



**INVENTORY MANAGEMENT STRATEGIES AND PROCUREMENT
PERFORMANCE OF LARGE MANUFACTURING COMPANIES IN NAIROBI
COUNTY, KENYA**

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ABSTRACT

The manufacturing sector for instance heavily relies on the procurement process to meet the customer needs and gain competitive advantage. However, there are persistent complaints among stakeholders over poor procurement performance, which increased by 23%. The main focus of this study was to establish the effect of inventory management strategies on procurement performance of large manufacturing companies in Nairobi County, Kenya. Specifically, the study sought to examine the influence of Economic order quantity on procurement performance of large manufacturing companies in Nairobi County, Kenya and to ascertain the influence of Activity Based Costing on procurement performance of large manufacturing companies in Nairobi County, Kenya. This study used descriptive research design. The study targeted procurement officials in the large manufacturing firms. To get a representative sample, Cooper and Schidler's formula was adopted. Therefore, 187 procurement officers were sampled using simple random sampling. The choice of this sampling technique is preferred as it gives each item in the population an equal probability of being selected. This study used questionnaire to collect data relevant to this study. Quantitative data collected was analyzed using descriptive statistical techniques which are frequencies, mean, standard deviation. Inferential statistics which include Pearson correlation and the Regression Analysis Model was used to test the relationship between study variables. The significance of the model was tested at 5% level of significance. Data was analysed using Statistical Package for Social Sciences (SPSS) software. The study results were presented through use of tables and figures. The study concludes that economic order quantity has a positive and significant effect on procurement performance of large manufacturing companies in Nairobi County, Kenya. The study also concludes that activity based costing has a positive and significant effect on procurement performance of large manufacturing companies in Nairobi County, Kenya. Based on the findings, this study recommends that large manufacturing companies in Nairobi County should incorporate EOQ calculations into their procurement processes. This can help optimize inventory management by ordering the right quantity of materials at the right time, minimizing carrying costs, and ensuring that stockouts are minimized

Key Words: Inventory Management Strategies, Procurement Performance, Economic Order Quantity, Activity Based Costing

Background of the Study

Procurement is a business management function to ensure the identification, sourcing, access, and management of external resources needed by the organization (cips.org), the existence of procurement serves to explore market opportunities for suppliers and services and implement resource strategies providing the best supply and services for organizations and stakeholders. The better the procurement performance will reduce costs and increase company profits, (Zai, 2021). The procurement function has undergone significant changes in many countries, moving from a reactive activity to a strategic one, in order to keep pace with the expansion of procurement activities and enhance procurement performance (Dimitriadis & Maroudas, 2017). This has led to reforms aimed at establishing a strong and well-functioning procurement system that is governed by a clear legal framework for transparency and effectiveness (Hunja, 2019). Procurement excellence is increasingly becoming an important factor in delivering efficient operations within successful companies. During a downturn, when companies must consider every avenue for cutting costs in order to simply survive, the procurement department plays an increasingly important role in achieving this strategic goal (Schiele & McCue, 2016).

Inventory management is a critical management issue for most companies – large companies, medium-sized companies, and small companies (Ahmed, 2016). Effective inventory flow management in supply chains is one of the key factors for success. The challenge in managing inventory is to balance the supply of inventory with demand. A company would ideally want to have enough inventories to satisfy the demands of its customers- no lost sales due to inventory stock-outs (Danese, & Kalchschmidt, 2017). On the other hand, the company does not want to have too much inventory staying on hand because of the cost of carrying inventory. Enough but not too much is the ultimate objective (Coyle, Bardi, and Langley, 2018). The role of inventory management is to ensure faster inventory turnover. It increases inventory turnover by ten (10) and reduces costs by 10% to 40%. The so-called inventory turnover is not yet right to sell products on the shelves based on the principle of first in first out (FIFO) cycle (Ofori-Ayeh, 2016).

In traditional settings, inventories of raw materials, work-in-progress components and finished goods were kept as a buffer against the possibility of running out of needed items (Lwiki, *et al*, 2017). However, large buffer inventories consume valuable resources and generate hidden costs. Consequently, many companies have changed their approach to production and inventory management. Since at least the early 1980s, inventory management leading to inventory reduction has become the primary target, as is often the case in just-in-time (JIT) systems, where raw materials and parts are purchased or produced just in time to be used at each stage of the production process. This approach to inventory management brings considerable cost savings from reduced inventory levels. As a result, inventories have been decreasing in many firms (Agu, Obi-Anike, & Eke, 2016), although evidence of improved firm performance is mixed (Etale, & Bingilar, 2016). It is therefore essential to establish the influence of inventory management strategies on procurement performance.

