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**Stock Control Management Practices and Performance of the Kenya Electricity
Generating Company in Eastern Region, Kenya**

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Abstract

Purpose: The purpose of this study was to establish the relationship between Stock Control Management Practices and Performance of the Kenya Electricity Generating Company in Eastern Region, Kenya. The specific objectives of this study were; Inventory Optimization, Economic Order Quantity, Safety Stock Levels and Tracking Stock respectively.

Methodology: The study employed a descriptive research design. The study preferred this method because it allows an in-depth study of the subject. The target population of this study was 274 respondents from Kenya Electricity Generating Company in Eastern Region, Kenya. Data was collected using self-administered questionnaires. Pilot study was carried out to establish the validity and reliability of the research instruments. The instruments were designed appropriately according to the study objectives. The data collected was analyzed by use of descriptive and inferential statistics. The study used multiple regression and correlation analysis to show the relationship between the dependent variable and the independent variables. The data generated was keyed in and analyzed by use of Statistical Package of Social Sciences (SPSS) version 28 to generate information which was presented using tables, frequencies and percentages. Reliability of the research instruments was done to validate the pilot test for confirmation of the presence of clear questionnaire in relation to reliability and validity of the designed instruments. Data was presented in form of tables.

Findings: The study confirmed a strong relationship between Stock Control Management Practices and Performance of the Kenya Electricity Generating Company in Eastern Region, Kenya; hence the need to implement the study findings.

Unique Contribution to Theory, Practice and Policy: The study was anchored on inventory theory. The study recommends implementation of Inventory Optimization, Economic Order Quantity, and Safety Stock Levels and Tracking Stock management practices to improve performance of Kenya Electricity Generating Company in Eastern Region, Kenya. That in future, different counties, sectors and organizations need to strengthen their performance and procurement processes with the help of Inventory optimization, EOQ, Safety Stock Levels and Tracking Stock management practices.

Keywords: *Inventory Optimization, Economic Order Quantity, Safety Stock Levels, Tracking Stock, Performance*

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INTRODUCTION

Inventory management is viewed as a central function in the inventory management system (Bastas & Liyanage, 2018). For inventory management, also known as materials management, is identified as the organization, securing, storage, and distribution of the right materials, of the right quality, in the right quantity, in the right place and at the right time, in order to coordinate and organize the creative movement in an integrated way within a mechanical project. Inventory management involves maintaining some stock levels at a minimized cost while improving the value-adding measures of customer satisfaction, which are useful measures of organizational performance (King, Bill, 2017).

Inventory (stock) management is a critical operation in manufacturing and supply chain processes. The manufacturing process uses raw materials and work-in-process goods to create finished products that are stored as inventory or sold, some of which may also be used in follow-up operations (Ologundudu, 2015). Inventory is the most important asset held by many organizations, representing as much as half of the company's expenses, or even half of the total capital investment. In addition, according to the Science Direct publication website the past two decades have seen an increase in inventory management research interest. As shown in Figure 1, the publication of articles on inventory management has seen an increase of over 525 per cent, with the number of published articles increasing from 2 544 in 1998 to 13 381 in 2020.

Inventory management models are applied in nearly all operations. The scope in the literature spans fields such as manufacturing, medicine, humanitarian aid, environmental science, engineering, agriculture, and even energy (Bastas & Liyanage, 2018). By filtering Science Direct's search for publications on inventory management, and taking into account both open access journals and journals to which only subscribers have access, it was found that the most frequently discussed topic in inventory management is environmental science, followed by engineering, energy, and others. Given the increasing impact of climate change, environmental science has created the need for re-engineering, thus increasing the demand for stock management (Ologundudu, 2015).

Since the primary role of inventory management is to maintain a desired stock level of defined products or items, the role of inventory in operations management cannot be overemphasized. History has shown that organizations that have neglected or failed to consider the importance of inventory management have lived to regret it. According to Ogbonna, Idenyi and Nick (2016), inventory management helps to improve customer service and to cope with demand uncertainty. Demand uncertainty is a potential challenge that results in high inventory levels and high carrying costs, which can lead to higher prices and low customer satisfaction, and thus a less profitable business (Bastas & Liyanage, 2018).

Inventory models and the demand variable The main decisions affecting demand in an inventory management problem are a) when to purchase (creation of a purchase order), and how much to purchase (Bastas & Liyanage, 2018). Resolving both problems in a decision-making process requires the development of inventory models and techniques. These two decision-making problems connect the inventory model's objective function with a number of decision variables (e.g., lot size and re-order point). It also links up with several inventory-related cost parameters and situational variables, such as a) the demand nature and level (including its level of certainty); the lead time; extant constraints; quantity discounts or

inflationary trends; and other relevant issues (KPMG, 2016). Demand is regarded as a critical variable in inventory management. Accurately forecasting the market or the level of demand helps to make the correct inventory decisions that optimize sales and profits. Based on the level of certainty of demand, two types of inventory model are usually developed: deterministic demand models, and stochastic (Bayesian) demand models.

Electricity company means a corporation organized under the laws of the commonwealth for the purpose of making by means of water power, steam power or otherwise and for selling, transmitting, distributing, transmitting and selling, or distributing and selling, electricity within the commonwealth, or authorized by special act so to do (Boateng, 2019),, even though subsequently authorized to make or sell gas; provided, however, that electric company shall not mean an alternative energy producer; provided further, that a distribution company shall not include an entity which owns or operates a plant or equipment used to produce electricity, steam and chilled water, or an affiliate engaged solely in the provision of such electricity, steam and chilled water, where the electricity produced by such entity or its affiliate is primarily for the benefit of hospitals and nonprofit educational institutions, and where such plant or equipment was in operation before January 1, 1986; and provided further, that electric company shall not mean a corporation only transmitting and selling, or only transmitting, electricity unless such corporation is affiliated with an electric company organized under the laws of the commonwealth for the purpose of distributing and selling, or distributing only, electricity within the commonwealth (Kalu,2018).

