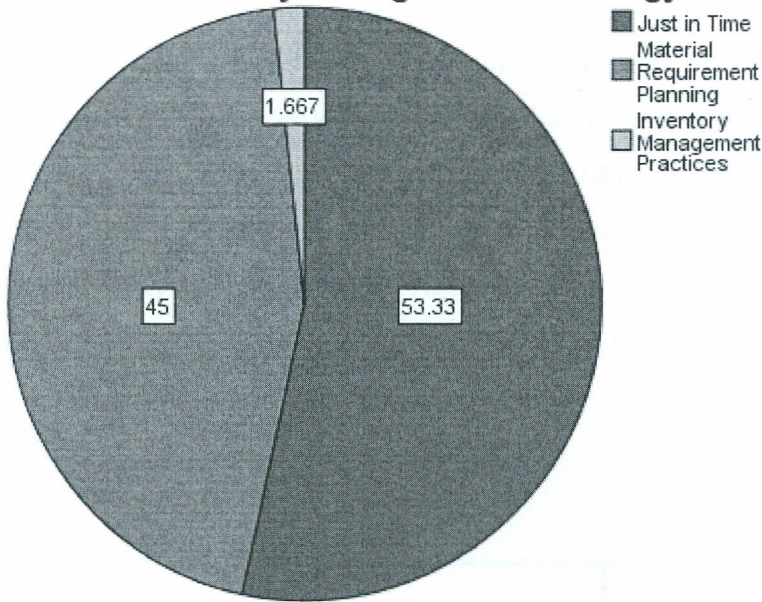
From fig 4.1.1 above it is clear that Kibos sugar does more of waste management with 33% of our respondent confirming to this while replacement management is done in the least percentage of 13%, the company also engage in other forms of reverse logistics as shown above. Since the company engage in recycling of products, warranty management, waste management, customer services and replacement management, we access the level of agreement on the same by the respondents to get the most applied type of reverse logistics in Kibos sugar.

#### 4.2 Inventory Management

Practice overseeing and controlling of the ordering, storage and use of components that accompany uses in the production of the items within the industry. I analyzed the most common form of inventory management applied by Kibos sugar.

Fig 4.2.1 below shows the most common inventory management strategy used by Kibos sugar.

### Common inventory management strategy in kibos



The pie chart above shows the inventory management strategies employed by kibos sugar. The firm uses mostly Just in time strategy method to manage their inventory .This is represented by (53%) as indicated in the pie chart above. Only 1.7% of the respondent indicated that Kibos sugar uses inventory management practices as an inventory management strategy.

### 4.3 Regression Analysis

According to Scott (2012) regression analysis is a statistical process that is used to estimate the relationship between the dependent and the independent variables. It is used to predict the change in the dependent variable caused by change in the independent variable. In this model, Performance of Kibos sugar was measured using reverse logistics and inventory management strategies.

Table 4.3.1 Model summary

<i>Model Summary</i>				
Model	<i>R</i>	<i>R Square</i>	Adjusted R Square	Std. Error of the Estimate
1	.250	.063	.012	.09423

a. Predictors: (Constant), reverslogistics, strategies, inventomag

The regression table shows the value of R and R<sup>2</sup> values .The simple correlation represented by R is 0.25 which indicates that in overall, strategic logistic practices explains 25.0 % of the changes in firm performance (there is low degree of correlation) .The R<sup>2</sup> shows how much of the total variation of the dependent variable(performance)can be explained by the independent variables .The value for R<sup>2</sup> in this case is 6.3% which indicates that only 6.3% of the dependent variable is explained by the independent variable.

Table 4.3.2 Correlation

**Correlations analysis results.**

		performance
performance	Pearson Correlation	1
	Sig. (1-tailed)	
	N	60
inventomag	Pearson Correlation	.367
	Sig. 1-tailed)	.006
	N	60
reverslogistics	Pearson Correlation	.244
	Sig. (1-tailed)	.049
	N	60
strategies	Pearson Correlation	.303
	Sig. (1-tailed)	.019
	N	60

The result in table 4.3.2, Pearson correlation=.367 and significance value= 0.006(less than 0.01) indicates that there is significant positive correlation between inventory management and performance. Pearson correlation=.244 and significance value= .049(less than 0.05) indicates that there is statistically significant positive correlation between reverse logistic and firm performance. Lastly Pearson correlation value=.303 and significance value=.019 (less than 0.05) indicates that there is significant positive correlation between strategic warehousing and performance.

