

**EFFECT OF INVENTORY MANAGEMENT PRACTICES ON
OPERATIONAL PERFORMANCE OF KENYA POWER &
LIGHTING COMPANY LIMITED**

BY

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FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF
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DECLARATION

I declare that this research project is my original work and has never been submitted to any other university for assessment or award of degree.

Signature..... Date.....

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D61/75764/2014

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

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DEDICATION

This project is dedicated to my parents who sacrificed a lot for me to be where I am today.

ACKNOWLEDGEMENT

Many thanks to many people who have contributed immensely to the success of this work in many ways.

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LIST OF ABBREVIATIONS AND ACRONYMNS

- EDP** - Electronic Data Processing
- EOQ** - Economic order quantity
- GDP** - Gross Domestic Product
- JIT** - Just-in-time
- KPLC** - Kenya Power & Lighting Company
- KPI** - Key Performance Indicator
- RDT** - Resource Dependency theory
- SRM** - Supplier Relationship Management
- VMI** - vendor managed inventory

ABSTRACT

This study was focused on determining the effect of inventory management practices on operational performance of Kenya Power & Lighting Company. The objectives of the research were; To determine the effect of lean inventory systems on operational performance, to determine the effect of warehouse management systems on operational performance, to determine the effect of information communication technology on operational performance and finally to determine the effect of strategic supplier relationship on operational performance. Through empirical analysis, researchers were able to determine a correlation between inventory management and firm's operational performance. From a review of literature, it was evident that many studies have been done on this concept of inventory management and operational performance but there was no elaborate study linking the said concept and the energy sector in Kenya thus a wide knowledge gap. This underscored the need for the study to determine the impact of inventory management practices on operational performance in Kenya Power & Lighting Co. The study employed a cross sectional survey design. The target population was all 57 sub-region stores. Data was collected through questionnaires administered through drop and pick method. Cronbach's Alpha test was used to test for data reliability. Collected data was quantitatively analyzed as per statistical information acquired through the research questions. The study focused on four inventory management practices namely: Information communication technology, Strategic supplier partnership, Lean Inventory Systems and Warehouse Management Systems. The study found out that the four are positively related to operational performance. Warehouse Management Systems was the most adopted with ICT being least adopted. The research findings will form the basis of advancing knowledge for developing theoretical background in similar fields by future researchers. The findings of the study will help organization in re-evaluating the inventory management practices in use and reassess their benefits to operations performance. The focus of this study was on the energy sector, the study recommended that future studies ought to be conducted to cover other sectors like technology, insurance and banking. Future studies should also be conducted using both primary and secondary data.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Goods that are held by a company are known as inventory. Practices of inventory management comprise of the vigorous involvement of different section e.g. procurement, manufacturing, finance department and sales. Levels of inventory ought not be assumed or ignored, but warily considered as David and Alex, (2014) insist. All organizations and/or business enterprise operating in the developing and industrialized countries should ensure that inventory management is given the priority, while having warehousing as a ‘science’ of management (Bucklin, 2015). Benton (2016) reiterated that inventory is a key to either success or failure towards goal achievement and the organizations operating with large inventories should ensure that the top management is directly involved and should not ignore the concern of warehousing to only the subordinates. To realize or achieve this, it is necessary for the top managers to examine the status of their environment, whether the department is filled with the appropriate professional, provided with the right warehouse machines/tools, proper storage facilities and enough budgetary allocations for improvements. Purchased goods inventory and the management of such inventory are non-trivial concerns for firms wishing to remain competitive and survival in the market place (Corbett, 2015). Lean theory is an extension of ideas of Just-in-Time. The theory eliminates buffer stock and minimizes waste in production process (Green & Inman, 2005). Economic Order Quantity (EOQ) is a scientific representation created in the bracket of operations management in order to establish the most favorable levels of inventory. The study by Ross *et al.*, (2008) established that the EOQ model is actually an attempt of establishing the best levels of inventory that considers the cost-carrying inventory, costs of stock-out that are indeed useful in the establishment of the right volumes of inventory to hold. In Resource Dependency theory (RDT), companies make

sure certified and systematic connections with other companies endeavoring to clear uncertainties and give room to reliance with other companies. Therefore, RDT reveals that companies with tactical supplier joint ventures can to bring about resource bundles.

Kenya Power and Lighting Company is a public company owned by the government and private investors i.e. shareholders. The government has a controlling stake of 50.1% and the shareholders own 49.9%. The main objective of the company is to provide world class power that delights people. To achieve this, the company procures and stores materials for construction of distribution lines and other infrastructure for power distribution. Kenya Power and Lighting Company has hired, or constructed warehouses to store all materials to be used in connecting customers. There are ten stores located in West Kenya, Central Rift, North Rift, Mt. Kenya North, Mt. Kenya South, Nairobi and Coast regions, Nairobi South Warehouse, Bulk Stores and Likoni Road Stores. Materials are obtained through local purchases from the regions or from the central warehouses. The warehousing function is a section in Supplies department. KPLC employs various inventory management practices to ensure efficiency in handling the inventory.

1.1.1 Inventory Management Practices

Management of inventory is the craft and discipline of preserving levels of stock of a certain kind of goods inviting costs that are of minimal levels consistent with other related needs plus goals targeted by cooperation (Jessop, 1999). It's crucial that executives that deal with inventory, consider, the aim of satisfying client requirements and wants and maintaining costs of inventory at lowest possible levels. Costs of inventory comprise of holding, ordering and shortage costs, explains Drury (2004). Holding costs relate to costs of having physical goods in stock, which comprise of insurance, security, cleanliness, out of date items, lighting, storage costs, and opportunity costs related to having monies which would be somewhere else but are instead held up in inventory. Ordering costs are

costs associated with placing an order and receipt of inventory. Shortage costs come about when the demand surpasses the provision of inventory on hand. The costs consist of decrease or loss of customer goodwill, opportunity costs of making a sale, overdue charges and such like costs.

Practice of inventory management aids firms to better their levels of stock, an important feature for companies attempting to become accustomed to developing clients' demands. This practice made possible companies that took on the same to improve their functional efficiency, giving their precisely what they require, when they do. There exist several practices of inventory management. This study will showcase the following practices: - information technology, strategic supplier partnership, lean inventory systems and warehouse management systems.

Partnering is a pledge by both suppliers and customers, to a long period association grounded on clear, jointly decided goals to go all-out for world class competence, defines Lysons and Gillingham, (2003). The idea of supplier partners came to form sturdily during the 1980s owing to the embrace of just- in-time (JIT) manufacturing. JIT insisted on reduction of waste, reduction of lead times, advancement and minimalism. Bicheno, (1996) insisted that earlier mentioned are also the objectives of supplier partnership. The viewpoint is that instead of confrontation, co-operation benefits both parties.

Information Technology is the use of intercompany systems that are used for sharing of information as well as meting out across company borders. These IT instruments include devices of communication or application, which comprise of: cellular phones, satellite systems, TV, Radio, computer networks, software and hardware etc. as well as the various services and applications related to them, e.g. distance learning and video conferencing. Information is the lifeblood of all organizations, asserts Carter and Price

(2010). Computers help in control of stock in calculating the most favorable amount of stock to keep and send out so as to satisfy the customer's requirements. The EDI is an arrangement that allows direct communication between co operations without any human interference.

Today's warehousing companies and distribution points are weighed down by information related to the supply and storage of products. Warehouse Management Systems (WMS) are often employed and applied with these objectives put into considerations. WMS is a useful tool in inventory management as it defines the best procedures for both inbound logistics, outbound logistics and inventory management.

1.1.2 Operational Performance

Operational performance is calculated in opposition to standard or prescribed indicators of effectiveness, efficiency and environmental responsibility, such as cycle time, productivity, waste reduction, and regulatory compliance as indicated by Salami and Adayami (2010). In order to improve operational efficiency an organization has to measure both the input and the output side of the inventory management (Abdel-Maksoud, Asada & Nakagawa, 2008). The major goal of organizations is to reduce the costs associated with inventory management, which would impact positively the over-all performance of an organization. In this study, the main goal of the researcher was to find out how inventory management techniques employed by consumer goods manufacturing firms in Kenya impacted on the performance of such organizations in terms of optimal production, efficiency, production targets, on time delivery, as well as quality (Oketch, 2000).

1.1.3 Inventory Management and Operational Performance

Operational Performance is explained as the numerous measures of performance created by the firm to determine the capability of its assets to fulfill a company's lasting and temporary goals. Neely et al., (2005) writes, "Performance measurement is the practice of measuring the efficiency and effectiveness of action." The tool that often wires the process of performance measurement is known as performance measurement indicator also abbreviated as KPI. A KPI upholds various metrics i.e. performance measures, that are put to use for various functions like facilitating the making of decision and control of management, assessing the outcome, motivating people, promoting learning, enhancing harmonization and communication, explains Neely and Simons, (2005). A performance measure is information brought to the management function, assessing the effectiveness and the efficiency of a course, resource or an outcome.