Inventory Optimization

Inventory Optimization argues that mathematical inventory models can only take us so far with supply chain management. In order to optimize inventory policies, we have to use probabilistic simulations (Mogoi & Osoro.2022). The book explains how to implement these models and simulations step-by-step, starting from simple deterministic ones to complex multi-echelon optimization. Inventory management is a significant component of supply chain management (Ogunleye, 2016). We have discussed a method based on genetic algorithm to optimize inventory in supply chain management we also focus on how to specifically determine the most probable excess stock level and shortage level required for inventory optimization in the supply chain such that the total supply chain cost is minimized .we apply our methods on three stage supply chain studied model for optimization. Without inventory optimization, companies commonly set inventory targets using rules of thumb or single stage calculations (Mogoi & Osoro.2022).

Rules of thumb normally involve setting a number of days of supply as a coverage target. Single stage calculations look at a single item in a single location and calculate the amount of inventory required to meet demand. For the inventory Control to be more effective, the main primary objective is to predict where, why and how much of the control is required and such a prediction is to be made here through the methodology .In the proposed Methodology an appropriate stock levels to be maintained in the approaching periods that will minimize the supply chain inventory cost can be arrived. Supply Chain model is divided into three stages in which the optimization is going to be performed (Ogunleye, 2016).

Optimizing inventory in the value chain and in individual firms has a positive effect on the company's profitability and long-term sustainability (Mogoi & Osoro.2022). Many companies have focused on reducing cash conversion cycle time and improving cash flow because of the

economic opportunities provided. Although some corporations have successfully implemented changes to improve the cash position of the company, many others have struggled. Following is an overview of the evolution of manufacturing operations and the effect the evolution in practices has had on working capital management.

Pipeline inventory mentioned inventory between steps in processes internally, and inventory between supply chain partners. Pipeline inventory may also present an opportunity for inventory optimization. Internally, operations in the same facility and the same company should be able to optimize material flow and resultant inventory. That is not always the case. Mogoi and Osoro (2022) analyzed four businesses and discovered two significant reasons for suboptimal material flow internally, fire-fighting and functional-silo mentality. In the study poor value stream design, inconsistent strategy, independent systems, and high levels of uncertainty and variability in processes contributed to firefighting. Functional-silo mentality is when each department in a company focuses on improvement of the department regardless of the effect on the organization. Causes of functional-silo mentality included structure differences, different goals and incentives, different cultures, lack of integrated systems, and geography. Optimal levels of inventory should ensure on-time delivery to consumers at a predictable profit margin while preventing loss of sales (Nyabwanga & Ojera, 2012). Too little inventory to meet customer demand may result in future sales loss.

Too much inventory results in higher product costs caused by increased storage, increased movement of materials, increased insurance, increased overhead to account for valuing inventory, and increased inventory obsolescence (Mogoi & Osoro, 2022). Several tools and philosophies exist to assist decision makers in optimization of inventory. Inventory optimization application organizes the latest techniques and technologies, thereby assisting the enhancement of inventory control and its management across an extended supply network. Some of the design objectives of inventory optimization are to optimize inventory strategies, thereby enhancing customer service, reducing lead times and costs and meeting market demand. The design and management of the storage policies and procedures for raw materials, work-in-process inventories and typically, final products are illustrated by the inventory control. The costs and lead times can be reduced and the responsiveness to the changing customer demands can be significantly improved and subsequently inventory can be optimized by the effective handling of the supply chain (Ogunleye, 2016).

The optimization model is presented through different possible value streams of each finished product family of the company and developed using lingo optimization software to result in the optimum level of safety stock with its optimum location in the stream (Mogoi & Osoro, 2022). In order to limit the number of stages and for simplification, only the last two stages of those value streams that have more than two nodes before the internal customer stage are selected. Therefore, all the previous stages and their connections are being excluded and their performances are being captured only through the input of the latest second stage. The other reason for this limitation is the difficulty in defining the shortage costs in upstream stages of the chain due to lack of visibility and control. Furthermore, the objective of the model is cost minimization, and the upstream stages' contributions towards cost are significantly less than the downstream stages, thus this simplifying assumption should have a negligible effect on overall results. Although, there is a Value Stream that goes beyond this limitation just to show the applicability of the model for the whole chain from end to end point (Ogunleye, 2016).

Economic Order Quantity

In terms of the order quantity, finding the appropriate quantity for replenishment that minimizes total inventory costs will contribute to the company's budget performance. From a theoretical point of view, the convenience of small and frequent deliveries was analyzed based on the EOQ model. As a calculating method to minimize purchasing cost, inventory carrying cost, and ordering cost, the EOQ method is complementary to the safety stock optimization that focuses on finding the optimal threshold to trigger the reorder (Mogoi & Osoro.2022). Knowing the best timing of placing an order is crucial for the purchasing department regarding inventory optimization. The easiest way to arrange this is to define a reorder level, which can assure that each order can arrive just as existing stock runs out. In the reorder point planning procedure, the inventory control system is intended to compare current available stock level with the reorder level. If available stock falls below the reorder level, an order project is generated. The reorder level (also known as the reorder point) is made up of the sum of the safety stock plus the expected average consumption within the replenishment lead time. Therefore, when determining the reorder level, the safety stock, previous consumption values or future requirements, and the replenishment lead time need to be taken into consideration (Ogunleye, 2016).

The process of determining the economic order quantity turned out to be more complicated. Like mentioned before, unfortunately some variables are mere estimates such as ordering cost, carrying cost percentage, and average inventory value (Mogoi & Osoro.2022). The total ordering cost for the year 2014 was defined as the sum of ordering making cost, monitoring and control cost, warehouse personnel cost, transportation cost, purchasing invoicing cost, and the cost for entering data into the system, etc. And the ordering cost per unit was assumed to be fixed, and it was calculated by the total ordering cost divided by the estimated number of yearly orders. However, some other issues may also affect the ordering cost. Taking the costs of materials handling as an example, the costs were generated not only by the working hours put in, but also the potential risk of damage to the items. In this case, the calculating process became even more challenging. And the inventory carrying cost was 68 calculated by multiplying the estimated inventory value by the estimated inventory carrying cost percentage. As the thesis considered the stocks situation of trading parts only, currently it is too hard for the company to exclude the manufacturing parts from the total stock. The estimated inventory value used for calculation is the total stock value of trading parts on the data collecting day (Ogunleye, 2016).

