

## Factors Influencing Inventory Management in Public Sector: A Case Study of Kajiado County Hospital

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### **Abstract**

The aim of this study was to investigate the factors influencing inventory management at the public sector from which the researcher settled on Kajiado District Hospital. The various factors investigated were broken into Procurement procedure, lead time, supplier selection and e-procurement. The objectives were to; determine how procurement procedures influence inventory management, to determine how e-procurement influences inventory management at Kajiado County Hospital. The study used thirty percent of the target population consisted of officers from various departments who are directly responsible in inventory management to ensure that the customer demands are effectively and efficiently met. Information was collected from forty five (45) of the targeted one hundred and fifty (150) respondents using structured and semi structured questionnaires. Data was quantitatively analyzed using SPSS version 22 which presented frequency tables, graphs and the necessary measures of variance for effective interpretation. The key findings in the research indicated several challenges in inventory management such as limitation of scope from which suppliers are selected, lack of transparent supplier appraisal process, lack of transparent tender awarding process and pre-qualification of supplier not made public. Delays was another challenge which was caused by the process of initiating a request of supplies to the supplier, non-availability of some pharmaceuticals from the Kenyan market or in the global market, legislation issues also come in to play as these products had to be authorized to be used in Kenyan market hence delays while awaiting approval and other logistical issues. Lack of e-procurement which could have been fast and reduce the delays. The study was of great importance to Kenyan government and donors it assisted in identifying areas of improvement in procurement process of such activities. To researchers the study formed basis for future research.

**Keywords:** Disposal, E-Procurement, Surplus Property, Expediting, Efficiency, Effectiveness

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### **Introduction**

Inventory consists of all goods owned and held for customer satisfaction. Inventory is a necessary evil to any organization although there are various costs that accrue as a result of keeping inventory. It is therefore important for any organization to keep a good balance between the amount of inventory to keep at any one time so as to ensure that both internal and external customers are satisfied without causing the organization to incur high inventory costs. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the

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random disturbance of running out of materials or goods (Williams, 2000). The scope of inventory management also concerns the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space for inventory, quality management, replenishment, returns and defective goods and demand forecasting.

The various types of inventory include: raw materials, which are all materials before they are placed into production, work in progress (W.I.P), which are manufactured products that are only partially completed at some point in time while finished products are manufactured goods that are complete and ready for sale (Williams, 2000).

Inventories represent a sizeable investment and a potential source of waste that needs to be carefully controlled. If managers keep too much inventory on hand, they will waste money storing it and lose money if inventories are damaged or stolen. On the other hand, managers who run out of inventory may have to stop production until the necessary materials are supplied, wasting time and labour (James, 1999). In most realistic inventory situations, certainty does not exist. Both demand and acquisition lead time usually fluctuate and cannot be completely predictable. Even inventory models such as EOQ are not applicable to all inventory situations. Demand or usage of items can be greater or lesser than anticipated due to external or internal factors. Also the acquisition lead time can vary from favourable to unfavourable due to supplier and transshipment difficulties. If there is no inventory of items when required due to any reasons, a stock out occurs. This situation can lead to decrease in profits and sometimes even losses.

On account of increased pressure on the working capital, the need for minimum or no inventory has been felt very much. However, it is not practical to completely avoid stocks as stocks are held to avoid too frequent purchases and to avoid loss of production due to plant shut down. As it is necessary to hold stocks, it is necessary to control it. One problem that arises with uncertainty of demand is that of providing buffer stock to protect any shortages (Shenoy, 2000).

There is an optimum level of investment below which opportunities are lost through having too little and above which more opportunities are lost through idleness of excess stock. The costs associated with large inventories are; loss of return on tied up capital, risk of obsolescence, storage costs, handling costs, clerical costs and insurance premiums. On the other hand costs associated with low inventories include; foregone sales, foregone purchase discounts, loss of customer goodwill, increased unit costs of purchasing and transportation and extra costs of economic production runs (Richard, 2004)

It is important that both the Public sector and the private sectors in Kenya embrace good inventory management practices as a tool of enhancing the performance of the procurement process. The research focused on the Public sector and investigates the challenges of inventory management and shall give recommendations on how to overcome these challenges.