Table 4.4 ANOVA

<i>Model</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
1 <i>Regression</i>	4.256	3	2.011	5.245	.002 <sub>a</sub>
<i>Residual</i>	15.497	56	.309		
<i>Total</i>	19.753	59			

a. Dependent Variable: performance

b. Predictors: (Constant), reverslogistics, strategies, inventomag

The table 4.4 presents the significance text on the regression model. The significance value of .002 (less than 0.05) indicates that the overall influence of strategic logistic practices on firm performance equation (25.0%) is statistically significant. Adoption of strategic logistic practices leads to enhanced achievement of objectives set by the manufacturing firm significantly.

Table 4.5 the coefficients of the variables.

<i>Model</i>	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t</i>	<i>Sig.</i>
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
1 <i>(Constant)</i>	.516	.741		.697	.489
<i>Strategies</i>	.348	.101	.446	3.461	.001
<i>Inventomag</i>	.187	.128	.185	1.459	.042
<i>Reverslogistics</i>	.341	.118	.375	2.883	.006

a. Dependent Variable: performance

### Hypothesis testing

The hypothesis of the study were tested using t-test. The results of the hypothesis testing results were as presented in table 4.5.

The first hypothesis of the study was HA<sub>1</sub>: Strategic warehousing have significant influence on performance of manufacturing firm of Kibos Sugar Company.



From the table 4.5,  $t=3.46$  and  $p=.001$  (less than 0.05) indicates that strategic warehousing has significant influence on performance of Kibos sugar company. The null hypothesis was therefore rejected and accepted alternative hypothesis and alternative hypothesis and conclusion made the strategic warehousing significantly influence performance of Kibos Sugar Company. Therefore effective strategic warehousing significantly affects performance and can be used as a competitive in the manufacturing and distributing industry.

The second hypothesis of the study was stated as  $HA_2$ : inventory management has significant influence on performance of manufacturing firm of Kibos Sugar Company.

The result in table 4.5,  $t=1.459$  and  $p=.042$  (less than 0.05) implies that inventory management practices have significant influence on performance of Kibos sugar company. The null hypothesis was therefore rejected and accepted alternative hypothesis and conclusion made the inventory management significantly influence performance of Kibos Sugar Company. Therefore effective inventory management practices significantly affects performance and can be used as a competitive in the manufacturing and distributing industry. The study conducted by Saaad et al. (2015) similarly revealed that inventory management practices can act as a guideline on what need to be done in order to outperform competitors in terms of procurement and organizational performance by using proper inventory management practices as tools.

The last hypothesis of the study was presented as  $HA_3$ : reverse logistic has significance influence on performance of manufacturing firm of Kibos Sugar Company.

The research findings presented in table 4.5;  $t=2.883$  and  $p=.006$  (less than 0.05) indicates that reverse logistic have significant influence on performance of Kibos sugar company. These finding formed the basis for rejecting the null hypothesis and subsequent conclusion that reverse logistic significantly influence performance of Kibos Sugar Company. Therefore effective reverse logistic practices significantly affects performance and can be used as a competitive in the manufacturing and distributing industry.

## CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Summary

Reverse logistic has significance influence on performance of manufacturing firm of Kibos Sugar Company. The research findings presented in table 4.5;  $t=2.883$  and  $p=.006$  (less than 0.05) indicates that reverse logistic have significant influence on performance of Kibos sugar company. These finding formed the basis for rejecting the null hypothesis and subsequent conclusion that reverse logistic significantly influence performance of Kibos Sugar Company. Therefore effective reverse logistic practices significantly affects performance and can be used as a competitive tool in the manufacturing and distributing industry.