The impact of the quality management on inventory turnover can be demonstrated by examining the functional elements of aggregate inventory (Mogoi & Osoro.2022). When there are some quality problems occur in the purchasing or manufacturing process, large amounts of safety stock inventory are required, in order to compensate the absence of constant work flow. In terms of the variance of lead-time, since lead-time varies more because of manufacturing or purchasing process problems, more safety stock is required to guarantee the meeting of customer needs. At the same time, the quality management also allows the use of smaller lots, which reduces cycle stock and safety stock buffers. Thus, the quality management leads to a relatively lower inventory level. In terms of the scrapped and obsolete items that are often the least costly component of poor quality, the quality management can also prevent recurrence of problems by improving buying or production process (Ogunleye, 2016).

A better-controlled inventory situation could be realized through purchasing process optimization. In terms of the purchasing activities, one of the most important responsibilities is to maintain and improve the quality of purchased goods and services. Firstly this is based on selection of suppliers who can guarantee a sufficient level of quality (Mogoi & Osoro.2022). Therefore, it is essential to measure the performance of suppliers for the needs of setting up the reliable relationships. Normally, suppliers are evaluated on the basis of their quality, price, delivery time and materials, etc. Including some other specific aspects such as environmental awareness and sustainability, the elements involved in the quality measurement towards suppliers include: Preparation of the purchase order specification, Preliminary qualification of potential suppliers, Sample inspection procedure, Inspection of first and following production series, Conclude a quality agreement and certification and Periodic verification (Ogunleye, 2016).

Safety Stock Levels

In order to define the accurate level of optimized safety stock and reorder point, it would be advisable to perform a detailed analysis of some relevant factors such as service level, lead time, and demand standard deviation (Mogoi & Osoro.2022). Meanwhile it would be also useful to know the earlier reorder levels accurately so that they can be compared with the theoretically optimized levels. However, because of the unavailability of precise data, the service level was assumed to be the same for all products, the lead times were defined depending on the class of items, and the demand standard deviations were estimated based on the consumption trend of products generally. Moreover because the reorder level of Company X was defined according to different suppliers and different lead times or even some other factors, it was challenging to know the accurate reorder point for every single product (Ogunleye, 2016).

Safety stock level and location determination in the supply chain with a stochastic environment is a challenging task; therefore, there are many different assumptions in the models and approaches provided in this area to make it simpler. For example, some of these approaches exclude the suppliers' variability, some of them have limitations in their applications, and some of them put limitation on the demand distribution, among others (Mogoi & Osoro.2022). A general safety stock optimization model with the objective of logistics cost minimization by considering both internal and external variabilities is presented. And then the total value of safety stock of each finished product will be compared with its total value of sales in the past (for example last year) and this comparison will give us an idea of whether the current value of safety stock for each finished product is aligned with its sales value or not. It may be even determined that the same value of safety stock is keeping for two different finished products while the sales value of one was even twice of the other one. For example, although the volume of finished product AB is really lower than the volume of AF, still the value of its safety stock is somehow equal to the safety stock value of AF. On the other hand, that manufacturing makes the biggest portion of AB's safety stock value (Ogunleye, 2016).

Tracking Stock

Structuring a tracking stock culture, however, does not lead to the formation of separate entities. Tracking stock remains the equity of the parent corporation and holders of tracking stock continue to be, or become, shareholders of the whole corporation and not of the tracked business segment whereas in carve-outs and spin-offs, conversely, the subsidiary's assets are

transferred to a new company (Mogoi & Osoro.2022). Accordingly, preferred stockholders as well as general and secured creditors of the parent corporation, are basically unaffected by the implementation of a tracking stock culture because all assets of the corporation remain available to satisfy all liabilities. 3 Regardless of how the firm organizes the structure of issued stock and conducts its accounting and financial reporting system, the subject of private liability always will be the same. In sum, it is not the relationships between the shareholders on the one hand and the corporation and its creditors on the other that are affected, but mainly the relationship between the owners of tracking stock and owners of the residual class of common stock (Ogbonna et al.,2016).

A tracking stock is a security issued by a parent company to track the results of one (or more) of its subsidiaries or lines of business. Tracking stock is considered for legal and accounting purposes to be equity of the parent company, and not equity of the unit or subsidiary to which the stock tracks. The holders of tracking stock are considered to hold equity of the parent and not the specific entity represented by the tracking stock. As such, awards based on a tracking stock should generally be accounted for as equity awards of the parent if the tracking stock is deemed to be substantive (Mogoi & Osoro.2022). We believe that the following factors would be considered to determine whether a tracking stock is substantive: Reasons for the issuance, Whether the shares have been issued to third parties, Whether the voting rights of the holders of the tracking stock are similar to the rights of the holders of the parent company stock If tracking stock is not deemed to be substantive such as issued only to management for purposes of paying out cash based on certain divisions' results, it would not be considered equity for share-based payment purposes and the award should be accounted for as either a cash-based award or as a formula-based award (Ogbonna et al.,2016).

Performance of Kenya Electricity Generating Company

The Kenyan Government hopes to continue investing heavily in the development of power sectoring Kenya. It is estimated that Kenya could have 5,040 MW of installed capacity by 2020, representing 2,700 MW of new generation capacity coming online over the next 5 years (KenGen, 2016).The need to increase generation and installed electricity capacity in Kenya has called upon key industry players to initiate mega projects in the power sector towards the realization of this goal. Ken Gen, as government parastatal was tasked with a great responsibility of increasing its generating capacity through construction of additional power generation. New generation power projects at Olkaria that have been constructed include 85MW Wellhead Projects, 280MW Olkaria I (Additional Units 4 and 5) and Olkaria IV. New power plants under construction include 156MWOlkaria V and 70MW Olkaria I (Additional Unit 6). Other power related projects include construction of new access road to Olkaria IV and V power plants and construction of relocation houses for Projects Affected Persons (PAP) (KenGen, 2016) The Kenyan Government identified development of key physical infrastructure in the power sector as one of the key enablers to transform the country into an industrialized nation by 2030 (GOK,2007). Power Africa (2016), a U.S led government partnership with African Governments in the area of development of the power sector noted in their report, Development of Kenya's power sector 2015-2020 (Mogoi & Osoro.2022).