Bicheno, (2017) strongly emphasized that KPI development will not just enhance in-side performance, but will also make benefits that will trickle down to clients and associates alike. Cost savings via cut-down inventory levels, accelerating, accomplishment and best shipment costs could enable a company to offer better terms to clients. Similarly, effective preparation and implementation can assist firms and their clients conform to the demand shifts of the market. Transactions, precautionary and speculative are the main motives for a firm to hold inventory (Schroeder, 2012). To avoid un-foreseen breakdowns, hold ups and any other disruptions in running of operations Ly-son, (2016) asserts that inventory poses as a policy of insurance. By his assessment, stocking excess inventory, bad relationships with suppliers and bad use of IT are a few of the elements that control management of inventory therefore alter the output of the purchasing function. Dobler and Burt (2015) noted that as it is the case of cash, stock amount to the monetary value held by a firm and similar control measures. It is essential to have a sound

inventory management system as it assists in preventing stock outs, excess stocks, wear and tear, outdated items and high holding costs. Planned supplier relations, efficient usage of ICT and a system of management of inventory are essential to a firm and aims to be efficient and offer quality services to the customer's thus operational excellence in an organization. KPLC has to combine all these key functions (proper inventory practices, WMS SRM and ICT) in its operations so as to achieve its objectives which include efficiency and effectiveness in its operation.

1.1.4 Kenya Power & Lighting Company Limited

Kenya Power & Lighting Company Limited (KPLC) was born in 1922. Initially it was called the East African Power & Lighting Company (EAP&L). In 1983 it was re-named to KPLC (www.kplc.co.ke). The government of Kenya (and its institutions) is the chief shareholder of KPLC, while private shareholders (through the Nairobi Stock Exchange) own the rest. (www.kplc.co.ke). Kenya Power is subdivided into 10 Regions namely: West Kenya, North Rift, Central Rift, Nairobi West, Nairobi South, Nairobi North, North Eastern, South Nyanza, Western Kenya and Coast Region. Operations such as Finance, Supply chain, Human resource are decentralized.

The Kenya Power & Lighting Company has a yearly connectivity target of 1,000,000 new electricity customers. In this regard Kenya Power and Lighting Company has hired, or constructed warehouses to store all materials to be used in connecting customers. Inventories are either stored in regional or central stores. There are seven regional stores located in West Kenya, Central Rift, North Rift, Mt. Kenya North, Mt. Kenya South, Nairobi and Coast regions. Central stores comprise three namely: Nairobi South Warehouse, Bulk Stores and Likoni Road Stores all located in Nairobi. Regional warehouses obtain materials through local purchases from the regions or from the central warehouses. The warehousing function is a section in supplies department that consists of

functional units like warehousing, inventory control and logistics. Kenya power and lighting hold inventories valued at ksh.10 billion in order to meet the demand for maintaining and new connections (SAP 3.1) In line with this, KPLC employs various inventory management practices to ensure efficiency in handling the inventory.

1.2 Research Problem

Several activities are undertaken within the sphere of inventory management, these include purchasing, classification, inspection, codification, store keeping and stock taking which include stock control. Kenya mobile phone service providers are facing competition in the current markets that has led to the need for coming up with better methods of managing and measuring how resources are utilized by various jobs or products, and therefore eliminate any wastage in the supply chain (Wangari, 2015). Organizations at times do not control their inventory holding, resulting in under stocking and causing the organizations to stay off production, thereby resulting to organizational ineffectiveness creating relationship problems between inventory management and organizational productivity, profitability and effectiveness. Too much inventory consumes physical space, creates financial burden, and increases possibility of damage, spoilage and loss (Coyle, Bardi& Langley, 2014). Worldwide, inventory management practice is increasingly growing and regionally, firms in Kenya adopt new management philosophies such as Just-In-Time, lean, agile, cross-docking, E-commerce and globalization (Florence, 2017)

Lwikiet al., (2014) using a survey carried-out in eight sugar manufacturing firms in Kenya established that there is generally positive correlation between each of inventory management practices. Capkun, Hameri, and Weiss, (2015) carried out a research study to determine the relationship between inventory and financial performance in manufacturing firms. The main measuring tools they used were gross markup and operating income for

financial performance, and unprocessed materials, partially manufactured products and finished products for inventory levels. This allowed them to notice that the degrees of correlation varied depending on the type of inventory and the financial performance reference. Through an empirical analysis done by the re-searchers Sahari, Tinggi and Kadri, (2017) they were able to determine a correlation between inventory management and firm's performance plus capital intensity. The study sampled constituted of 82 construction firms in Malaysia for the period 2012–2016. This correlation was deduced further with the use of the regression and correlation analysis methods. Competitive strategy targets one or more customer segments and aims to provide products and services that will satisfy these customers' needs. Inventory management involves ensuring a constant supply of stock to avoid stock out and have uninterrupted sales and efficient customer service, maintaining sufficient stock, controlling investment in inventories by keeping at an optimum level of production while minimizing carrying costs and time (Wangari,2015).

From the above studies it is evident that many studies have been done on this concept of inventory management and operational performance but there is no elaborate study linking the said concept and the energy sector in Kenya thus creating a wide knowledge gap. This underscores the need for carrying out the study to determine the impact of inventory management practices on operational performance in Kenya Power & Lighting Company.

1.3 Study Objectives

To determine the effect of inventory management practices on operational performance of Kenya Power and Lighting Company the study addressed the following objectives.

- i. To determine the effect of lean inventory systems on operational performance of Kenya Power and Lighting Company.

- ii. To establish the effect of supplier relationship management on operational performance of Kenya Power and Lighting Company.
- iii. To determine the effect of information communication technology on operational performance of Kenya Power and Lighting Company.
- iv. To determine the effect of warehouse management system on operational performance of Kenya Power and Lighting Company.

1.4. Value of the Study

The findings of the study are of value to the academia, the industry and to policy makers. To an academia, the results of the study are quite significant since it provides a better understanding of inventory management and the impact it has on the operational performance of utility firms such as KPLC. The study's findings form the basis to which further and future researches could be built in the area of study.

To a policy maker, the study can be used as basic information by inventory control staff to develop friendly policies and procedures for receiving inventory and controlling their levels as well. To an industry, the findings will assist in guaranteeing successful inventory management at all times for it will guide with decision making by those entrusted to formulate strategies of dealing with the problems of inventory. The findings of the study, should assist to identify areas where costs can be reduced while ensuring overall efficiencies are maintained.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter provides a substantial evaluation of the theoretical and empirical literature to the research study, literature analysis to the study and finally the literature review summary. Several theories like lean theory, resource dependence theory and economic order model are rich in inventory management issues as discussed below.

2.2 Theoretical Review

Efficient management of supply chain is pegged on how effective inventory management is in an organization. Special issues will emphasize the use of inventory management approaches and techniques and thus the various theories of inventory management. The following are some of the theories and how the theories related to the study.

2.2.1 Lean Theory

Lean theory is an extension of ideas of Just-in-Time. The theory eliminates buffer stock and minimizes waste in production process (Green & Inman, 2005). Inventory leanness positively affects the profitability of a business firm and is the best inventory control tool. Firms that are leaner than industry average generally see positive returns to leanness (Eroglu & Hofer, 2011). The theory elaborates on how manufacturers gain flexibility in their ordering decisions, reduce the stocks of inventory held on site and eliminate inventory carrying costs. Scholarly studies indicate that companies successfully optimize inventory through lean supply chains practices to achieve high levels of asset utilization and customer satisfaction leading to improved growth, profitability and market share. Criticism leveled against the theory is that it can only be applicable when there is a close and long-term collaboration and sharing of information between a firm and its trading partners.

According to Trujillo-Barrera (2014) leanness involves five principles: value whereby before business practices are changed it is first determined whether applying lean inventory techniques will actually generate business value. The second principle involves flow where to determine both your business value and the economic value you offer customers; you must understand how inventory flows in your warehouse. The third principle involves pull and it states that once you are fully aware of how your inventory flows and you've worked to eliminate inventory waste, pulling inventory only when requested by your customer, will become a natural outcome. The fourth principle is responsiveness and it involves a continuous and rigorous evaluation of your inventory flow along with effective demand management allows you to respond and adapt quickly to changes in the market. It will also keep the inventory at appropriate levels, preventing unnecessary storage costs and obsolete inventory. The last principle is perfection. It requires you to commit to a continuous refinement of your inventory management processes; doing so will result in improved quality, cycle time, efficiency and cost.