## Statement of the Problem

Inventory management plays an important role in an organization's service delivery and ability to satisfy customers. The effectiveness of inventory control is directly measurable by how successful an organization is providing high levels of customer service and low inventory investment. At the Kajiado County Hospital there is need to always have enough materials in stock so as to ensure that goods and services are offered to all the customers. The department should never run out of supplies due to the sensitive nature of its function 'Offering medical services'. It is very important to ensure that there is efficient supply of various goods at all times because there need comes in handy to ensure proper performance of the supplies and stores department. In any case, the procurement department function is spread throughout the organization. There is difficulty in determining the desired stock levels that ensure a free flow of materials without incurring heavy expenses in stocking those materials.

For the past three financial years, the department has held excess inventory of some items while there has been lack of other necessary items in store required to meet customer demands. The inventory has not been able to run the organization smoothly as there have been several stock outs or total lack of various stock items. There is some evidence of suppliers who cannot meet delivery schedules and thus cause delivery uncertainty. The procurement department often provides the supplier with short notices or requests frequent changes to a schedule and thus increasing the probability of delivery uncertainty. This shows that the department has not determined its order and re-orders levels, which is a good practice in inventory management.

There is also an extended order cycle time, i.e. the time between the recognition of a purchase requirement and the physical receipt of material from a supplier (Greene, 1997). The longer the order cycle time the more uncertain delivery becomes resulting to a possibility of a stock out. There is also an inaccurate or uncertain demand forecast, a source of uncertainty affecting inventory levels at the procurement department. This has increased the need for safety stock to meet future demand regardless of the demand uncertainty.

## Research Objective

The general objective was to assess factors influencing inventory management in the Public Sector.

This was guided by the following specific objectives;

- i. To determine the effect of procurement procedure on inventory management in Kajiado County Hospital.
- ii. To determine the effect of e-procurement on inventory management in Kajiado County Hospital.

The study sought to answer the following questions:

- i. How does procurement procedure influence inventory management in Kajiado County Hospital?

- ii. Does e-procurement influence inventory management in Kajiado County Hospital?

### **Justification of the Study**

Inventories represent a sizeable investment and a potential source of waste that needs to be reviewed regularly and closely for example through perpetual stock taking, periodic reviews also as well as internal and external auditing. This should be done in full participation of the employees. In this relation the Procurement department should establish the challenges it is facing by having inventories in excess. For this reason, the study sought to assist the department in knowing how much inventory it should keep at any one time and the reasons it should keep such inventory. The studies also enabled the department to establish the kind of technology it should adopt to ensure efficiency in inventory management. The study was of benefit to the public sector especially the Procurement and Stores department as a whole.

Umma University is also on the throes of setting up a hospital and research findings will help the institution set an efficient and effective stores management system through inventory management as the findings will cascade to the Umma hospital.

The study was used in increasing the knowledge base to existing challenges in inventory management systems literature available in Kenya. The study provided basis for further studies on inventory management in Kenya. Upon successful research, the researcher was in a position to ascertain the role of procurement on the performance of public Sector and hence make recommendations on areas of improvement. Thus the Kajiado County Hospital may adopt the findings of this research and implement them in the institution. The major contribution of this study was to document the procurement procedures used and recommendations on how e-procurement can lead to overall performance of Kajiado County Hospital. The results of this study can also be used as a source of reference by other scholars in future.

### **Scope of the Study**

The study was conducted using one case study of Kajiado County Hospital. It has been in operation for many years now consistently offering the same goods and services to the public and whose importance is unmatched. The study focused on the nature of inventory management at the procurement and supplies department, the nature and type of challenges faced in inventory management and how to overcome those challenges.

The study specifically focused on Procurement Officers, Procurement Assistants, Store men as well as the Clerical Officers working in that department. It aimed at gaining an overview of the nature and practice concerning inventory management systems and their effectiveness in ensuring customer satisfaction.

### **Literature Review**

The purpose was to find out how other authors conceptualized the concepts as well as the findings and methodology that has been adopted in past empirical studied on the inventory management.

## Conceptual Framework

The conceptual framework includes independent variables identified as procurement procedures, lead time, supplier selection and e- procurement on one hand and inventory management as dependent variable on other hand. The problem under investigation is inventory management as affected by the identified independent variables. Inventory management is shown on the right side while the independent variables are shown on the left hand in figure 1.