Kenya has an opportunity to take its power sector from good to great by delivering 2,700 MW of new generation capacity by 2020, through new financing and partnership models and construction and development of efficient power plants that will ensure availability of electrical power (Power Africa, 2016). The Government of Kenya therefore committed resources for

both research and development of key electricity infrastructure developments in Kenya. Power Africa (2016) also noted that Kenya has made considerable strides in the development of the Electricity Power Sector. These include the construction of the largest geothermal power planting Africa, the 280 MW Geothermal Power Plants at Olkaria, Naivasha. Government owned Ken Gen contributes up to 70% of installed generation capacity of power in Kenya (Power Africa, 2016). Independent Power Producers (IPPs) are also playing a major role in the development of the power sector in Kenya (Ken Gen, 2016). Around 30% of Kenya's installed electricity capacity is owned and operated by these Independent Power Producers across 15 electricity generating stations (Ken Gen, 2016)

Statement of the Problem

According to Mogoi and Osoro (2022) the performance of Kenya Electricity Generating Company in Eastern Region, Kenya has been experiencing problems due to stock control management practices. Demand for better quality, faster delivery and better overall value increase is increasing; which has led to visionary leaders to consciously differentiate between the things that create value and those that do not (WB, 2013). This has led to adoption of inventory automation in all areas that seek to help organizations in the electricity generating sector in Kenya to have a competitive advantage over rivals and position themselves for future success (KPMG, 2012). Bittok (2017), most electricity generating companies in Kenya operate at a technical efficiency of about 59% compared to their counterparts in South Africa at 70% and Malaysia at about 84% hence stock control management practices may help to close this gap. According to a report by Deloitte (2012) on electricity generating companies in Kenya, inventory automation saved various firms over Kshs.70 billion in the financial year (FY) 2011/2012).

A number of studies have been conducted on electricity generating companies globally. For instance, Bittok (2017), conducted a survey on 121 energy firms in the UK and found out that though 92% claimed inventory automation seemed to have reduced transaction costs. The studies found that the investigated energy firms looked at electricity generating companies instead of focusing on streamlining the inter-generating company processes. This study was however, conducted in a developed country and not in Kenya. Few studies have been done locally; Mogoi and Osoro (2022) did a study on factors affecting Kenya Electricity Generating Company in Eastern Region, Kenya. In view of the foregoing this study was done in the Kenyan context so as to bring new ideas which will fill the existing knowledge gap.

LITERATURE REVIEW

Theoretical Framework

Inventory Theory

In order for this type of inventory policy to be successful, Zappone and his employees communicate often. He checks the level of his inventory and the price of copper daily, and discusses pending sales with his sales crew (Feidler & House, 1994). All in all, the mathematical models in this paper cannot help Zappone's company. Because the price of copper fluctuates so much from day to day, it is hard to say when exactly to order. Perhaps, with more studying and a more complex model, we could formulate an optimal policy for Zappone. This would require more complex statistical analysis in order to deal with the fluctuating price of copper. Another reason we would need a more in depth model is that although Zappone orders the copper today, at today's prices, he will be charged the price of

copper on the day it ships, roughly 5 weeks later. Even though he does not use a model, Zappone has done well for himself. He sells copper all over the world: Japan, South America, Europe, and all 50 states. In addition, he is environmentally friendly because about 80% of the copper he uses comes from recycled copper and only 20% comes from new copper being mined from the ground. However, the price of copper, whether it is reusable or new, does not differ, so this does not change his inventory policies. This shows that an inventory model is helpful but not necessary for all companies.

In this research, we began the study of inventory theory. We examined two types' models: deterministic continuous review models and stochastic models. In addition, inventory theory 15 we learned about quantity discounts and how these affected our models. We also looked at a few examples of how these models are used (Feidler & House, 1994). However, this paper only touches the surface of what inventory theory is all about. After learning the basics, we now can ask and study more complex questions. For example, what happens when customers place orders in advance for a future delivery? A company could choose to allow for four different levels of response time to customers: standard (five-day delivery), value (slower, but lower shipping cost), premium (faster, next day delivery), and precision (delivered on a specific date). How does this hypothetical company handle its inventory policy? If interested in the previous question, please refer to Wei Wei and Ozalp Ozer. Another problem we can consider deals with a firm that supplies goods to two different types of customers: customers who have long-term supply contracts, and customers who request goods occasionally. The orders of the customers who have supply contracts are known in advance and must be fully met without delay every period. However, the unexpected requests from occasional customers are unknown and the company can either accept the order or reject it. How does a company deal with their inventory policy when it mixes deterministic and stochastic demand? If interested in this issue surrounding inventory theory, the reader is referred to Frank, Zhang and Duenyas.

Conceptual Framework

A conceptual framework is an analytical tool with several variations and contexts. It can be applied in different categories of work where an overall picture is needed. It is used to make conceptual distinctions and organize ideas. Conceptual framework is a detailed description of the phenomenon under the study accompanied by the graphical or visual depiction of the major variable of the study. According to Ogbonna et al. (2016), conceptual framework is diagrammatical representation that shows the relationship between dependent variable and independent variables.