2.2.2 Resource Dependence Theory

In accordance with Harrison, (2001), resource dependence theory (RDT), organizations make certain certified and organized linkages with other firms by minimizing uncertainty and agreeing to reliance to other companies. That said, companies tend to be dependent to each other, hence merge assets to come up with a special resource bundle that is not easy to replicate. This was also stressed by Sambharya & Banerji, (2006) on that very note, because it is revealed that by the company's partnership with the other organizations creation of superior products has been experienced, thus better revenue and competitive advantage.

The importance of supply management activities is steaming from several issues, including the field of innovation, faster product development, global competition,

advanced hardware and software technology, increasing manufacturing flexibility, transportation speed, and information availability. Thus, supply management is gaining strategic importance followed by a wide range of tasks that needs to be fulfilled by the purchasing department.

The basic assumption of RDT is ensuring organizational survival by minimizing any situation of uncertainty and dependency and characterizes an organization as an open system, dependent on contingencies in the external environment. However, managers are able to reduce the environmental uncertainty and dependency by several actions, where the concept of power is the central stage. Having the engagement in mergers and acquisitions, joint ventures, composing and structuring the board of direction, political actions, and executive successions as juxtaposed actions (Hillman et al., 2009). Based on the notion that supply market is inherently unstable, literature claims that RDT provides a framework on how organizational actions can reduce uncertainty resulting in a more stable supply market. The study therefore, implies companies having premeditated supplier joint venture are capable of structuring resource bundles.

2.2.3 Economic Order Model

Economic order quantity (EOQ) is the cost of inventory that cuts down the sum cost of inventory management. The EOQ is an accounting formula that determines the point at which the combination of inventory costs and order costs are at the least. EOQ is the number of units that an organization ought to add to inventory with each order to reduce the sum cost of inventory, e.g., ordering costs, stock out costs and holding costs. EOQ is used as part of nonstop review system in which the level of inventory is always checked and fixed quantity is ordered every time the inventory arrives at a specific reorder point (Lysons, 2012). A variation of the basic EOQ model is the non-instantaneous receipt model, also referred to as the gradual us-age and production lot-size model. In this EOQ

model the assumption that orders are received all at once is relaxed. The order quantity is received gradually over time, and the inventory level is depleted at the same time it is being replenished. This situation is most commonly found when the inventory user is also the producer, as in a manufacturing operation where a part is produced to use in a larger assembly. This situation also can occur when orders are delivered gradually over time or when the retailer is also the producer.

Limitations of the economic order quantity model: It is necessary for the application of EOQ order that the demands remain constant throughout the year. It is also necessary that the inventory be delivered in full when the inventory levels reach zero. The EOQ model assumes steady demand of a business product and immediate availability of items to be re-stocked. It does not account for seasonal or economic fluctuations. It assumes fixed costs of inventory units, ordering charges and holding charges. This inventory model requires continuous monitoring of inventory levels. The effectiveness of the basic EOQ model is most limited by the assumption of a one-product business, and the formula does not allow for combining several different products in the same order.

2.3 Inventory Management Practices

To enhance performance in terms of efficiency and effectiveness of organizations, there are various inventory management practices. Inventory management turns into a big unnecessary headache without automation. Systems of tracking assets utterly simplify processes of inventory management, streamline documentation, and preserve accuracy further than what is realizable by use of manual inventory control processes. More so, it is a big saver of time. Four different inventory management practices have been looked at in this study.

2.3.1 Lean Inventory Systems

Keeping suitable inventory volumes is a paramount concern of every organization in terms of performance in its operations. The assumption is better regulation of inventory is strongly tied to organizations' improved earnings. Proper levels of inventory are dictated by program of production as a decision-making reaction to the demands of the market. Inventory is an existing positive feature to a company, although it's expensive to sustain while awaiting transformation into sales. When inventory is scarce, this can mean lost sales, whilst excess inventory does increase costs. Previous studies have paid attention to ways of management of inventory and most favorable volumes of inventory since there exists a relationship with the steadiness between more scientific systems of information, savings of expenditure on inventory, and competence in sales and production, as Sungard, (2007) reckons.

Management of inventory became a vastly researched and applied theory in the world of commerce that merged the making of best use of: - movement of inventory, the sharing of information amongst sellers and purchasers, supply chain management concepts and lean production strategies. Just-In-Time (JIT) is the center of the existing inventory management system. JIT therefore is a viewpoint of management that cuts wastage while enhancing quality in overall trade development according to Harrison &Hoek, (2011). Many manufacturing companies from Japan have employed JIT since 1970s. Toyota production system (TPS) created and developed JIT. It enhances reduction of lead-time and inventory as production quality increases. JIT can be referred to as, "an inventory tactic designed to improve a business financial performance by dropping excess inventory and its connected cost" (Sungard, 2007). It is of paramount importance to share information on schedule of production with distribution companies and suppliers.

Nowadays, via an up to date IT infrastructure, this sharing of information is available, utilizing the Enterprise Resource Planning, also abbreviated as ERP and the internet. During mid 1990s ERP was introduced as an enterprise of information system aimed at integrating accounting and production data and functions across firms. The major objective of ERP is to share data by all functional sections and to have right to use the data immediately to boost punctual making of decision. Jointly, ERP systems and internet considerably picks up the JIT inventory system, enabling actual time follow up of information and sharing of accounting and production information. The use of ERP systems and internet and JIT inventory management caters for a “lean production” chance to the firms to achieve their operational excellence. As in the case of KPLC, the lean inventory practices are very vital to the operational objectives since KPLC has large inventory to handle due to high demand escalated by the market situation.

2.3.2 Supplier Relationship Management

According to Cavinato (2012), "Supplier Relationship Management (SRM)" is practicing and process of interacting with suppliers. Many supply experts look at SRM as well thought-out move towards defining exactly what is needed and wanted by a supplier and setting up and running the firm-to-firm (or purchase-to-sales) connection to find these needs. SRM poses as a crucial point between the company and the last user. Firms that have issues with their supply chain set-up can take on SRM practice to improve their supply chain competence. Hughes (2010) argued, “Incompetent supply chains were the main reason behind poor company performance” he stressed that firms with incorporated supply chains produced more profits than those never considered supply chains.

SRM is the orderly, enterprise-wide evaluation of suppliers’ assets and ability with regards to general trade tactic, willpower of what actions to engage in with diverse suppliers, and preparation and implementation of all relations with suppliers, in a

synchronized manner across the relationship life cycle, to take full advantage of the value gotten by those relations. SRM is to build up reciprocally profitable relations with tactical supply associates to bring about better innovation and competitive advantage than could possibly be attained via operating separately or by a customary, transactional buying agreement.

Croxton and Rogers (2016) concurred that in most basic ways, SRM is comparable to Customer Relationship Management. Same way firms have several interactions within certain duration with their clientele, likewise they relate with suppliers when agreeing on contracts, buying, running logistics and delivery, work in partnership on product design, etc. The genesis of defining SRM as explained by Croxton and Rogers (2016) is an acknowledgment that the several interactions with sellers are not discrete and self-regulating, but rather precisely and gainfully thought of as consisting a relation-ship, which could and should be run in a synchronized style across functional and business unit touch-points, and throughout the relationship lifecycle. A research courtesy of Goko (2012), concluded that suppliers are required to sustain dependable records, faults to be acknowledged early, supermarkets to spread out their management structures, suppliers should conform to specifications and that superior level management should be wholly devoted especially in supplier development programs in order to triumph over the challenges faced in supplier quality management. The SRM brings to the concordant of operational effectiveness as enhanced by good understanding between the supplier and the buying organization which KPLC can materialize on.

2.3.3 Information Communication Technology

Information is nucleus of all organizations, writes Carter and Price (2010). It's needful of Inventory managers to have IT so as to prosper in their job. By comparing inventory variables, the computer can help in the control of stock in determining the best stock

quantity to hold and send off so as to suit the consumer wants. The Electronic Data Interchange, EDI is a feature that facilitates straight communication between firms with zero involvement of man. EDI means “the shift of structured data, by agreed message standards from one computer system to another, by electronic means as per the International Data Interchange Association, explains (Jessop, 2006). With the EDI system connecting the purchasing firm to its suppliers, the replacement can be triggered exactly when the need comes about and the message is conveyed from the original point with negligible corruption on the way. An EDI link also allows the computers of suppliers and clientele to cross-examine each other concerning the levels of stock and plans about production such that activities are properly harmonized. This bears possible advantages terms of minimized paper work, better precision of information, minimized human resource costs and brief lead times amounting from on-the-spot communication.

Another mechanism applied in the management of inventory is called Electronic point of sale, also referred to as EPOS. Its use is to search and capture information in relation to supplies traded. it ensures and makes available immediate sales information, charges dealings and sends out intra- and inters- stored messages. It facilitates stock to be restricted to demand, cuts the hazard of obsolescence and wear and tear of stocks, minimized risk of thievery and gives information to purchaser. This enables better client service and brings about better financial performance, argues (Lysons, 2012).