The contribution of the manufacturing sector to GDP has continued to stagnate at about 8%-10%, with contribution to wage employment on a declining trend (RoK, 2016). Kenya's share of manufacturing exports to the global market is about 0.02 per cent. While this compares favourably with neighbouring Uganda and Tanzania at 0.016 per cent and 0.019 per cent respectively, it is unimpressive when compared with South Africa, Singapore, China and Malaysia. For example, South Africa's global share of manufacturing exports is about 0.3 %, while that of Singapore and Malaysia are 2.4% and 1.3%, respectively. According to a recent Kenya economic report, low value addition and high costs of production impede competitiveness of Kenya's manufactured products in the global market (IEA, 2016). Factors like a high taxation rate at 17.5% and high power tariff between 15-21 shillings resulted in manufacturing contributing 7.2% to Kenya's GDP in the 2019/2020 financial year. This study

focused on the effect of inventory management strategies on procurement performance of large manufacturing companies in Nairobi County, Kenya.

Statement of the Problem

Procurement stands to be one of the major practices that largely contribute to business growth and development in the manufacturing sector and its improvement is needed in order to further facilitate the growth. Kenya, both public and private companies count on procurement processes as the major source of their efficiency and effectiveness in operations which translate to performance (Kamotho, 2018). The manufacturing sector for instance heavily relies on the procurement process to meet the customer needs and gain competitive advantage. However, according to (Malela, 2016; Miheso, 2013; Makau, 2018) there are persistent complaints among stakeholders over poor procurement performance, which increased by 23%. These complaints are characterized by long procurement lead-time; poor service delivery; noncompliance with procurement policy; as well as inflated cost of acquiring goods and services. Malela (2016) argues these are the challenges in procurement in large manufacturing firms that implementation of effective inventory management strategies is supposed to solve (Kemunto, 2017).

Inventory is a vital part of current assets mainly in manufacturing concerns. Huge funds are committed to inventories to ensure a smooth flow of production and to meet customer demand. However, maintaining inventory also involves holding or carrying a lot of costs. Inventory management, therefore, plays a vital role in balancing the benefits and disadvantages associated with holding inventory (Essel, 2020). Efficient and effective inventory management goes a long way in the successful running and survival of business firms, when organizations fail to manage their inventory effectively; they are bound to experience stock out, a decline in productivity and profitability, customer dissatisfaction (Nyongesa & Shale, 2019). Due to the competition that exists in every industry, inventory management has become mandatory on each and every manager responsible for production in an organization. Inventory is one vital resource that any organization requires and just like any other resource that is very scarce and that requires effective management rather than neglect (Garba, 2018).

Several studies have been undertaken on inventory management and organization performance. For instance, Rogito (2019) carried out a research on the influence of inventory management and performance of NGOs. Gathoni and Ngugi (2016) study investigated drivers of effective inventory management and performance of milk processing firms in Kiambu County, Kenya. Wachaiyu (2019) focused on inventory management and performance of food and beverage manufacturing firms. However, none of these studies focused on inventory management strategies and procurement performance of large manufacturing companies in Nairobi County, Kenya. To fill the highlighted gaps, the current study sought to establish the effect of inventory management strategies on procurement performance of large manufacturing companies in Nairobi County, Kenya.

Objectives of the Study

The main focus of this study was to establish the effect of inventory management strategies on procurement performance of large manufacturing companies in Nairobi County, Kenya.

Specific objectives

The study was guided by the following specific objectives;

- i. To examine the influence of Economic order quantity on procurement performance of large manufacturing companies in Nairobi County, Kenya
- ii. To ascertain the influence of Activity Based Costing on procurement performance of large manufacturing companies in Nairobi County, Kenya

Theoretical Review

Economic Order Quantity (EOQ) Model

EOQ model was developed by was Ford Wilson Harris in 1913 and is also known as Wilson EOQ. model, who critically analyzed the model in detailed (Kumar, 2016). The use of the model has shown increase in some costs as other costs decline, an example of ordering costs decline with the inventory holdings, while holding costs rise and the total inventory associated costs curve have a minimum point. It is also known as the point where total inventory costs are minimized. EOQ is the level of inventory that minimizes the total of inventory holding costs and ordering costs.