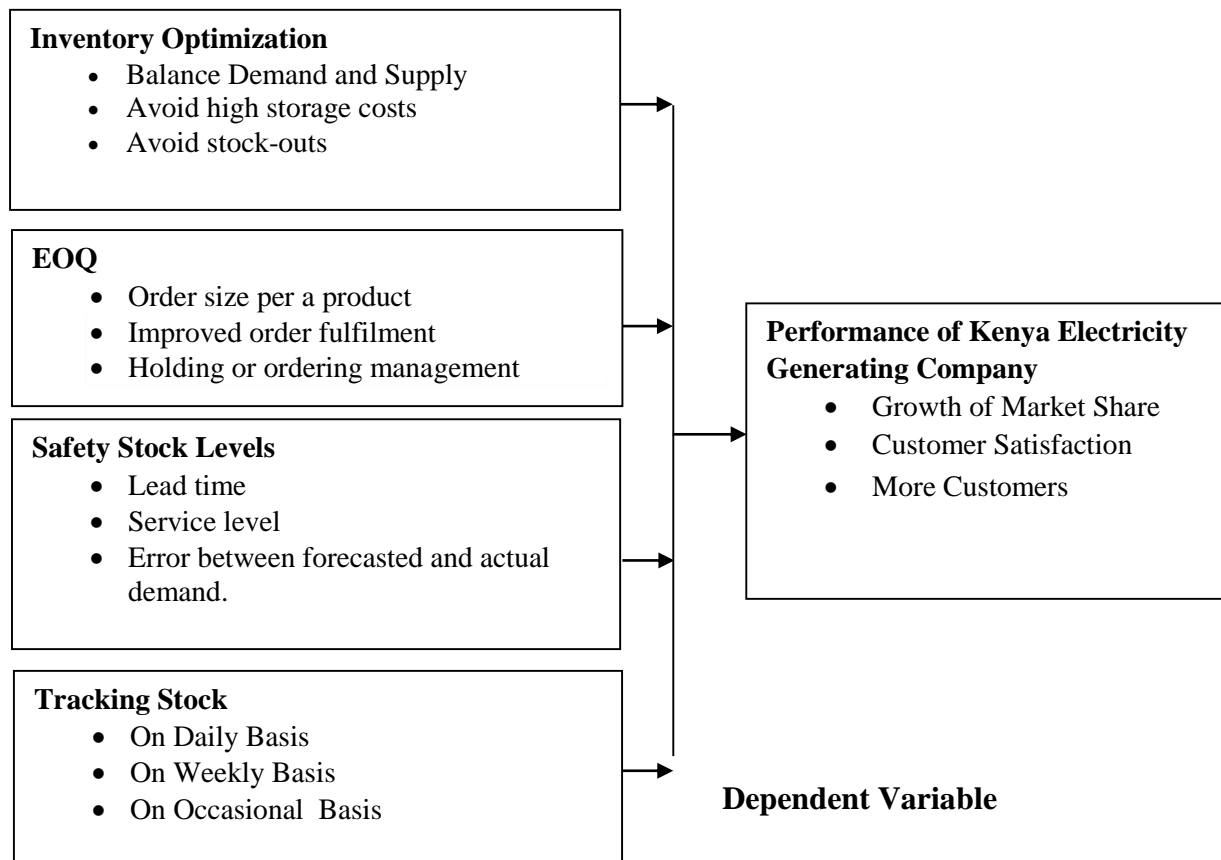


Figure 1: Conceptual Framework

Research Gaps

Performance, growth and sustainability of firms has a strong and reliable relationship with stock control practices but enterprises more specifically financial institutions, have largely not used these practices as far as performance goals, structured growth and development of supply chain relationships are concerned. According to Kalu (2018), the competitiveness and profit-generating capacity of the individual firm is highly dependent on its ability to handle the supply side. Also Mogoi and Osoro (2022), reveal that stock control management practices improve quality much in the same way as quality management practices. Kalu (2018), inventory automation can be used to support supply chain management. Despite the literature mentioned above, it is obvious that no in-depth study has been done to determine the precise role stock control management practices variables, such as order management systems, inventory categorization systems, inventory logistics systems, and inventory control systems, play in the performance of electricity generating companies in Kenya. None of the research done so far has focused on stock control management practices and how it affects performance, particularly in developing nations and more specifically electricity generating companies in Kenya. These make up the research gaps that this study will analyse and quantify in order to comprehend how electricity generating firms operating in Kenya are affected by inventory automation.

METHODOLOGY

The study adopted a descriptive research design. This study used stratified sampling and simple random sampling while the target population was 274 employees. A questionnaire was used to gather the required research information. The study's target consisted of respondents from Kenya Electricity Generating Company in Eastern Region in Kenya. Each of the firms' deputy heads and heads of the Finance and User departments provided responses to the study's questions regarding the impact of stock control practices on the performance of Kenya Electricity Generating Company in Eastern Region in Kenya. Both descriptive statistics and inferential statistics were applied to analyze numerical data gathered. Statistical Package for Social Sciences (SPSS) version 28 was used as a tool for analysis of study variables. Data was presented in form of tables.

FINDINGS AND DISCUSSION

Descriptive Statistics

Inventory Optimization

Respondents were requested to give their opinion on the variable Inventory Optimization. From Table 1, the respondents unanimously agreed that Inventory Optimization plays a significant role in improving Performance of the Kenya Electricity Generating Company in Eastern Region, Kenya with a Mean of 4.745, and Standard Deviation of 1.3606; balancing between demand and supply had a Mean of 4.533 and Standard Deviation of 1.3020; on avoiding unnecessary storage cost, respondents were neutral with a Mean of 3.903, and Standard Deviation of 1.2007; respondents also agreed that avoiding stock-outs plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya with a Mean of 4.061, and Standard Deviation of 1.3951. These findings agree with the findings of Nyile *et al.* (2022) who observed that Inventory Optimization enhances effective performance of organizations.