2.3.4 Warehouse Management Services

Today’s warehousing companies and distribution points are weighed down by information related to the supply and storage of products. Warehouse Management Systems (WMS) are often employed and applied with these objectives put into considerations. WMS is a useful tool in inventory management as it defines the best procedures for both inbound logistics, outbound logistics and inventory management

2.4 Empirical Review

In their study on lean inventory management and its effects on operation performance, Seungjae Shin & Kevin L. Ennis, (2015), found out that maintaining an appropriate level of inventory is a key issue to firms' operational performance. The supposition is that better inventory management is closely related with firms' better financial performance. Appropriate inventory levels depend on the production schedule as a managerial response to market demand. Inventory is a current asset to a firm, but it is costly to maintain as it waits to be converted into future sales. While excess inventory does increase costs, a shortage of inventory may result in lost sales. Inventory management has evolved into a highly studied and practiced concept in the business world that combines optimizing inventory movement, information-sharing between buyer and seller, lean production strategies, and supply chain management concepts. The core of the current Inventory management system is Just-In-Time (JIT) inventory systems. JIT as a practice of inventory management has been identified, by a number re-searcher, to exhibit a complimentary effect on the performance of an organization. A further research by Fullerton (2003) supports it, and it indicates that companies that outperform their rivals implement a big standard of inventory practice of JIT than the ones that didn't put that to use. That way, cutting down of waste by some practices applied, e.g. programs of preventive maintenance, lessening of time and standardized workloads. Eroglu and Hofer (2011) applied a dissimilar inventory management instrument- Empirical Leanness Indicator also abbreviated as (ELI), which showed the positive relation between the performance of a company and management of inventory.

The need for effective and efficient supplier's relationship management has been urged by increased competition, extended supply chains and global markets. Manufacturing firms are now confronting new challenges, despite their major contribution to the world

economy. Supply chains are becoming increasingly complex and dynamic; distribution channels are expanding with an increasing dependence on outsourced manufacturing and logistics (Smith et al., 2004). Furthermore, globalization and fast changing business practices are putting organizations under tremendous pressure to constantly improve product or process quality, delivery index, performance, and responsiveness along with reducing costs. The need to improve on supplier-buyer relations is becoming more apparent in the quest to achieve operational excellence (Smith et al., 2004).

According to Luke A. Oyugi & Charles Rambo, (2015), manufacturing share of total Kenyan economic output has stagnated with a declining contribution to total wage employment. Although previous research has explored the effect of supplier relationships management (SRM) on performance of firms, most of these works have concentrated on developed countries. Consequently, the contribution of specific SRM practices which includes supplier development, supplier segmentation, supplier performance management and information sharing on the performance of manufacturing firms, particularly in Kenya, has received relatively little direct attention from researchers. Supplier relationship management (SRM) is the discipline of strategically planning for, and managing, all interactions with third party organizations that supply goods and/or services to an organization in order to maximize the value of those interactions. It entails creating closer, more collaborative relationships with key suppliers in order to uncover and realize new value and reduce risk.

In spite of the considerable investment in Information Communication Technology, investments made by organizations, an express connection between investment in technology and productivity increases and performance has been tremendously elusive. The expected profits from investment in technology comprise of lowered costs, better quality, improved flexibility, better client satisfaction, advanced productivity and in due course a greater

financial performance. Information sharing is now available through a modern IT infrastructure utilizing the Internet and Enterprise Resource Planning (ERP). ERP was introduced in the 1990s as an enterprise information system designed to integrate production and accounting data and functions across organizations. JIT inventory management and the utilization of Internet and ERP systems provides for a “lean production” opportunity. In this dynamic and unpredictable world, an organization’s capability to access the right information at the right time holds the key to sustenance and longevity. As the suppliers are important and integral part of supply chain management and supplier management an important part of any organization’s strategies, having the right information on suppliers and supplier’s performance becomes imperative (Kearney, 2013).

Warehouse management primarily refers to the coordination of the movement and storage of materials within a warehouse and processes associated and transactions, including shipping, receiving, put-away and picking. Warehousing is one of the important auxiliaries to trade. It creates time utility by bridging the time gap between production and consumption of goods. It is integral part to the supply chain network within which it operates and as such its roles and objectives should synchronize with the objectives of the supply chain. It is not a ‘Stand-alone’ element of activity and it must not be a weak link in the whole supply chain network. (Aberdeen Group, 2013). However, to date in most organization, both analysts and managers have been relatively unsuccessful in convincing top management to give this area the due consideration that it logically deserves. Inventories are basically stocks of resources held for the purpose of future production and/or sales. Inventories may be viewed as an idle resource which has an economic value. Better management of inventories would release capital for use elsewhere productively; Hence Inventory control implies the coordination of materials accessibility, controlling,

utilization and procuring of material. The direction of activity with the purpose of getting the right inventory in the right place at the right time and in the right quantity is inventory control and it is directly linked to productivity of the warehouse. (Zhang & Vonderembse, 2012).

2.5 Conceptual Framework

Baxter, (2014) describes conceptual framework as a combination of wide-ranging notions and ideology derived from related areas of enquiry and applied in order to form a succeeding presentation. While undertaking the anticipated research, a conceptual framework will be structured to bring out the correlation between the dependent variable and the non-dependent variables. In the research, the scholar will seek to determine how independent variables such as lean inventory systems, supplier relationship management and information communication technology systems impact on the operation performance (dependent variable).

Independent Variables

Dependent Variable

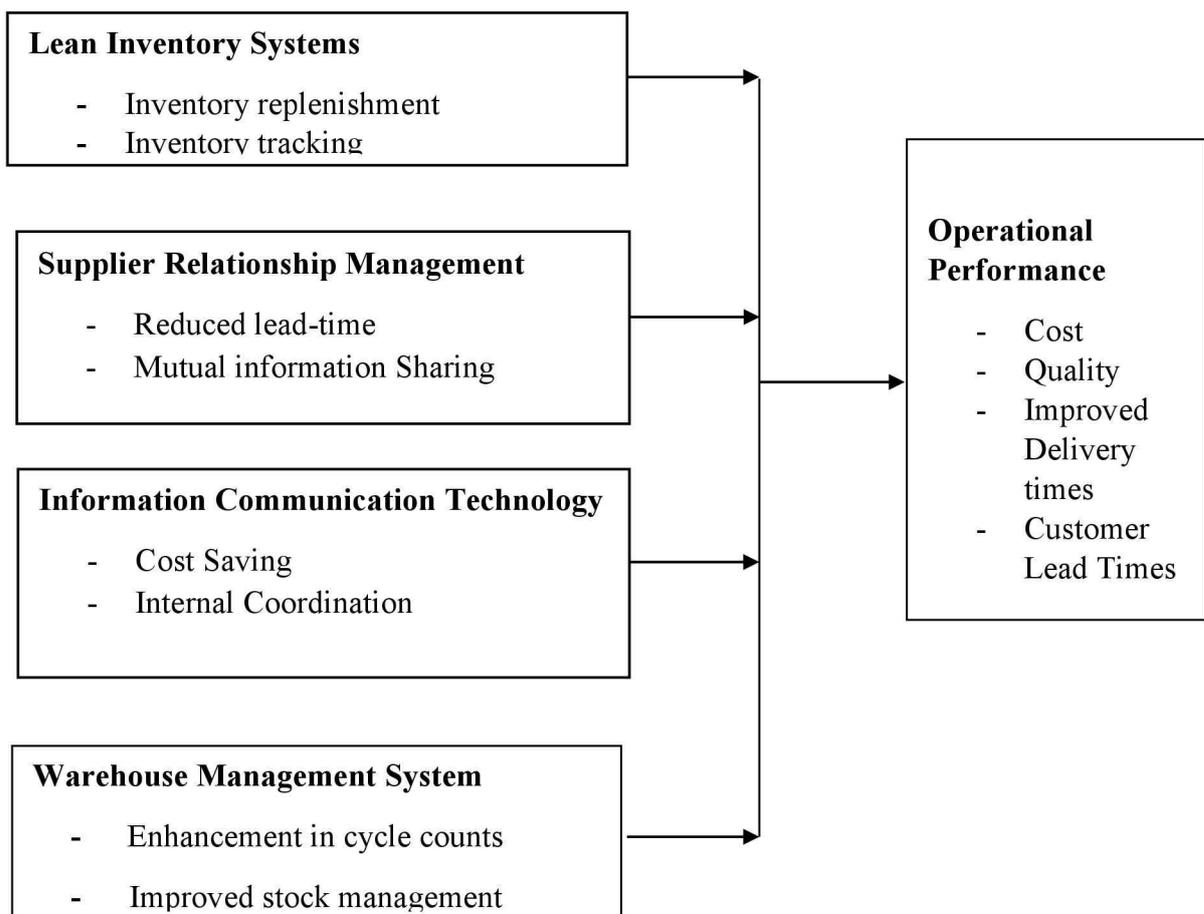


Figure 2.1 Conceptual Framework

2.6 Operationalization of Variables

The variables have been defined into measurable factors as shown in table 2.1

Table 2.1: Operationalization of Variables

Objectives	Variable Type	Indicator	Data Analysis
To determine the effect of Information Communication systems on operational Performance of KPLC	Independent	Cost Saving	- Descriptive
		Internal Coordination	- Regression
To determine the effect of Warehouse Management Systems on operational Performance of KPLC	Independent	Improved stock management	- Descriptive
		Enhanced cycle counts	- Regression
To determine the effect of Supplier Relationship Management on operational Performance of KPLC	Independent	Reduced lead-time	- Descriptive
		Mutual information Sharing	- Regression
To determine the effect of lean inventory systems on operational Performance of KPLC	Independent	Inventory replenishment	- Descriptive
		Inventory tracking	- Regression
Operational Performance	Dependent	Cost,	- Descriptive
		Quality,	- Regression
		Delivery Times	