The economic order-quantity model considers the tradeoff between ordering cost and storage cost in choosing the quantity to use in replenishing item inventories. A larger order-quantity reduces ordering frequency, and, hence ordering cost/ month, but requires holding a larger average inventory, which increases storage (holding) cost/month. On the other hand, a smaller orderquantity reduces average inventory but requires more frequent ordering and higher ordering cost/month (Kazemi *et al.*, 2018). The EOQ model helps organizations to reduce inventory management costs by reducing the cost of ordering and holding stock. This mode was used in this study to assess the influence of Economic order quantity on procurement performance of large manufacturing companies in Nairobi County, Kenya.

Goal Setting Theory

Goal setting theory according to Locke (1990) and Latham (2002) postulate that Goal Based Theory deals with the personal or institutional drive to realise the intended benefits. They therefore presuppose that budgeting process is action determination and assignment process that sets the standards against which actual achievements are compared. Having been developed inductively within industrial organization psychology for over 25 years period based on 400 laboratory and field studies, these studies showed that specific high (harder) goals lead to a higher level of task performance than do easy goals or pause abstract goals such as the exhortation to “do ones best” (Chituri *et.al*, 2016). A budget is therefore a way of setting an organization at goals for a specific period of time. The prime axiom of goals lead to higher performance than when people strive to simple “do their best” the performance benefits of challenging specific goals have been demonstrated in hundreds of laboratory and field studies. Such goals positively affect the performance of individuals, groups, organization units as well as entire organizations and over periods long as twenty five years (Heslin, Vande Walle, & Carson, 2019).

A budget not only contains the plans to be achieved and the nominal. Activity-based budgeting is an outgrowth of activity-based costing (ABC), which is similar to zero-based budgeting. This budget type accounts for how staff members allocate their effort among activities (Keta, 2022). Once the full cost of each activity has been calculated, drivers can be established that link support activities to the primary activities of the organization in a law enforcement environment the primary activities are the direct costs of program delivery (Abdilahi, Kithinji & Naminda, 2023). By developing a comprehensive activity-based budget executives are able to create a clear nexus between workload and costs. Once developed, executives and managers can exercise control in several ways; assigning personnel based on demonstrated need, expanding or contracting personnel proportionately as the need changes, uncovering waste and hidden costs, determining activities in terms of most and least expensive, thereby subjecting them to review, assessing full efficiency of the organization, identifying places to cut costs, establishing cost baseline that may be influenced through process or technology changes that reduce effort requirements for the activity, and arguing issues from an informed, objective position in favor of the organization’s budget. This theory was used to ascertain the influence of Activity Based Costing on procurement performance of large manufacturing companies in Nairobi County, Kenya

Conceptual Framework

In this study, the independent variables include; Just-In Time, Economic order quantity, Material Requirements Planning and Activity Based Costing while the dependent variable is procurement performance of large manufacturing companies in Nairobi County, Kenya

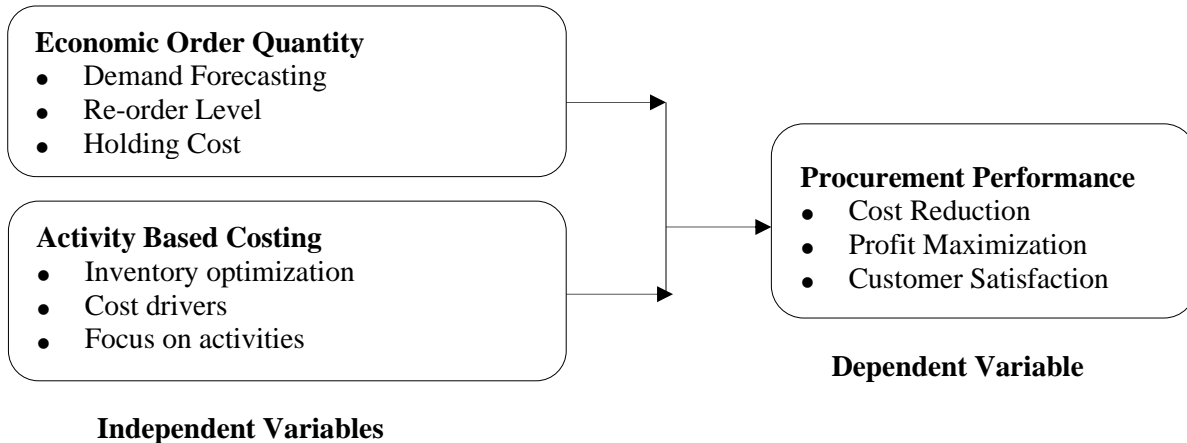


Figure 1: Conceptual Framework

Economic order quantity

The Economic Order Quantity (EOQ) is a mathematical formula used in inventory management to determine the ideal order quantity for a product that minimizes total inventory costs. The primary objective of EOQ is to find the balance between ordering costs and holding (carrying) costs to achieve cost-efficient inventory management. EOQ is a fundamental concept in inventory control and plays a crucial role in optimizing inventory levels for businesses (Mwangangi & Senelwa, 2018).