Inventory management has significant influence on performance of manufacturing firm of Kibos Sugar Company. The result in table 4.5,  $t=1.459$  and  $p=.042$  (less than 0.05) implies that inventory management practices have significant influence on performance of Kibos sugar company. The null hypothesis was therefore rejected and conclusion made the inventory management significantly influence performance of Kibos Sugar Company. Therefore effective inventory management practices significantly affects performance and can be used as a competitive in the manufacturing and distributing industry. The study conducted by Saaad et al. (2015) similarly revealed that inventory management practices can act as a guideline on what need to be done in order to outperform competitors in terms of procurement and organizational performance by using proper inventory management practices as tools.

Strategic warehousing has significant influence on performance of manufacturing firm of Kibos Sugar Company. From the table 4.5,  $t=3.46$  and  $p=.001$  (less than 0.05) indicates that strategic warehousing have significant influence on performance of Kibos sugar company. The null hypothesis was therefore rejected and accepted alternative hypothesis and conclusion made the strategic warehousing significantly influence performance of Kibos Sugar Company. Therefore effective strategic warehousing significantly affects

performance and can be used as a competitive in the manufacturing and distributing industry.

Therefore adoption of strategic logistic practices significantly leads to enhanced achievement of objectives set by the manufacturing firm.

## 5.2 Conclusions

The first conclusion was made that strategic warehousing practices have significant positive influence on firm performance. Strategic warehousing enhance efficiency and effectiveness in logistic activities.

The second conclusion was made that inventory management have significant positive influence on firm performance. Inventory management ensures timely and adequate identification of inconsistency and evaluation of inventories (Lewis & Media, 2014). Proper inventory management reduce inventory losses and ensure inventory accuracy. In addition, inventory management enables any organization evade risks associated with inventory such as ; inadequate and inappropriate inventory, inaccurate and incomplete inventory records, poor inventory security and obsolete inventory.

The third conclusion was made that reverse logistic has significant positive influence on firm performance

## 5.2 Recommendations

From the findings and conclusions of the study, the following recommendations are made;

Reverse logistic should be considered as once of the strategies for strategic logistic. The reverse logistic practices should be developed in participatory manner between the store and procurement functions documented and should be well communicated across the organization.

Organization should have internal inventory auditors to prove check and control in the inventory activities especially on inventory records management. The organization should

also seek the service of external auditors to supplement internal auditors. This does not only help in identification of discrepancies in procurement activities but also reduce chances of such discrepancies from occurring in future.

Strategic warehousing can be adopted to enhance inventory management efficiency and effectiveness.

From the research findings, conclusions and recommendations, the study recommends further research in the following areas; study should be conducted to assess how reverse logistic practices can be adopted by public institutions and whether such practices can be incorporated in the in the public procurement regulations. Secondly, further research should be done to establish the integrated role of internal and external audit in inventory management especially in manufacturing firms. Thirdly, further research to be done to determine the influence of strategic warehousing on supplier service delivery. Lastly since strategic logistic practices only explains 25.0% of firm performance, further studies should be conducted to establish other factors that influence firm performance apart from strategic logistic practices.

## REFERENCE

- Abdullah, N. A and Yaakub, S., (2014). “*Reverse logistics: pressure for adoption and the impact on firm’s performance*”. International Journal of Business and Society, Vol. 15 No. 1, 2014, 151 – 170
- Achieng, S.O., (2011). “*Information Integration on supply chain management in the food processing firms in Kenya*”. Unpublished MBA Project, University of Nairobi.
- Aino, V., (2010). “*E-waste: impacts, challenges and the role of government, service providers and the consumer’s workshop*”. Communication Commission of Kenya. Nairobi –Kenya,
- Armstrong, J.S. and Overton, T.S. (1977), “*Estimating nonresponsive bias in mail surveys*”, Journal of Marketing Research, Vol. 14 No. 3, pp. 396-402.
- Badenhorst, A., (2013). “*A framework for prioritizing practices to overcome cost-related problems in reverse logistics*”. Journal of Transport and Supply Chain Management 7(1),
- Bowersox, D.J., Closs, D.J., Stank, T.P. and Keller, S.B.(2000), “*How supply chain competency leads to business success*”, Supply Chain Management Review, Vol. 4 No. 4, pp. 70-8.
- Carter, J.R. and Narasimhan, R. (1996), “*Purchasing and supply management: future directions and trends*”, International Journal of Purchasing & Materials Management, Vol. 32 No. 4, pp. 2-12.
- Scannell, T., Vickery, S. & Droge, C. (2000) *Upstream “Supply Chain Management and Competitive Performance in the Automotive Supply Industry”*, Journal of Business Logistics, Vol.21, No.1, pp. 23-48
- Tan, K. (2002) *Supply “Chain Management: Practices, Concerns, and Performance Issues”*, The Journal of Supply Chain Management, February, pp. 42-55