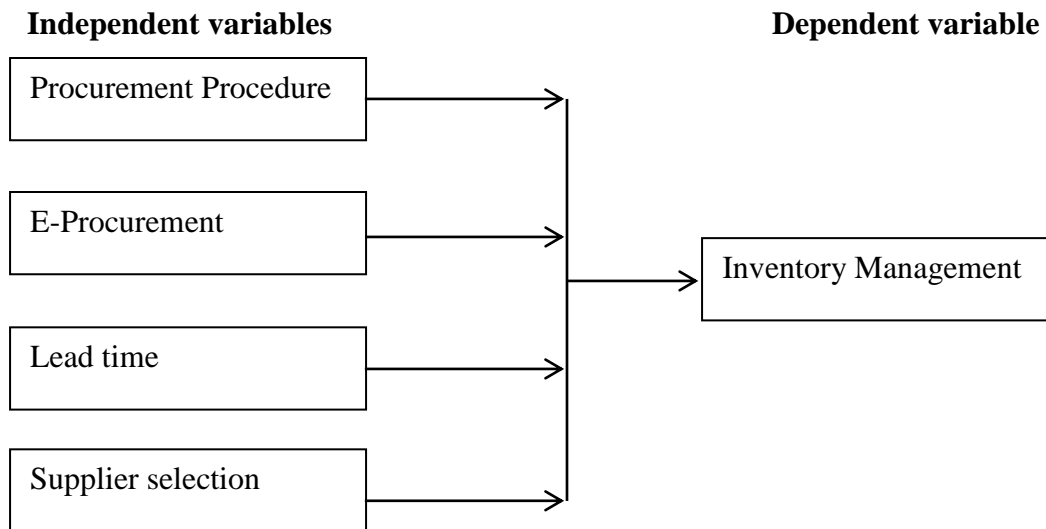


Figure 1: Conceptual Framework

*Procurement Procedures:* The public procurement procedure is the process followed in acquiring of goods, works and services by the government procuring entities which includes purchasing, hiring, leasing or any other contractual means of engaging suppliers in the provision of services to the public (lent, 2002). Public procurement is controlled by government and is financed from taxation, grants, public debts and fees for services. The main goal of public procurement is effective and efficient provision of public service. It is aimed at satisfaction of customers in terms of cost, quality, and timeliness of the delivered product or service, minimizing administrative operating costs, conducting business with integrity, fairness and openness (GoK, 2005).

The procurement procedures outline in detail the specific actions to be taken so as to accomplish a purchase task within the guidelines of the company. The procedure provides the framework and direction for achieving the most economical supply of materials with the maximum efficiency. It also provides the means of processing information and communicating from the time of need until the materials are delivered (Kenneth, 2003).

According to Gary (2002), procurement procedure entails the following major processes; Procurement Planning, Solicitation Planning, Solicitation, Source Selection, Contract

Administration and Contract Closeout. Procurement planning is the process of identifying which project needs can be best met by procuring products or services outside the project organization and should be accomplished during the scope definition effort. It involves consideration of whether to procure, how to procure, what to procure, how much to procure, and when to procure. Procurement planning should also include consideration of potential sellers, particularly if the buyer wishes to exercise some degree of influence or control.

*E-Procurement:* E-procurement is simply aspects of the procurement function support by various forms of Electronic communication, (Knudsen, 2002) and its use in both the public and private sector. This typology has been adapted from various sources including, (Caldwell et al. 2002; de Boer et al. 2002; Knudsen 2002; Telgen 2001). Market places (market sites) take various forms and may be buyer, supplier or neutral Centric and have been thought beneficial in reducing costs and optimizing supply chains (Barratt and Rosdahl, 2002).

The term e- procurement has become synonymous with electronic market places (market sites). During the height of dot.com mania between about 1999 and 2000 electronic market places were seen as a potentially lucrative source of revenue for aspiring dot.com companies. The promotional material was along the lines that if your organization is not using a market place then it is not doing e-procurement and would be left behind. This line was generally accepted in the public sector which saw the potential of electronic market places as a magic pudding into which could be mixed a large part of the spending of public sector entities with great opportunities for small and medium sized enterprises and other worthy suppliers. Notwithstanding the very wishful thinking, the reality has been different.

## **Research Design**

The research was a case study. A case study refers to the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves. The researcher used a case study because it places more emphasis on a full contextual analysis of few elements and conditions and their interrelations which will rely on qualitative data. The case study was chosen for the study because it enabled the researcher to get more detailed information about the employees' views on the challenges affecting inventory management.

The study used both qualitative and quantitative approaches. The qualitative approach was the use of non- quantifiable methods to collect, to evaluate and analyze data (Borg and Gall, 1993). The reasons for this approach were to permit the researcher to study selected issues, cases, or events in depth and detail. Also, data collection should not be constrained by predetermined categories of analysis, allowing for a level of depth and detail that wouldn't be provided by the quantitative approach (Borg and Gall, 1993).