Demand forecasting is a critical process in business and supply chain management that involves estimating the future demand for a company's products or services. It is essential for making informed decisions about production, inventory, procurement, and overall business strategy. Accurate demand forecasts enable organizations to meet customer demands efficiently, optimize inventory levels, minimize stockouts or overstock situations, and allocate resources effectively. The foundation of demand forecasting is data collection. Historical sales data, customer orders, market trends, and external factors (e.g., economic conditions, seasonality, and competitive activity) are valuable sources of information (Achevi, Juma & Otinga, 2021).

The reorder level (also known as the reorder point or reorder threshold) is a crucial concept in inventory management and supply chain management. It represents the inventory level at which a company should place a replenishment order for a product to ensure that it doesn't run out of stock before the new order arrives. In essence, the reorder level is designed to prevent stockouts and maintain a smooth flow of goods to meet customer demand. Lead time is the time it takes for a supplier to deliver a product once an order is placed. This includes the time for order processing, manufacturing (if applicable), and shipping. Accurate lead time estimation is crucial for setting the reorder level (Korir, Kaitany & Sang, 2021).

Activity Based Costing

Activity-Based Costing (ABC) is a modern accounting method used by organizations to allocate overhead costs to products, services, or activities based on their actual consumption of resources. Unlike traditional cost allocation methods, which often rely on broad averages and may not accurately reflect the true cost drivers, ABC provides a more accurate and granular view of where costs are incurred. ABC is particularly valuable in industries with diverse product or service lines, complex operations, or where overhead costs represent a significant portion of total expenses. At the heart of ABC is the identification and analysis of various activities that consume resources within an organization. These activities can be both direct

and indirect, ranging from machine setup, quality control, and material handling to administrative tasks like order processing and customer support. Each activity is assigned a cost driver, which is a metric that reflects the level of activity consumption, such as machine hours, labor hours, or the number of orders processed (Ezeala, Nzewi & Tochukwu, 2022).

ABC involves several key steps. First, organizations identify and define the activities that contribute to their operations. Then, they determine the cost drivers associated with each activity. Once these elements are established, the organization collects data on the actual consumption of resources by different products, services, or projects. Next, ABC calculates the cost per unit of the chosen cost driver for each activity. This cost rate is then used to allocate overhead costs to specific products or services (Oseifuah, 2019). By matching costs more precisely to the activities that drive them, ABC provides a more accurate view of the true cost structure of products or services (Ezeagba, 2018).

Empirical Review

Economic Order Quantity and Procurement Performance

According to Mwangangi and Senelwa (2018) economic order quantity is the quantity of inventory that should be ordered at once. The quantity of inventory ordered at once affects inventory ordering and holding costs and will ultimately have a bearing on profitability. Put differently, EOQ is the optimum size of the order that minimizes the cost of ordering and holding cost. Sporta (2018) states that Economic order quantity is used to determine the optimal number of units of the product to order so as to minimize the total cost associated with the purchase, delivery and storage of the product. Noe et al., (2010) explain that the cost of minimizing order-quantity is called the Economic Order Quantity (EOQ). It posits that one of the advantages often explored to cushion the burden of net inventory cost and to enjoy substantial savings is the benefit from procuring large enough quantity that reduces the unit price of the item. This results to reduction of aggregate costs which enhances performance of the firm. It discussed that EOQ model was determined by minimizing the total annual cost incurred by the company by virtue of its ordering cost and carrying cost.

Achevi, Juma and Otinga (2021) researched on inventory control techniques and performance of procurement function at Vihiga county referral hospital, Kenya. The study adopted a cross sectional study design. The unit of analysis for this study was 83 employees of the Vihiga County Referral Hospital. Stratified random sampling was used; primary was used. The study made use of questionnaires to collect primary data. A pilot test was conducted to test the reliability and validity of the data collection instruments. SPSS software program version 22 was used to facilitate data processing and analysis. Descriptive and inferential statistics was used to analyze quantitative data. From multiple linear regression coefficients, just in time had greatest predictability regression power followed by economic order quantity and lastly, ABC analysis. The study therefore, concluded that inventory control techniques adopted at Vihiga County Referral Hospital significantly influence performance of procurement function.