2.7 Summary of Literature Review

Preceding researches have revealed weak relations and positive relations between the operational performance of firms and the practices of inventory management. Also noted was that the elements that draw companies to take on practices of inventory management and the advantages they enjoy from taking on practices of inventory management. Some studies have also shown challenges that firm experience with the inventory management practices. However, these studies have not clearly outlined effects of inventory management practices on operational performance in KPLC. This formed the basis of this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section highlights the methodology of the study. This includes the research design, population of the study, data collection instruments and procedures and methods of data analysis.

3.2 Research Design

The study employed a cross sectional survey design. Cross sectional survey approach is where data is collected at one time from a sample selected to represent a larger population. The study looked at sub-regional perspective as each sub region store has a free way to handle its own inventory so long as it's accountable.

The data was collected from the 57 sub-region stores the cross sectional study was used to answer questions concerning the current status of the research subjects in the study looking across the entire number of stores in KPLC.

3.3 Population of the Study

Mugenda and Mugenda (2003) defines population as all members of some defined group. The target population were all sub region stores in Kenya Power and Lighting Company Ltd. The company has 57 sub-region stores. Due to the size of the target population, no sampling was conducted as the researcher collected data from all the 57 stores.

3.4 Data collection

Data was collected through questionnaires. Questionnaires were a preferred tool for data collection as it enabled the researcher to collect up to date data as well as elicit information which would have been captured in the other data collection techniques. The questionnaire used five point Likert scale whereby the views of the respondents were indicated on a scale of 1 to 5. The questionnaire contained 3 sections as follows; Section

A contained the Background/Demographic information, Section B contained data on Inventory Management Practices Section C contained data on the relationship between the variables. The questionnaires were administered via email and dropping to the stores. The respondent were the stores managers, the stock controller and store-keepers in all the 57 stores.

3.5 Data Analysis

In order to address the objectives of this study, multiple regression analysis was used to generate the effect of the independent variables (lean inventory management, strategic supplier relationship, and warehouse management system and information communication technology) on the dependent variable (operational performance). Using this model R, R² (R-Regression analysis and R² adjusted regression coefficient) was computed and the relationship determined.

Equation (i) represented the multiple regressions.

$$OP = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

OP= Operational Performance

β_0 is the intercept of the model.

X₁= Warehouse Management System

X₂= Strategic Supplier Partnerships

X₃= Information Communication Technology

X₄-Lean inventory management

β_1 -Regression Coefficient of the variable X₁ (Warehouse Management System)

β_2 -Regression Coefficient of the variable X₂ (Strategic Supplier Partnerships)

β_3 -Regression Coefficient of the variable X3 (Information Communication Technology)

β_4 -Regression Coefficient of the variable X4 (Lean inventory management)

ε = Error term

The error term (ε) represented the unknown variables or those hard to measure but had an effect on the dependent.

The collected questionnaires were organized and data extracted. The data was checked for completeness and consistency. The data was quantitatively analyzed and results presented through tables, graphs and charts to give a clear picture of the findings.

3.6 Diagnostic Tests

The study carried out diagnostic tests to test the suitability of the data before conducting regression analysis. The specific tests in this context included multi-collinearity and normality. VIF was used to test for Multi-collinearity, Skewness and Kurtosis tested Normality.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter focused on presenting the findings of the study, as well as analyzing findings to enable the user of the study to understand at an in-depth level the results regarding the research topic. In the first section, the chapter focuses on providing the demographic data regarding the respondents while the second section provides the data analyzed data based on descriptive statistics.

4.2 Response Rate

Out of the 171 questionnaires distributed to the respondents, 122 were returned which represents a response rate of 71 %. This is considered as adequate as the per study of the Mugenda (2008) who recommends a response rate of 60 percent and above as good and adequate for analysis.

Table: 4.1 Response Rate

Parameters	Frequency	Percent (%)
Response	122	71
Non Response	49	29
	171	100

4.3 Demographic Information

This section presented the findings of the respondents' demographic information namely the length of service in the company and number of employees in the ware-house.

4.3.1 Length of Service

The respondents were asked to state the durations they had worked in the company Majority 57% stated they had worked for the company for less than ten years.43% had worked for more than ten years as given by Table 4.2.

Table: 4.2 Duration Worked by Employees

	Frequency	Percent
Less than 10 years	81	57
Above ten years	61	43
Total	142	100

4.3.2 Number of Employees

The respondents were asked to state the number of employees in their stores; 44.4% of the stores had between 1 to 5 employees. Followed 21.8% of stores with over 30 employees, 19.7% had between 16-30 employees and finally 14.1 % of the stores had between 6 to 15 employees.

Table: 4.3 Number of employees

	Frequency	Percent
1-5	63	44.4
6-15	20	14.1
16-30	28	19.7
Over 30	31	21.8
Total	142	100

4.4 Reliability Statistics

To check the internal consistency of the variables and data, reliability test was done using Cronbach's Alpha Coefficient. A Cronbach's Alpha value of more than 0.7 is considered to be good enough, Kothari &Garg, (2014).

Table: 4.4 Reliability statistics

Cronbach's Alpha	No of Items
0.968	26

From Table 4.4 it can be shown that the overall reliability was 0.968 which is way above the minimum threshold of 0.70.

Reliability test was done also for each of the individual variables. The results are given in Table

Table: 4.5 Reliability for individual variables

Variables	Cronbach's Alpha	No of items
Lean inventory systems	0.883	4
Strategic supplier partnership	0.903	5
Information communication technology	0.906	5
Warehouse management systems	0.882	5
Operational Performance	0.915	7

From Table 4.5 it can be seen that all the variables had a coefficient value of more than 0.7 hence their data was reliable

4.5 Descriptive Analysis of Inventory Management Practices

The study sought to establish the extent to which sub regional stores in KPLC have embraced inventory management practices. A five point Likert scale was used to rate the responses where 1=Strongly Disagree; 2= Disagree; Agree; 3= No opinion; 4=Agree; 5=Strongly Agree; M= Mean; S.D=Standard Deviation and the results are indicated in tables.

4.6 Lean Inventory Systems

On whether lean inventory system assists the departments in preparation of inventory stock sheet on time, 36.6% of the respondents agreed with the statement, 31.7% of the respondents strongly agreed 19.7% were indifferent,7.0% and 4.9% both disagreed and

strongly disagreed with the statement respectively. On whether lean inventory system assists the department do inventory budget reviews on time, 36.6% of the respondents agreed with the statement, 30.3% of the respondents strongly agreed 23.9% were indifferent, 7.7% and 1.4% both disagreed and strongly disagreed with the statement respectively.

On whether lean inventory system assists the departments stock replenishment on timely basis, 40.9% of the respondents strongly agreed with the statement, 36.4% of the respondents agreed 15.2% were indifferent, 5.3% and 2.3% of the respondents both disagreed and strongly disagreed with the statement respectively. On whether lean inventory system assists the departments in stock replenishment on timely basis, 35.8% of the respondents strongly agreed with the statement, 34.3% of the respondents agreed 23.1% were indifferent, 4.5% and 2.2% of the respondents both disagreed and strongly disagreed with the statement respectively.