Table 1: Inventory Optimization

Statement	Mean	Std. Dev.
Inventory optimization plays a significant role in improving performance of the Kenya Electricity Generating Company in Eastern Region, Kenya.	4.745	1.3606
Balancing between demand and supply plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.533	1.3020
Avoiding unnecessary storage cost plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	3.903	1.2007
Avoiding stock-out play a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.061	1.3951

Economic Order Quantity (EOQ)

From Table 2, respondents agreed that: EOQ plays a significant role in improving Performance of Kenya Electricity Generating Company in Eastern Region, Kenya with a mean of 4.033 and Standard Deviation of 1.3990; Order size per a product had Mean of 4.041 and Standard Deviation of 1.3027; How much to hold or order the respondents strongly disagreed with a Mean of 4.111 and Standard Deviation of 1.3117); Improving order fulfilment had a Mean of 4.094 and Standard Deviation of 1.3005. These findings were in agreement with the findings of Ongeru and Osoro (2021) that the goal of Economic Order Quantity is to enhance performance of enterprises. Effective EOQ minimizes or eliminates problems and potential claims and disputes. The results agrees with the finding of Ominde et al. (2022).

Table 2: Economic Order Quantity

Statement	Mean	Std. Dev.
EOQ plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.033	1.3990
Order size per a product plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.041	1.3027
How much to hold or order plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.111	1.3117
Improving order fulfilment plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.094	1.3005

Safety Stock Levels

The findings presented in Table 3 show respondents strongly agreed that: Safety Stock Levels and Lead Time play a great role towards improving Performance of Kenya Electricity Generating Company in Eastern Region, Kenya with means of 5.504 and 5.411 and Standard Deviations of 1.4900 and 1.4934 respectively. The respondents unanimously agreed that Service Levels and Errors in Forecasting Demand contribute towards the performance of Kenya Electricity Generating Company in Eastern Region, Kenya with means of 4.603 and 4.821 and Standard Deviations of 1.3936 and 1.3802 respectively.

The findings concurs with the finding of Boit and Osoro (2021), who argued that for any company that tries to manage the inventory across its supply chain efficiently, and towards realization of corporate goals, efficient levels and locations of safety stock have become more and more highlighted as a prerequisite condition. On the other hand, it is really important to take into account the lead time of the whole chain, otherwise, it will put them in a shortage situation.

Table 3: Safety Stock Levels

Statement	Mean	Std. Dev.
Safety stock levels acknowledgement systems play a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya	5.504	1.4900
Lead time plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	5.411	1.4934
Service level plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.603	1.3936
Errors in forecasting and demand play a significant role in affecting the performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.821	1.3802

Tracking Stock

From Table 4, respondents, respondents agreed that Tracking Stock ensures performance of Kenya Electricity Generating Company in Eastern Region, Kenya; the respondents gave a Mean of 4.033 and Standard Deviation of 1.3700; tracking stock on daily and weekly basis as a tool to improve performance of Kenya Electricity Generating Company, respondents agreed with a Mean of 4.004 and 4.010 and Standard Deviation of 1.3707 and 1.3973 respectively. The respondents also agreed with a Mean of 4.026 and Standard Deviation of 1.3806 that occasional tracking of stock replenishment plays a significant role on performance of Kenya Electricity Generating Company in Eastern Region, Kenya.

These findings are in line with the findings of Nyile *et al.* (2022) who observed that the characteristic of tracking stock are the best value reaction to sort out non-performance.

Table 4: Tracking stock

Statement	Mean	Std. Dev.
Tracking stock system plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.033	1.3700
On daily basis management plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.004	1.3707
On weekly basis tracking of stock plays a significant role in improving performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.010	1.3973
On occasional basis tracking of stock replenishment plays a significant role on performance of Kenya Electricity Generating Company in Eastern Region, Kenya.	4.026	1.3806

Performance of Kenya Electricity Generating Company in Eastern Region, Kenya.

From the findings, 62% respondents were in agreement that performance of Kenya Electricity Generating Company in Eastern Region, Kenya has been attributed to the company's market share growth over the last 5 years. When asked about Customer Satisfaction and its effect on

performance of the company, they gave strongly agree of 69 %; 58% of the respondents were in agreement that performance of Kenya Electricity Generating Company in Eastern Region, Kenya has been attributed to the company’s customer base growth over the last 5 years. The outcome is in line with the findings of Mutai and Osoro (2021); they observed that some of the factors that contribute to performance of Kenya Electricity Generating Company Eastern Region, Kenya include growth of market share, customer satisfaction and a broader customer base.

Table 5: Performance of Kenya Electricity Generating Company in Eastern Region, Kenya

Statements	Yes (%)	No (%)
Growth of Market Share has enhanced performance of Kenya Electricity Generating Company in Eastern Region, Kenya for the last 3-5 years.	62	38
Customer Satisfaction has affected performance of Kenya Electricity Generating Company in Eastern Region, Kenya for the last 3-5 years.	69	31
Increase in Customers has contributed to performance of Kenya Electricity Generating Company in Eastern Region, Kenya for the last 3-5 years.	58	42

Pearson Correlation Analysis

The study further conducted inferential statistics entailing both Pearson and regression analysis with a view to determine both the nature and respective strengths of associations between the conceptualized predictors such as Inventory Optimization, EOQ ,Safety Stock Levels and Tracking Stock and Performance of Kenya Electricity Generating Company in Eastern Region, Kenya.

Table 6: Correlation Coefficients

		Performance of electricity generating company	Inventory optimization.	EOQ	Safety stock levels	Tracking stock
Performance Of eastern region	Pearson correlation	1				
	Sig. (2-tailed)					
Inventory optimization	Pearson correlation	.571*	1			
	N.	199*				
	Sig. (2-tailed)	.000				
EOQ.	Pearson correlation	.1994**	.264	1		
	N	199	199			
	Sig. (2-tailed)	.002	.0199			
Safety stock levels	Pearson correlation	.765**	.314	.335	1	
	N	199	199	199		
	Sig. (2-tailed)	.001	.041	.040		
Tracking stock.	Pearson correlation	.501*	.240	.256	.253	1
	N	199*	199	199	199	
	Sig. (2-tailed)	.000	.035	.060	.070	
			199	199		199

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

From the findings, a positive correlation is seen between each variable and performance. The strongest correlation was established between Safety stock level and performance of Kenya Electricity Generating Company in Eastern Region, Kenya ($r = 0.535$ and the weaker relationship found between Tracking stock and performance of electricity generating company in eastern region ($r = 0.153$). while EOQ and performance of electricity generating company in eastern region in Kenya were found to be strongly and positively correlating with performance of electricity generating company in eastern region in Kenya correlation coefficient of 0.307 and 0.413 respectively. This is tandem with the findings of Ongeru and Osoro (2021), who observed that all independent variables were found to have a statistically significant association with the dependent variable at over 0.05 level of confidence.