Korir, Kaitany and Sang (2021) conducted a study on economic order quantity stock control technique and performance of selected level Five Hospitals: An Evidence of Kenya. The paper main focus was to establish the relationship between Economic Order Quantity stock control technique and performance of selected level five hospitals in south rift region, Kenya. Which used economic quality theory. A correlation study design was appropriate. A target population of 248 employees comprised of staff working under procurement and supply chain department who were handling material acquisition, stock control department, record department and disposal department in the selected level five hospital. Purposive sampling technique was used to select 156 respondents where questionnaires were used for data collection. Data was analyzed descriptively and presented using frequency tables. Inferential statistics was also analyzed using regression models. The study findings revealed that economic order quantity had a positive statistical relationship with performance of the level five hospitals.

A study by Thogori and Gathenya (2018) on the role of inventory management on customer satisfaction among the manufacturing firms in Kenya established a positive relationship between inventory management technique and customer satisfaction. The study was a case study of Delmonte Company as the organization has a well elaborated supply chain material technology of sharing information which is closely connected to their clients in real time to boost its stock management. The study adopted census research design because the target population was small (50) and therefore all of them formed a sample size. Primary data collection technique was adopted where an observation guide, interview guide and Questionnaire were used. The findings from the study revealed that all the respondents agreed that there was minimum stock in the store. The study held that processing and manufacturing firms experienced low stock management system and this affected firms from satisfying their clients thus leading to decrease in sales and profitability

Activity Based Costing and Procurement Performance

Abdilahi, Kithinji and Naminda (2023) focused on the effect of activity based costing on financial performance of cement manufacturing industry in Kenya. This study focused on the effect of activity-based costing on financial performance of manufacturing industry in Kenya. The study used both qualitative and quantitative research method. The target population of the study was 100 middle level management. The study used primary source of data that was collected through questionnaire that consisted of structured questions. Quantitative data was collected analyzed through descriptive analysis and SPSS presentations was presented through percentages, means, standard deviations, and frequencies. The information was displayed by use of frequency tables. The study findings revealed that financial performance of manufacturing industry in Kenya was significantly related with activity-based costing. The activity-based costing had positive influence on performance. The study concluded that activity-based Costing (ABC) have positive influence on cement manufacturing firms as it enhances cost reduction which portend a high increase in profit and overall performance of an organisation

Keta (2022) researched on the effects of activity based costing as aspect of inventory management practice on supply chain performance of Homa bay county teaching and referral hospital. For the purpose of this study, correlation and descriptive research designs were adopted and the target population for the study was thirty (30) procurement officers of Homa Bay County Teaching and Referral Hospital. Data was collected using questionnaires whereas the statistical analyses were carried out using SPSS. Regression analysis results revealed that activity based costing inventory practice had a positive and significant ($\beta = 0.321$, $p = 0.001$) effect on supply chain performance of Homa Bay Teaching and Referral hospital. In conclusion, the study revealed that the majority of the respondent at 48.1% either agreed or strongly agreed that activity based costing reduces space in supply chain in the health facility at the county teaching and referral hospital.

Ezeala, Nzewi and Tochukwu (2022) researched on the effect of activity based costing on financial performance of consumer goods manufacturing companies in Nigeria. The research data covered ten financial years which comprised of both pre-ABC adoption period and post-ABC-adoption period in equal number. Quasi-experimental research design was adopted to guide the direction of the study. The population of the study comprised of all Consumer Goods Manufacturing Companies listed on the Nigeria Stock Exchange, while the sample comprise of consumer goods manufacturing companies in Nigeria that have adopted activity based costing system. Chow Test structural stability version of ordinary least square method of econometric regression was used with the aid of Statistical Package for Social Sciences (SPSS) version 25 to analyze the data. The analyses revealed that activity based costing has no significant effect on financial performance of the adopters. It was recommended that the ABC system be restructured to integrate internal control so as to enable it have the potency to eliminate waste and promote efficiency in the use of resources. The study concluded that elimination of waste could impact positively on company's financial performance.

In an earlier study, Oseifuah (2019) assessed the impact and possible improvement in financial performance as a result of the practice of Activity Based Costing (ABC) and also to determine the condition under which such improvement is achievable in the South African public sector. They expressed financial performance in terms of gross profit margin, current ratio, interest cover and total debt to total assets. The case study method was employed to collect and analyze data relating to improvement in financial performance, perception and success of ABC in Buffalo City Municipality in the Eastern Cape Province of South Africa. The study revealed that the application of Activity-Based Costing (ABC) provides significantly more accurate and useful cost information than the traditional cost accounting. The result indicated further that management strongly agree that ABC application provides more insight into causes of cost; provides better cost control and cost management; provides better understanding of cost reduction opportunities; improves management decision making and provides more accurate information for product / service costing and pricing.