Table: 4.6 Lean inventory systems

S/No	Statement	1%	2%	3%	4%	5%	M	S.D
001.	Lean inventory systems assists my department prepare Inventory stock sheets on time.	4.9	7	19.7	36.6	31.7	3.83	1.04
002.	Lean inventory systems assists my department do inventory budget reviews on time.	1.4	7.7	23.9	36.6	30.3	3.87	0.984
003.	Lean inventory systems assists stock replenishment on timely basis in my section.	2.3	5.3	15.2	36.4	40.9	4.08	0.989
004.	Lean inventory systems assists accurate inventory tracking in my store	2.2	4.5	23.1	34.3	35.8	3.97	0.988
Grand mean							3.94	

4.7 Strategic Supplier Partnership

The respondents were asked to indicate the level of agreement with respect to strategic supplier partnership. A five point Likert scale was used to rate the responses where 1=Strongly Disagree; 2= Disagree; Agree; 3= No opinion; 4=Agree; 5=Strongly Agree. The respondents were asked whether Strategic supplier partnership assists in establishing long-term relationships with suppliers in my department. 44.7% of the respondents strongly agreed with the statement, 27.0% of the respondents agreed 20.6% were indifferent, 5.7% and 2.1% of the respondents both disagreed and strongly disagreed with the statement respectively. On whether the strategic supplier partnership assists my department maintain high level of trust with suppliers,36.9% of the respondents strongly

agreed with the statement, 31.8% of the respondents agreed 24.8% were indifferent, 5.0% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively. The respondents were asked whether Strategic supplier partnership enhances mutual information sharing between my department and suppliers 36.9% of the respondents strongly agreed with the statement, 32.6% of the respondents agreed 21.3% were indifferent, 7.1% and 2.1% of the respondents both disagreed and strongly disagreed with the statement respectively.

The respondents were asked whether Strategic supplier partnership ensures suppliers maintain timely deliveries in my department and suppliers 39.7% of the respondents strongly agreed with the statement, 37.6% of the respondents agreed 15.7% were indifferent, 5.7% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively. On whether the strategic supplier partnership assists Strategic supplier partnership improves quality of inventories supplied in my department, 39.7% of the respondents strongly agreed with the statement, 33.3% of the respondents agreed 19.1% were indifferent, 5.0% and 2.8% of the respondents both disagreed and strongly disagreed with the statement respectively.

Table: 4.7 Strategic Supplier Partnership

S/No	Statement	1 %	2 %	3 %	4 %	5 %	M	S.D
001	Strategic supplier partnership assists in establishing long-term relationships with suppliers in my department.	2.1	5.7	20.6	44.7	27.0	3.89	0.942
002	Strategic supplier partnership assists my department maintain high level of trust with suppliers.	1.4	5.0	24.8	36.9	31.8	3.93	0.946
003	Strategic supplier partnership enhances mutual information sharing between my department and suppliers.	2.1	7.1	21.3	32.6	36.9	3.95	1.030
004	Strategic supplier partnership ensures suppliers maintain timely deliveries in my department	1.4	5.7	15.7	39.7	37.6	4.06	0.943
005	Strategic supplier partnership improves quality of inventories supplied in my department.	2.8	5.0	19.1	39.7	33.3	3.96	0.992
Grand mean							3.96	

4.8 Information Communication Technology

The respondents were asked to indicate the level of agreement with respect to information communication technology. A five point Likert scale was used to rate the responses where 1=Strongly Disagree; 2= Disagree; Agree; 3= No opinion; 4=Agree; 5=Strongly Agree; M= mean; S.D=standard deviation and the results are indicated in table 4.7.

The respondents were asked whether Information Communication Technology helps my department determine stock levels on time in the department 30% of the respondents strongly agreed with the statement, 32.9% of the respondents agreed, 30% were indifferent, 5.0% and 2.1% of the respondents both disagreed and strongly disagreed with the statement respectively. The respondents were asked whether Information Communication Technology helps my department determine reorder levels accurately in the department, 29.5% of the respondents strongly agreed with the statement, 42.4% of

the respondents agreed, 23.3% were indifferent, 3.6% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively.

On timely review of the reorder levels by use of Information Communication Technology, 35.3% of the respondents strongly agreed with the statement, 38.14% of the respondents agreed, 20.1% were indifferent, 5.0% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively. On how Internal information sharing internally is enhanced by the department using Information Communication Technology, 40.3% strongly agreed with the statement, 23.8% of the respondents agreed, 25.2% were indifferent, 4.3% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively.

On whether improved communication between stores and suppliers is enhanced using Information Communication Technology, 34.3% strongly agreed with the statement, 41.4% of the respondents agreed, 19.3% were indifferent, 3.6% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively.

Table: 4.8 Information Communication Technology

S/No	Statement	1	2	3	4	5	M	S.D
		%	%	%	%	%		
001	Information Communication Technology helps my department determine stock levels on time.	2.1	5.0	30	32.9	30	3.84	0.986
002	Information Communication Technology assists my department determine reorder levels accurately.	1.4	3.6	23.0	42.4	29.5	3.95	0.895

003	Reorder levels are reviewed on a timely basis in my department with the assistance of Information Communication Technology.	1.4	5.0	20.1	38.1	35.3	4.01	0.944
004	Internal information sharing internally is enhanced in my department using Information Communication Technology.	1.4	4.3	25.2	28.8	40.3	4.02	0.881
005	Improved Communication between stores and suppliers is enhanced using Information Communication Technology.	1.4	3.6	19.3	41.4	34.3	4.04	0.901
Grand mean							3.97	

4.9 Warehouse Management System

The respondents were asked to indicate the level of agreement with respect to warehouse management systems. A five point Likert scale was used to rate the responses where 1=Strongly Disagree; 2= Disagree; Agree; 3= No opinion; 4=Agree; 5=Strongly Agree; M= Mean; S. D=Standard Deviation and the results are indicated in Table 4.8

The respondents were asked to state whether warehouse management systems assist my department to prepare inventory budgets accurately in the department and 35.5% of the respondents strongly agreed with the statement, 29.0% of the respondents agreed, 30.4% were indifferent, 2.2% and 2.9% of the respondents both disagreed and strongly disagreed with the statement respectively. When asked whether my department reviews inventory levels on a timely basis through the use of Warehouse Management Systems, 34.1% of the respondents strongly agreed with the statement, 38.4% of the respondents agreed, 20.3% were indifferent, 5.8% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively.

A total of 34.8% of the respondents strongly agreed with the statement that warehouse management systems are important to my department in cycle counts to detect stock variances, 36.2% of the respondents agreed, 22.5% were indifferent, 0.0% and 6.5% of the respondents both disagreed and strongly disagreed with the statement respectively. On how my department manages inbound and outbound logistics efficiently through warehouse management systems, 40.6% of the respondents strongly agreed with the statement, 32.6% of the respondents agreed 15.2% were indifferent, 8.7% and 2.9% of the respondents both disagreed and strongly disagreed with the statement respectively. A statement that my department uses warehouse management systems to ensure the stores space is efficiently utilized, 39.3% of the respondents strongly agreed, 35.7% of the respondents agreed, 19.3% were indifferent, 4.3% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively.

Table: 4.9 Warehouse Management Systems

S/No	Statement	1 %	2 %	3 %	4 %	5 %	M	S.D
001	Warehouse management systems assist my department to prepare inventory budgets accurately.	2.9	2.2	30.4	29.0	35.5	3.92	1.004
002	My department reviews inventory levels on a timely basis through the use of Warehouse Management Systems.	1.4	5.8	20.3	38.4	34.1	3.98	0.955
003	Warehouse management systems are important to my department in cycle counts to detect stock variances.	6.5	0.0	22.5	36.2	34.8	3.99	0.916
004	My department manages inbound and outbound logistics efficiently through Warehouse Management Systems.	2.9	8.7	15.2	32.6	40.6	3.99	1.084
005	My department uses warehouse management systems to ensure the stores space is efficiently utilized.	1.4	4.3	19.3	35.7	39.3	4.07	0.942
Grand mean							3.99	

4.10 Operational Performance

The respondents were asked to indicate the level of agreement with respect to operational performance. A five point Likert scale was used to rate the responses where 1=Strongly Disagree; 2= Disagree; Agree; 3= No opinion; 4=Agree; 5=Strongly Agree; M= Mean; S.D=Standard Deviation and the results are indicated in Table 4.9. The respondents were asked to state whether Inventory management practices enhance customer service in my department and 31.6% of the respondents strongly agreed with the statement,38.2% of the respondents agreed 22.1% were indifferent,0.0% and 8.1% of the respondents both disagreed and strongly disagreed with the statement respectively. On the statement that Inventory management practices facilitate standardization of inventory movements in my department, 37% of the respondents strongly agreed, 37.8% agreed with the statement, 17.8% were indifferent, 0.0% and 7.4% of the respondents both disagreed and strongly disagreed with the statement respectively. The response on the statement that inventory management practices lead to faster inventory turn around in my department was, 36.6 % of the respondents strongly agreed, 34.3% agreed with the statement, 18.7% were indifferent, 0.0% and 10.4% of the respondents both disagreed and strongly disagreed with the statement respectively.