Regression Analysis

To establish the degree of the effect of supply chain for a regression analysis was conducted, with the assumption that: variables are normally distributed to avoid distortion of associations and significance tests, which was achieved as outliers were not identified; a linear relationship between the independent variables and dependent variable for accuracy of estimation, which was achieved as the standardized coefficients were used in interpretation. The multiple regression model was as follows:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \epsilon$$

Performance of electricity generating company in eastern region = $\beta_0 + \beta_1$ (Inventory optimization) + β_2 (EOQ) + β_3 (safety stock levels) + β_4 (Tracking stock) + error term. Regression analysis produced the efficient of determination and analysis of variance (ANOVA). Analysis of variance was done to show whether there is a significant mean difference between dependent and independent variables. The ANOVA was conducted at 95% confidence level.

Model of Goodness Fit

Regression analysis was used to establish the strengths of relationship between the Performance of Kenya Electricity Generating Company in Eastern Region, Kenya (dependent variable) and the predicting variables; Inventory optimization, EOQ, Safety stock level and Tracking stock (Independent variables). The results showed a correlation value (R) of 0.765 which depicts that there is a good linear dependence between the independent and dependent variables. This finding is in line with the findings of Ongeru and Osoro (2021). They observed that this also to depict the significance of the regression analysis done at 95% confidence level. This implies that the regression model is significant and can thus be used to evaluate the association between the dependent and independent variables. This finding is in line with the findings of Ittmann (2015), who observed that analysis of variance statistics examines the differences between group means and their associated procedures.

Table 7: Model of Goodness Fit

R	R ²	Adjusted R	Std. Error of the Estimate
0.765	0.891	0.731	0.064

a. Predictors: (constants); Inventory optimization, EOQ, Safety stock levels and Tracking stock

b. Dependent Variable: performance of electricity generating company

With an R-squared of 0.891, the model shows that Inventory optimization, EOQ, Safety stock level and Tracking stock an contribute up to 89.1% on performance of Kenya Electricity

Generating Company in Eastern Region in while 11.9% of this variation is explained by other indicators which are not inclusive in this study or model. A measure of goodness of fit synopsis the discrepancy between observed values and the values anticipated under the model in question. This finding is in line with the findings of Mwakubo and Ikiara (2007).

Analysis of Variance (ANOVA)

From the results in table 4.13, analysis of variance statistics was conducted to determine the differences in the means of the dependent and independent variables to show whether a relationship exists between the two. The P-value of 0.005 implies that organizational performance of electricity generating company in eastern region have a significant relationship with Inventory optimization, EOQ ,Safety stock level and stakeholders management which is significant at 5 % level of significance.

Table 8: ANOVA TEST

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	4.155	1	1.059	.441	.001
Residual	6.466	198	.531		
Total	10.611	199			

Regression Coefficients of Determination

To determine the relationship between the independent variables and the dependent variable and the respective strengths, the regression analysis produced coefficients of determination. Findings in table 4.16 reveal a positive relationship between the performances of preference groups in eastern region in Kenya,

$$Y = \beta_0 + \beta_1 I_1 + \beta_2 EOQ + \beta_3 S_3 + \beta_4 T_4 + \epsilon; \text{ where,}$$

Y= performance of electricity generating company in eastern region in

β_0 = constant;

$\beta_1 - \beta_4$ = Beta coefficients;

I_1 = Inventory optimization

EOQ_2 = EOQ

S_3 =Safety stock level

T_4 = Tracking stock and

ϵ = Error term,

From the result shown below, it's clear that when all the independent variables are regressed against the dependent variable the constant gives a negative result meaning there is a strong relationship and how each predator has an effect on the dependent variable.

Table 9: Regression Coefficient Results

	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std. Error	Beta		
(constant)	-.134	.060	-1.144	4.004	.002
Inventory optimization	.470	.132	.555	5.472	.003
EOQ	.202	.067	.162	2.471	.001
Safety stock levels	.143	.059	.563	4.355	.004
Tracking stock.	.262	.115	.321	2.657	0.001

a. Predictors: (constants), Inventory optimization, EOQ Safety stock level and Tracking stock

b. Dependent Variable: performance of electricity generating company in eastern region in Kenya

A unit change in inventory optimization would thus lead to a .470 effect on performance of Kenya Electricity Generating Company in Eastern Region, Kenya *ceteris paribus*; while a unit change in EOQ would have an effect of .202 change in performance of Kenya Electricity Generating Company in Eastern Region, Kenya; also unit change of safety stock levels would lead to .143 change in performance of Kenya Electricity Generating Company in Eastern Region, Kenya; and finally, a unit change in tracking stock would lead to .262 change in performance of Kenya Electricity Generating Company in Eastern Region, Kenya. This finding is in line with the findings of Ongeru and Osoro (2021). This implies that among other factors, Inventory optimization, EOQ, Safety stock level and Tracking stock are significant determinants of performance of Kenya Electricity Generating Company in Eastern Region, Kenya.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Therefore, from the foregoing, this study concludes that Inventory Optimization, EOQ, and Safety Stock Levels and Tracking Stock have broadly impacted on performance of Kenya Electricity Generating Company in Eastern Region, Kenya. The findings conclude that for any enterprise in Kenya to achieve the best performance it should strive to embrace Inventory Optimization, EOQ, and Safety Stock Levels and Tracking Stock management practices.