RESEARCH METHODOLOGY

This study used descriptive research design which involved gathering of data that describes events then organizing, tabulating depicting and describing the data. The choice of this research design was influenced by the fact that it enables the researcher to assess the situation in the study area at the time of study. The target population for this study was the manufacturing companies in Nairobi, Kenya. As of December (2020), there were 1012 large manufacturing companies in Nairobi (KAM, 2020). Specifically, the study targeted procurement officials in these companies.

This study employed simple random sampling techniques to select the large manufacturing companies that are part of the target population. To get a representative sample, Cooper and Schidler's formula was adopted (Cooper and Schidlers, 2016). A 95% confidence level and $P = 0.05$ was chosen in view of social science nature of the study. Therefore, 187 procurement officers were sampled using simple random sampling. The choice of this sampling technique is preferred as it gives each item in the population an equal probability of being selected.

This research used a questionnaire to collect primary data. According to Patton *et. al* 2016, a questionnaire is appropriate in gathering data and measuring it against a particular point of view. It provides a standardized tool for data collection. The researcher obtained research permit from relevant authorities required for data collection. Structured and open questions were used to collect primary data from the field. The questionnaires were pilot tested to ascertain the extent to which the instrument is correct and to eliminate ambiguous questions, and improve on validity and reliability

According to Bashir, (2008), validity refers to the extent to which a test measures what it is supposed to measure and the extent to its truthfulness, accuracy, authenticity, genuineness, or soundness, whether the means of measurement are accurate and whether they are actually measuring what they are intended to measure. The pilot study was carried out on 19 respondents who are sufficient based on Glesne (2015) who stated that 10% of the population is adequate to constitute the pilot test size.

This study gathered both quantitative and qualitative data. Qualitative data analyzed by use of content analysis. Quantitative data was coded then analyzed using Statistical Package for Social Sciences (SPSS) computer software version 28. The choice of the software is influenced by its ability to appropriately create graphical presentation of questions, data reporting, presentation and publishing. SPSS is also able to handle large amount of data and it is purposefully designed for social sciences.

Descriptive statistics was used to analyze the data in frequency distributions and percentages which will be presented in tables and figures. Discussions and presentations of the analyzed data was done in tables of frequency distribution, percentages, bar graphs and pie charts. Measures of dispersion was used to provide information about the spread of the scores in the

distribution. The study also adopted multiple regression analysis to test the relationships between the variables.

RESEARCH FINDINGS AND DISCUSSION

Descriptive Statistics Analysis

Economic Order Quantity and Procurement Performance

The second specific objective of the study was to examine the influence of Economic order quantity on procurement performance of large manufacturing companies in Nairobi County, Kenya. The respondents were requested to indicate their level of agreement on Economic order quantity and procurement performance of large manufacturing companies in Nairobi County, Kenya. The results were as shown in Table 1.

From the results, the respondents agreed that EOQ models are seen as a valuable tool for optimizing procurement performance, helping manufacturing companies to maintain competitiveness in the market. This is supported by a mean of 3.996 (std. dv = 0.865). In addition, as shown by a mean of 3.819 (std. dv = 0.945), the respondents agreed that manufacturers have leveraged EOQ principles to achieve cost savings in procurement, which has positively impacted their overall profitability. Further, the respondents agreed that the use of EOQ has enhanced collaboration with suppliers among large manufacturing companies fostering stronger relationships and more reliable procurement processes. This is shown by a mean of 3.798 (std. dv = 0.611).

The respondents also agreed that EOQ models have enabled manufacturing companies to make informed decisions regarding reorder points, resulting in reduced emergency orders and associated costs. This is shown by a mean of 3.731 (std. dv = 0.908). With a mean of 3.711 (std. dv = 0.776), the respondents agreed that by implementing EOQ strategies, manufacturing companies have witnessed improved cash flow management. The respondents agreed that EOQ calculations have contributed to reduced procurement lead times, allowing manufacturers to respond promptly to market demands and fluctuations. This is shown by a mean of 3.675 (std. dv = 0.897). With a mean of 3.613 (std. dv = 0.786), the respondents agreed that EOQ models are seen as a valuable tool for optimizing procurement performance, helping manufacturing companies to maintain competitiveness in the market.