On the statement that inventory management practices facilitate standardization of inventory movements in my department, 33.1% of the respondents strongly agreed,14.7% agreed with the statement, 18.0% were indifferent,5.8% and 1.4% of the respondents both disagreed and strongly disagreed with the statement respectively. On the statement that inventory management practices lead to more efficient use of available warehouse space of inventory movements in my department, 27% of the respondents strongly agreed, 44.5% agreed with the statement, 21.2% were indifferent, 5.1% and 2.2% of the respondents both disagreed and strongly disagreed with the statement respectively. On the

statement that inventory management practices lead to improved cycle counting in my department, 46.4% of the respondents strongly agreed, 30.4% agreed with the statement, 17.4% were indifferent, inventory management practices lead to improved cycle counting 5.1% and 0.7% of the respondents both disagreed and strongly disagreed with the statement respectively. On the statement that in inventory management practices leads to improved communication between stores and suppliers in my department, 42.4% of the respondents strongly agreed, 35.3% agreed with the statement, 12.2% were indifferent, inventory management practices lead to improved cycle counting, 7.2% and 2.9% of the respondents both disagreed and strongly disagreed with the statement respectively.

Table: 4.10 Operational Performance

S/No	Statement	1	2	3	4	5	M	S.D
		%	%	%	%	%		
001.	Inventory management practices enhances customer service	8.1	0	22.1	38.2	31.6	3.93	0.929
002.	Inventory management practices facilitates standardization of inventory movements	7.4	0	17.8	37.8	37	4.04	0.921
003.	Inventory management practices leads faster inventory turns	10.4	0	18.7	34.3	36.6	3.97	0.988
004.	Inventory management practices leads to more efficient use of available warehouse space	1.4	5.8	18	14.7	33.1	3.99	0.936
005.	Inventory management practices leads to reduction in inventory paperwork	2.2	5.1	21.2	44.5	27	3.89	0.937
006.	Inventory management practices leads to Improved cycle counting	0.7	5.1	17.4	30.4	46.4	4.17	0.94
007.	Inventory management practices leads to improved Communication between stores and suppliers	2.9	7.2	12.2	35.3	42.4	4.07	1.047
	Grand mean						4	

4.11 Normality Test

Normality is one of the assumptions of a linear regression model. Various methods exist in the literature on how to test the normality of a given set of data. Ali *et al.*, (2016), showed that the measures of Skewness and Kurtosis statistics test can be used to assess the normality of a given set of data. Kothari &Garg, (2014), states that skewness test statistics is based on mean and median while kurtosis measures the peaked-ness of the curve of the frequency distribution (Kothari &Garg, 2014). A data set with skewness and Kurtosis statistics of between -1 and +1 is considered to be normal. Table 4.11 shows that

all the variables have a skewness and kurtosis values within the acceptable range. Therefore, all the independent variables have met the assumption of normality.

Table: 4.11 Skewness and Kurtosis

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Lean Inventory systems	142	-0.893	0.203	0.839	0.404
Strategic supplier partnership	141	-0.997	0.204	0.696	0.406
Information communication technology	140	-0.993	0.205	0.768	0.407
Warehouse management systems	140	-0.988	0.205	0.101	0.407

Correlation has been used to measure the strength of relationship between two or more variables. More often Pearson correlation coefficient is used and it ranges between -1 and +1.

From table 4.11 it can be seen that inventory system, strategic supplier partnership, information communication technology and warehouse management systems have a strong positive influence on operational performance. To assess the nature of the strength of these relationships, a multiple linear regression is fitted as given in section 4.8.

Table: 4.12 Correlations

		1	2	3	4	5
Inventory systems (1)	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	142				
Strategic supplier partnership (2)	Pearson Correlation	.641**	1			
	Sig. (2-tailed)	0				
	N	141	141			
Information Communication technology (3)	Pearson Correlation	.643**	.658**	1		
	Sig. (2-tailed)	0	0			
	N	140	140	140		
Warehouse management systems (4)	Pearson Correlation	.533**	.535**	.525**	1	
	Sig. (2-tailed)	0	0	0		
	N	140	140	140	140	
Operational performance (5)	Pearson Correlation	.647**	.690**	.694**	.742**	1
	Sig. (2-tailed)	0	0	0	0	
	N	139	139	139	139	139

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

4.12 Regression Analysis

In this study, regression analysis was used to test influence of inventory management practices on operational performance. All the variables in the model were tested for multicollinearity based on correlation matrix and Variance Inflation Factor (VIF) values. According to Smith (2005) tolerance values between each pair of independent variables should lie between 0 and 0.80 and VIF should be between 1 and 10. Table 4.13 shows that all the variables Tolerance and VIF were within the acceptable range hence the issue of multicollinearity will not arise.

Table: 4.13 Regression Coefficients and Multicollinearity

Model	Column1	Unstandardized		Standardized	t	Sig.	Collinearity Statistics	
		B	Std. Error				Beta	Tolerance
	(Constant)	0.518	0.208		2.497	0.014		
	Inventory systems	0.213	0.074	0.322	2.881	0.006	0.233	4.284
	Strategic	0.197	0.098	0.211	2.02	0.045	0.213	4.688
	Supplier partnership	0.263	0.1	0.274	2.624	0.01	0.212	4.712
	Information communication technology	0.444	0.052	0.5	8.6	0	0.685	1.459
	Warehouse management systems							

a. Dependent Variable: Operational Performance

4.13 Model Summary

Table 4.14 gives the model summary. It can be seen that inventory management practices have a combined explanatory power of 68.9%. This implies 68.9% of all the variations in operational performance are explained by the inventory management practices. Other factors explain 31.1% of the variations.

Table: 4.14 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.830 ^a	0.689	0.68	0.4388

a. Predictors: (Constant), warehouse management systems, information communication technology, inventory systems, strategic supplier partnership.

4.13 Model of Good Fit

Table 4.15 presents the ANOVA summary which gives the goodness of fit. From Table 4.15 it can be shown that at least one of the inventory management practices significantly influences operational performance (since the p value is less than 0.05). This also implies that the model adopted is adequate for the given data.

Table: 4.15 Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.138	4	14.284	74.187	.000 ^b
	Residual	25.801	134	0.193		
	Total	82.939	138			

a. Dependent Variable: operational performance

b. Predictors: (Constant), warehouse management systems, information communication technology, inventory systems, strategic supplier partnership.

4.14 Regression Results

Regression results show that lean inventory systems (supported by $\beta=0.213$, p-value = 0.006), strategic supplier partnership (supported by $\beta=0.197$, p-value = 0.045), communication information technology (supported by $\beta=0.263$, p-value = 0.010) and warehouse management system (supported by $\beta=0.444$, p-value = 0.000) are all statistically significant in explaining organization performance.

This implied that the null hypothesis is rejected in all the cases and the alternative hypothesis is accepted. The regression model is summarized by equation 4.1 as:

$$OP = 0.518 + 0.213X_1 + 0.197X_2 + 0.263X_3 + 0.444X_4 \dots \dots \dots (4.1)$$

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section highlights the summary of study findings, the conclusions, recommendations made based on findings, limitation of the study and the suggestions for further studies.

5.2 Summary of the Study Findings

The research study was sub-divided into three segments on the questionnaire; first, response rate and general information on respondents, second, inventory management practices embraced by the sub region stores in KPLC and finally the effect of inventory management on operational performance. From the findings, the questionnaires that were completed and returned by respondents were 122 out of 171, representing a response rate of 71%. The respondents were supply chain officer (stores in charge), stock controller and storekeeper.

The largest number of respondents were the Storekeepers 31%, followed by Supply Chain Officers at 27% and final stock controllers at 13%. From the observation, 57% employee have worked for less than 10years and 43% have worked for more than 10 years.

KPLC sub regional stores have between 1 to 5 employees at 44.4% followed by over 30 at 21.8% while those warehouses with between 6 to 15 employees were the fewest at 14.1 %.

The analysis from the finding revealed that there was a significant level of embracement of each of the inventory management practices. Warehouse management system was the most embraced inventory management practices by KPLC sub regional stores, having a grand mean score of 3.99 secondly followed by information communication technology

with a grand mean score of 3.97, strategic supplier partnership was at 3.96 and finally the lean inventory systems 3.94.

Under strategic supplier partnership, timely deliveries ranked as the highest indicator with a mean score of 4.06 followed closely by mutual information sharing at 3.76. The lowest ranked indicator of strategic supplier partnership was maintaining high level of trust 3.18. The analysis further revealed that for information communication technology practices, the highest ranked indicator was firms using ICT to improve communication between stores and suppliers 4.04; the lowest ranked indicator was use of inventory management techniques to determine stock levels at 3.84. For Lean inventory system the highest ranked was timely stock replenishment a 4.0 the lowest being preparing of inventory sheets at 3.83. Lastly the highest ranked indicator in warehouse management system was ensuring the stores space is efficiently utilized at 4.07 and the lowest was at 3.92.