- Council of Supply Chain Management Professionals (2007), *“Supply chain management and logistics management definitions”*.
- Cullen, J., Bernon, M. & Grost, J., (2010). *“Tools to manage reverse logistic”*, Research executivesummaries series6(3),18,retrievedon25<sup>th</sup>August 2014.
- Dietrich, M., &Krafft J. (Eds.). (2012). *“Handbook on the Economics and Theory of the Firm”*. Cheltenham (UK). Edward Elgar Publishing.
- Dunn, S.C., Seaker, R.F. and Waller, M.A. (1994), *“Latent variables in business logistics research: scale development and validation”*,Journal of Business Logistics, Vol. 15 No. 2,pp. 145-72.
- Elmas G. & Erdoğmuş F., (2011). *“The importance of reverse logistics”*. International journal of business and management studies Vol 3, No 1, and 2011 ISSN: 1309-8047.
- Gammelgaard, B. and Larson, P.D. (2001), *“Logistics skills and competencies for supply chain management”*,Journalof Business Logistics, Vol. 22 No. 2, pp. 27-50.
- Garver, M.S. and Mentzer, J.T. (1999), *“Logistics research methods: employing structural equation modeling to test for construct validity”*, Journal of Business Logistics, Vol. 20
- Green, K.W. Jr and Inman, R.A. (2005), *“Using a just-in time selling strategy to strengthen supply chain linkages”*,International Journal of Production Research, Vol. 43 No. 16,
- Huscroft, K., (2010). *“The Reverse Logistics Process in the Supply Chain and Managing Its Implementation”*. Auburn University. Auburn, Alabama. European Journal of Business Management Vol.2, Issue 1, 2014
- Jayant, A., Gupta, P. and Garg, S.K. (2012). *“Perspectives in reverse supply chain management: A state of the art literature review”*, Jordan Journal of Mechanical and Industrial Engineering 6(1), 87–102.

- Kurien, P. & Qureshi, N., (2011). “*Study of performance measurement practices in supply chain management*”. International Journal of Business, Management and Social Sciences. Vol. 2, No. 4, 2011, pp. 19-34.
- Mellewigt, T. & Nothnagel, K. (2011). “*Empirical research within resource-based theory: A Meta Analysis of the Central Propositions*”.
- Vodenicharova, M. (2010) *The Role of “Logistics in the Company Management of the Meat Processing Companies in Bulgaria”*, Meat and Meat Products, (in Bulgarian), No 4 (110), pp. 38-41.
- Vonderembse, M. & Tracey, M. (1999) *The “Impact of Supplier Selection Criteria and Supplier Involvement on Manufacturing Performance”*, The Journal of Supply Chain Management, Aug., pp. 33-41.
- Suhong L., Rao, S.S., Ragu-Nathan, T.S. & Ragu-Nathan, B. (2005) *Development “and Validation of a Measurement Instrument for Studying Supply Chain Management Practices”*, Journal of Operations Management, 23, pp. 618–641.
- Moturi et al, (2013). “*Electronic Waste Management in Nakuru Municipality, Kenya: An Environmental Health Risk*”. International Journal of Innovative Research and Studies. Vol 2 Issue 10
- Mugenda and Mugenda, 1999, “*Research Methods*” pp 94-97
- Scannell, T., Vickery, S. & Droge, C. (2000) *Upstream “ Supply Chain Management and Competitive Performance in the Automotive Supply Industry”*, Journal of Business Logistics, Vol.21, No.1, pp. 23-48
- Tan, K. (2002) *Supply “ Chain Management: Practices, Concerns, and Performance Issues”*, The Journal of Supply Chain Management, February, pp. 42-55