Table 1: Economic Order Quantity and Procurement Performance

| | Mean | Std. Dev. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| EOQ models are seen as a valuable tool for optimizing procurement performance, helping manufacturing companies to maintain competitiveness in the market | 3.996 | 0.865 |
| Manufacturers have leveraged EOQ principles to achieve cost savings in procurement, which has positively impacted their overall profitability. | 3.819 | 0.945 |
| The use of EOQ has enhanced collaboration with suppliers among large manufacturing companies fostering stronger relationships and more reliable procurement processes | 3.798 | 0.611 |
| EOQ models have enabled manufacturing companies to make informed decisions regarding reorder points, resulting in reduced emergency orders and associated costs." | 3.731 | 0.908 |
| By implementing EOQ strategies, manufacturing companies have witnessed improved cash flow management | 3.711 | 0.776 |
| EOQ calculations have contributed to reduced procurement lead times, allowing manufacturers to respond promptly to market demands and fluctuations | 3.675 | 0.897 |
| OQ models are seen as a valuable tool for optimizing procurement performance, helping manufacturing companies to maintain competitiveness in the market | 3.613 | 0.786 |
| Aggregate | 3.732 | 0.841 |

Activity Based Costing and Procurement Performance

The fourth specific objective of the study was to ascertain the influence of activity based costing on procurement performance of large manufacturing companies in Nairobi County,

Kenya. The respondents were requested to indicate their level of agreement on various statements relating to activity based costing and procurement performance of large manufacturing companies in Nairobi County, Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 2.

From the results, the respondents agreed that the adoption of Activity-Based Costing (ABC) has provided our company with a more accurate and granular view of procurement costs. This is supported by a mean of 4.168 (std. dv = 0.905). In addition, as shown by a mean of 3.959 (std. dv = 0.885), the respondents agreed that through ABC, we have identified specific cost drivers within our procurement processes, enabling us to allocate resources more efficiently. Further, the respondents agreed that ABC has improved our ability to assess supplier performance based on a comprehensive understanding of the costs associated with each supplier. This is shown by a mean of 3.920 (std. dv = 0.605). The respondents also agreed that by implementing ABC, they have gained a competitive advantage in the Nairobi County manufacturing sector by optimizing procurement costs. This is shown by a mean of 3.915 (std. dv = 0.981).

The respondents agreed that ABC has allowed them to make informed decisions when it comes to negotiating with suppliers, resulting in cost savings and better terms. This is supported by a mean of 3.911 (std. dv = 0.873). In addition, as shown by a mean of 3.897 (std. dv = 0.786), the respondents agreed that their procurement team has leveraged ABC data to develop a more cost-effective sourcing strategy for materials and components.

Table 2: Activity Based Costing and Procurement Performance

| | Mean | Std. Dev. |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|
| The adoption of Activity-Based Costing (ABC) has provided our company with a more accurate and granular view of procurement costs. | 4.168 | 0.905 |
| Through ABC, we have identified specific cost drivers within our procurement processes, enabling us to allocate resources more efficiently | 3.959 | 0.885 |
| ABC has improved our ability to assess supplier performance based on a comprehensive understanding of the costs associated with each supplier | 3.920 | 0.605 |
| By implementing ABC, we have gained a competitive advantage in the Nairobi County manufacturing sector by optimizing procurement costs. | 3.915 | 0.981 |
| ABC has allowed us to make informed decisions when it comes to negotiating with suppliers, resulting in cost savings and better terms | 3.911 | 0.873 |
| Our procurement team has leveraged ABC data to develop a more cost-effective sourcing strategy for materials and components | 3.897 | 0.786 |
| Aggregate | 3.886 | 0.858 |

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (Economic order quantity and Activity Based Costing) and the dependent variable (procurement performance of large manufacturing companies in Nairobi County, Kenya) dependent variable. Pearson correlation coefficient range between zero and one, where by the strength of association increase with increase in the value of the correlation coefficients.