Using a multiple regression model, the data obtained from the respondents was used to regress inventory management practices against operational performance of KPLC. Regression results show that lean inventory systems supported by $\beta=0.213$, p-value = 0.006, strategic supplier partnership supported by $\beta=0.197$, p-value = 0.045, communication information technology supported by $\beta=0.263$, p-value = 0.010 and warehouse management system supported by $\beta=0.444$, p-value = 0.000 are all statistically significant in explaining organization performance.

5.3 Conclusions

The focus of this research was to scan the effects of inventory management practices on operational performance of KPLC. The study found that out of the four inventory management practices, inventory management systems was the most embraced having a significance of 0.04. This is because inventory management systems not only reduce

inventory wastage but also ensures more efficient use of available warehouse. This finding conform to that of Baxter (2014) who introduced the lean production principle which was associated with reduced inventories. Their argument was that as a way of reducing storage fees, handling and waste, profit improvement was realized due to interest savings and inventory reduction as the main reason for that. Also the research study by Eroglu and Hofer (2011), showed positive relationship between inventory management and performance which used the Empirical Leanness Indicator (ELI) as a measurement for inventory management. They argued that inventory leanness is the best inventory management tool thus to mean that inventory management practices have a positive impact on the operational performance of a firm.

Findings further revealed that strategic supplier partnership had a significant relationship with the operational performance of the warehousing companies. While the p value (0.38) was found to be insignificant an indication that the model would not be appropriate however, the grand mean (4.21) showed a high ranking in its adoption. These findings conformed to a study done by Coyle (2014) who noted that the main factor for strategic supplier partnership to flow well, orthodox communication. Due to this proper communication between customers and suppliers, it makes work more efficient and effective to run in a firm. As new technology erupts and use of all kinds of electronic communication, the strategic supplier representative's still prevail vital. The firm should also embark on early supplier involvement in the design process to minimize items received being defective and also obsolescent. The results also revealed that information communication technology was not significantly related to the operational performance as shown by the p value. The reason could be because ICT is mainly intertwined in most of the inventory management systems which have been adopted by the warehousing firms.

Such systems include: JIT systems, Enterprise Resource Planning (ERP), Vendor Managed Inventory (VMI), and Materials Requirements Planning Systems (MRP).

5.4 Recommendations of the Study

The study recommends that KPLC should embrace inventory management practices since they contribute to enhanced operational performance. This is because an effective management of inventories has an overall impact on enhancing operational performance of a firm, including guarantee on the quality of goods supplied, reduced lead times, delivery, inventory management practices leads to a reduction of the reorder and holding costs; this has the consequence of enhancing the level of profitability. In particular, this research recommends that information communication technology, strategic supplier partnership, lean inventory systems and warehouse management systems to ensure effective management of inventories.

5.5 Limitations of the Study

This research limited itself to KPLC therefore its findings cannot be used as a generalization of other companies in the energy sector or other sectors such as banking agriculture etc. The independent variables that have been stated in this research are not limited to the four; there could be more variables to measure and assess the effect of inventory management practices on operational performance.

5.6 Recommendations for Further Studies

This study was on inventory management practices and operational performance. The study used primary data that was gathered exclusively using a questionnaire. The focus of this study was on the energy sector. Future studies ought to be conducted to cover other sectors like technology, insurance and banking. Future studies should also be conducted using both primary and secondary data.

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APPENDICES

Appendix I: Questionnaire

This questionnaire seeks to collect information in KPLC's stores to determine the impact of if inventory management practices on the operational performance of the company.

Please provide the information frankly and honestly.

Kindly fill-in and tick where appropriate.

Section A: Background Information

1. What is your position in the firm?

2. How long have you worked for the company?

Less than 10 years

Above 10 years

3. How many employees work in your warehouse?

1 - 5 6-15 16-30 Over 30

Part B: Inventory Management Practices

Lean Inventory Systems

Please indicate the level of agreement with respect to Lean Inventory Systems where 1 to 5 indicate: 1 = Strongly Disagree, 2 = Disagree, 3 = No Opinion, 4 = Agree, 5 = Strongly Agree.

Please note there are no correct or wrong answers, just express your opinion.

	Scale	1	2	3	4	5
1	Lean inventory systems assists my department prepare Inventory stock sheets on time.					
2	Lean inventory systems assists my department do inventory budget reviews on time.					
3	Lean inventory systems assists stock replenishment on timely basis in my section.					
4	Lean inventory systems assists accurate inventory tracking in my store.					

Strategic supplier partnership

Please indicate the level of agreement in the following statements with respect to strategic supplier partnership where 1 to 5 indicate: 1 = Strongly Disagree, 2 = Disagree, 3 = No Opinion, 4 = Agree, 5 = Strongly Agree.

Please note there are no correct or wrong answers, just express your opinion.

	Scale	1	2	3	4	5
1.	Strategic supplier partnership assists in establishing long-term relationships with suppliers in my department.					
2.	Strategic supplier partnership assists my department maintain high level of trust with suppliers.					
3.	Strategic supplier partnership enhances mutual information sharing					

	between my department and suppliers.					
4.	Strategic supplier partnership ensures suppliers maintain timely deliveries in my department					
5.	Strategic supplier partnership improves quality of inventories supplied in my department.					

Information communication technology

Please indicate the level of agreement in the following statements with respect to Information Communication Technology where 1 to 5 indicate: 1 = Strongly Disagree, 2 = Disagree, 3 = No Opinion, 4 = Agree, 5 = Strongly Agree.

Please note there are no correct or wrong answers, just express your opinion.

	Scale	1	2	3	4	5
1.	Information Communication Technology helps my department determine stock levels on time.					
2.	Information Communication Technology assists my department determine reorder levels accurately.					
3.	Reorder levels are reviewed on a timely basis in my department with the assistance of Information Communication Technology.					
4.	Internal information sharing internally is enhanced in my department using Information Communication Technology.					
5.	Improved Communication between stores and suppliers is enhanced using Information Communication Technology.					

Warehouse management systems

Please indicate the level of agreement in the following statements with respect to Warehouse Management Systems where 1 to 5 indicate: 1 = Strongly Disagree, 2 = Disagree, 3 = No Opinion, 4 = Agree, 5 = Strongly Agree.

Please note there are no correct or wrong answers, just express your opinion.

	Scale	1	2	3	4	5
1.	Warehouse Management systems assists my department to prepare inventory budgets accurately.					
2.	My department reviews inventory levels on a timely basis through the use of Warehouse Management Systems.					
3.	Warehouse Management Systems are important to my department in cycle counts to detect stock variances.					
4.	My department manages inbound and outbound logistics efficiently through Warehouse Management Systems.					
5.	My department uses Warehouse Management Systems to ensure the Stores Space is efficiently utilized.					

Any other? Please indicate.

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Operational performance

	Scale	1	2	3	4	5
1	Inventory management practices enhances customer service					
2	Inventory management practices facilitates standardization of inventory movements					
3	Inventory management practices leads faster inventory turns					
4	Inventory management practices leads to more efficient use of available warehouse space					
5	Inventory management practices leads to reduction in inventory paperwork					
6	Inventory management practices leads to Improved cycle counting					
7	Inventory management practices leads to improved Communication between stores and suppliers					

Any other? Please indicate.

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Thank you for participating

Appendix II: List of Sub Regional Stores of KPLC

Regions	Sub Regional Stores

Central Office	1. Nairobi South
	2. Bulk Stores
	3. Meter Store
	4. Stationery Store
	5. Training School Store
	6. Transport Store
	7. Isiolo Rd
	8. Likoni Rd
Nairobi South	9. Mlolongongo
	10. Machakos
	11. NS power Substation Stores
	12. Loitoktok
	13. Wajir
Nairobi North	14. Ruaraka
	15. Roysambu
	16. Dagoretti
	17. Kitengela
	18. Rongai
	19. Limuru
	20. Namanga
Mt.Kenya South	21. Thika
	22. White Sisters
	23. Garissa
Coast	24. Mbaraki

	25. Rabai
	26. Lamu
	27. Malindi
	28. Ukunda
	29. Mwambungo
	30. Mpeketoni
	31. Hola
	32. Kilifi
	33. Taveta
Mt Kenya Region	34. Nyeri
	35. Kiganjo
	36. Meru
	37. Nanyuki
	38. Embu
	39. Chuka
West Kenya Region	40. Kisumu
	41. Mamboloeo store
	42. Kakamega
	43. Kericho
	44. Kisii
	45. Busia
	46. Migori
	47. Bungoma
North Rift Region	48. Eldoret

	49. Rivatex
	50. Kitale
	51. Kabarnet
	52. Kapsabet
Central Rift Region	53. Lanet
	54. Naivasha
	55. Nyahururu
	56. Narok
	57. Ravine