Inventory Optimization

The study concludes that there is a positive relationship between Inventory Optimization and Performance of Kenya Electricity Generating Company in Eastern Region, Kenya. Specialization, identification, periodic design assessment, continuous improvement and proactive assessment are among the inventory optimization factors that significantly influenced the performance of Kenya Electricity Generating Company in Eastern Region, Kenya. The study further concludes that implementing Inventory Optimization would enhance performance of Kenya Electricity Generating Company in Eastern Region, Kenya, leading to operational increase in efficiency and effectiveness.

EOQ

The study concludes that EOQ influences performance of Kenya Electricity Generating Company in Eastern Region, Kenya. Suppliers' evaluation was through adherence to the set criterion in the bid documentation during the advertisement focusing on EOQ. A well integrated internal supply chain should provide excellence through EOQ. Embracing EOQ has

benefited organizations from facilitated teamwork, resource allocation to fulfilment of set goals between complementary functions. Therefore, the study concludes that performance of Kenya Electricity Generating Company in Eastern Region, Kenya would experience significant increase in growth through EOQ.

Safety Stock Levels

The study concludes that safety stock levels had a positive effect on performance of Kenya Electricity Generating Company in Eastern Region, Kenya. The study established that competence reviews, supplier performance, supplier skills, supplier knowledge, supplier training, is able to identify problems and find solutions in a timely manner to ensure safety stock levels of the goods and services delivered. From the findings, the study concludes that increasing safety stock levels evaluation can lead to increased performance of Kenya Electricity Generating Company in Eastern Region, Kenya.

Tracking Stock

The study concludes that there is a positive relationship between tracking stock and performance of Kenya Electricity Generating Company in Eastern Region, Kenya. Partnership enforcement policy, collective bargaining, alternative dispute resolution processes, free expression of concerns by involved parties are among the coordination factors that significantly influenced the performance of Kenya Electricity Generating Company in Eastern Region, Kenya. The study further concludes that adopting alternative coordination and partnership mechanisms would enhance the level of performance of Kenya Electricity Generating Company in Eastern Region, Kenya.

Recommendations

The study recommends implementation of Inventory Optimization, EOQ, and Safety Stock Levels and Tracking Stock management practices to improve performance of Kenya Electricity Generating Company in Eastern Region, Kenya. That in future, different counties, sectors and organizations need to strengthen their performance and procurement processes with the help of Inventory optimization, EOQ, Safety Stock Levels and Tracking Stock management practices. This study therefore sought to explore what past scholars had said on factors affecting supply chain best practices on performance of Kenya Electricity Generating Company in Eastern Region, Kenya and tested viability of best procurement policy and procedures in the public entities in Kenya. That from the foregoing, this study recommends that Kenya Electricity Generating Company in Eastern Region, Kenya should strive to be proactive on how to perform better to retain integrity and improve transparency and accountability. The study has now filled the existing gap after the creation of this new knowledge.

Inventory Optimization

The study recommends that inventory optimization formalizes relations between practices within a robust legal framework, besides; it is an opportunity to define the arrangements that encompass every aspect of what outcomes the Kenya Electricity Generating Company in Eastern Region, Kenya wants from the suppliers and how it wants the relationship to work. This means that the company needs to take an active role in the development of the quality mechanism early on; it should not be left as a supplementary activity post negotiation. At preparation of every quality check, management can contribute to supplier evaluation. Proper

inventory optimization can result to high procurement and organizational performance of Kenya Electricity Generating Company in Eastern Region, Kenya.

EOQ

From the study findings, EOQ had a good relationship with performance of Kenya Electricity Generating Company in Eastern Region, Kenya. Hence, effective EOQ can minimize or eliminate problems and potential claims against Kenya Electricity Generating Company in Eastern Region, Kenya. A key factor in successful EOQ is being arable to give credit to customers. It is essential for EOQ to understand the provisions of the purchase document, have the ability to communicate financial obligations to all practices involved, and maintain control over critical parameters. A good supplier manager ensures that the EOQ requirements are satisfied, that the goods and services are delivered in a timely manner, and that the financial interests are protected. The supply chain staff at Kenya Electricity Generating Company should ensure that they do proper EOQ by maintaining an updated form of the process; assessing and managing supplier involvement; supplier being paid on time; delivering at the right time; inspection or audit of all documents before settling payment by allocating all the necessary resources to reputable suppliers through efficiency and effectiveness analysis of previous records in the supply chain practices.

Safety Stock Levels

The study recommends that there should be a thorough and independent review that is informed by those involved in establishing and managing the safety stock levels. Evaluation needs to be tailored to the particular circumstances but should consider both the effectiveness and efficiency of the arrangement. To get the best out of the evaluation, entities should review all aspects of performance metrics, provide feedback to the contractors, this should not be done as part of another procurement process; report to stakeholders and identify lessons learned. The management of Kenya Electricity Generating Company in Eastern Region, Kenya should ensure regular supplier evaluation through well-established monitoring and evaluation mechanisms. This would ensure that there is input corrective measures to hedge against deviation of actual results against standards in the supply chain practices.

Tracking Stock

When relationships are not properly managed, they may cause supplier delays, undermine team spirit, increase delay costs, and, above all, damage business relationships. With the increase in the number of participants in supplier management, it is obvious that more business interactions and arguments end up with an increase in the number of supplier relationship disputes. Research in preventing and resolving relationship disputes supports the effort for better understanding and harmonization of the different cultures. Therefore, this study recommends to the management of Kenya Electricity Generating Company in Eastern Region, Kenya the need to enhance and upgrade on the implementation of all applicable alternative disputes resolution mechanisms so as to protect relationships with its stakeholders in the supply chain practices.

Areas for Further Studies

This study focused on Inventory Optimization, EOQ, Safety Stock Levels and Tracking Stock and Performance of Kenya Electricity Generating Company in Eastern Region, Kenya. The study therefore recommends a further study to be conducted in other regions in Kenya to get their findings and compare with this and agree or disagree. The study also recommends replication of the study in other sectors such as manufacturing sector and public sector to allow comparison of research findings. Future researchers can investigate the factors affecting supply chain best practices broadly in all areas of concern in this profession on performance of power generating companies in Kenya.

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