Table 3: Correlation Coefficients

| | | Procurement Performance | Economic order quantity | Activity Based Costing |
|-------------------------|---------------------|-------------------------|-------------------------|------------------------|
| Procurement Performance | Pearson Correlation | 1 | | |
| | Sig. (2-tailed) | | | |
| | N | 169 | | |
| Economic order quantity | Sig. (2-tailed) | .002 | | |
| | N | 169 | | |
| | Pearson Correlation | .856** | 1 | |
| Activity Based Costing | Sig. (2-tailed) | .001 | | |
| | N | 169 | 169 | |
| | Pearson Correlation | .859** | .189 | 1 |
| | Sig. (2-tailed) | .000 | .081 | |
| | N | 169 | 169 | 169 |

Moreover, the results revealed that there is a very strong relationship between economic order quantity and procurement performance of large manufacturing companies in Nairobi County, Kenya ($r = 0.856$, p value = 0.001). The relationship was significant since the p value 0.001 was less than 0.05 (significant level). The findings conform to the findings of Mwangangi and Senelwa (2018) that there is a very strong relationship between economic order quantity and procurement performance.

The results also revealed that there was a very strong relationship between activity based costing and procurement performance of large manufacturing companies in Nairobi County, Kenya ($r = 0.859$, p value = 0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the results of Abdilahi, Kithinji and Naminda (2023) who revealed that there is a very strong relationship between activity based costing and procurement performance

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (Economic order quantity and Activity Based Costing) and the dependent variable (procurement performance of large manufacturing companies in Nairobi County, Kenya)

Table 4: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|------|----------|-------------------|----------------------------|
| 1 | .925 | .848 | .849 | .10120 |

a. Predictors: (Constant), Economic order quantity and Activity Based Costing

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r -squared for the relationship between the independent variables and the dependent variable was 0.848. This implied that 84.8% of the variation in the dependent variable (procurement performance of large manufacturing companies in Nairobi County, Kenya) could be explained by independent variables (Economic order quantity and Activity Based Costing).

Table 5: Analysis of Variance

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|-------|-------------------|
| 1 Regression | 12.027 | 2 | 3.018 | 75.45 | .000 ^b |
| 1 Residual | 6.568 | 166 | .0400 | | |
| Total | 18.595 | 168 | | | |

a. Dependent Variable: procurement performance

b. Predictors: (Constant), Economic order quantity and Activity Based Costing

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 75.45 while the F critical was 2.427. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of Economic order quantity and Activity Based Costing on the procurement performance of large manufacturing companies in Nairobi County, Kenya.

Table 6: Regression Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients Beta | t | Sig. |
|-------|-------------------------|-----------------------------|------------|--------------------------------|-------|-------|
| | | B | Std. Error | | | |
| 1 | (Constant) | 0.341 | 0.089 | | 3.831 | 0.000 |
| | Economic order quantity | 0.387 | 0.095 | 0.386 | 3.949 | 0.000 |
| | Activity Based Costing | 0.398 | 0.102 | 0.399 | 3.716 | 0.002 |

a Dependent Variable: Procurement Performance

The regression model was as follows:

$$Y = 0.341 + 0.387X_1 + 0.398X_2 + \varepsilon$$

The results revealed that economic order quantity has significant effect on the procurement performance of large manufacturing companies in Nairobi County, Kenya, $\beta_1=0.387$, p value=0.000). The relationship was considered significant since the p value 0.000 was less than the significant level of 0.05. The findings conform to the findings of Mwangangi and Senelwa (2018) that there is a very strong relationship between economic order quantity and procurement performance.

In addition, the results revealed that activity based costing has significant effect on the procurement performance of large manufacturing companies in Nairobi County, Kenya ($\beta_1=0.398$, p value= 0.002). The relationship was considered significant since the p value 0.002 was less than the significant level of 0.05. The findings are in line with the results of Abdilahi, Kithinji and Naminda (2023) who revealed that there is a very strong relationship between activity based costing and procurement performance

Conclusions

The study concludes that economic order quantity has a positive and significant effect on procurement performance of large manufacturing companies in Nairobi County, Kenya. The study revealed that demand Forecasting; re-order Level and holding Cost influence procurement performance of large manufacturing companies in Nairobi County, Kenya

The study also concludes that activity based costing has a positive and significant effect on procurement performance of large manufacturing companies in Nairobi County, Kenya. The study revealed that inventory optimization, cost drivers and focus on activities influence procurement performance of large manufacturing companies in Nairobi County, Kenya.

Recommendations

Based on the findings, this study recommends the following;

Large manufacturing companies in Nairobi County should incorporate EOQ calculations into their procurement processes. This can help optimize inventory management by ordering the right quantity of materials at the right time, minimizing carrying costs, and ensuring that stockouts are minimized.

Companies should establish and regularly review reorder points to ensure that they are aligned with demand patterns. Consider factors like lead time, demand variability, and safety stock requirements when determining reorder levels. Adjust these levels as necessary to prevent stockouts and overstock situations.

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