## **Target Population**

The target population for this study consisted of officers from various departments. These were the employees who are directly responsible in inventory management to ensure that the customer demands are effectively and efficiently met, as well as those who are indirectly

involved. Questionnaires were also administered to all the respondents'. The questionnaires were constructed in both open and closed ended questions to enable for quantitative and qualitative analysis respectively.

### Sample Size and Sampling Design

Purposive sampling techniques were applied in selecting the study area (Kajiado County hospital). The main factor considered in determining the sample size was to keep it manageable enough. Also to enable the researcher to derive from it detailed data at an affordable cost in terms of time, finances and human resource (Mugenda and Mugenda 1999). The study adopted stratified sampling techniques to select suitable sample size.

The researcher selected (30%) of the target population to act as the sample size, since it have been argued that such a sample size is adequate for a descriptive survey study (Patton, 2002)

**Table 1: Target Population**

Category	Population size	Sample size
Finance officers	16	5
Procurement Personnel	20	6
Marketers	18	5
Casual workers	96	29
<b>Total</b>	<b>150</b>	<b>45</b>

Source: Kajiado County Hospital 2016

### Data collection methods

These are the approaches that the researcher used in data collection during research process. In this study, the researcher utilized both primary and secondary data in the research process. The primary data was collected through questionnaire and interviews. Secondary data were obtained from the tender documents, published material, journals and internet sources.

### Effect of procurement procedures on inventory management

The first objective of the study was to analyze the effect of procurement procedures on inventory management in public sectors.

**Table 2: Respondents Ratings on Procurement Procedures in Kajiado County Hospital**

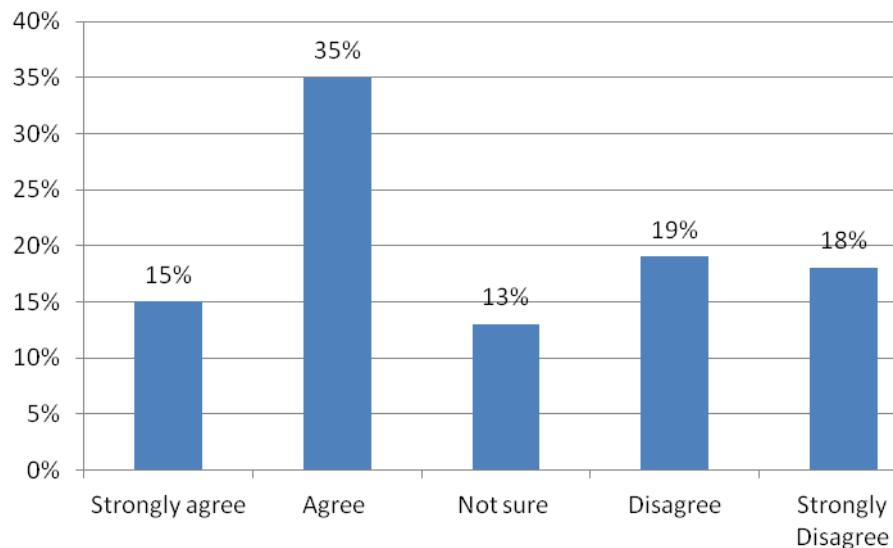
Procedure	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
Open tendering is done transparently	18%	46%	6%	16%	14%
Supplier selection is affected by politicians and other external players	22%	41%	4%	15%	18%



Restricted tendering is never done	1%	13%	22%	46%	18%
Bids evaluation is handled by competent members	3%	14%	21%	42%	20%
Annual procurement plan is not prepared in good time	17%	34%	16%	18%	15%
Composure of tender committee is all inclusive (all departments represented)	12%	27%	24%	18%	19%
Urgent procurement is not common in Kajiado County hospital	20%	33%	16%	23%	8%
Deliveries inspection process is not handled well by inspection committee	37%	30%	10%	18%	5%
All suppliers are promptly paid on delivery	14%	24%	26%	18%	18%

Major procurement procedures like request for open tendering, bids evaluation and inspection of deliveries are not conforming to PPOA requirements. This implies that inventory management level is very low. Sixty six percent (66%) agreed that open tendering is not done transparently. Sixty three percent (63%) agreed that Supplier Selection is affected by politicians and other external players, local community and staff members. Inventory management level must be guided by the aforementioned procurement procedures. The study revealed that inventory management level is still low as reflected by figure 2 next page.

### Procurement plan preparation



**Figure 2: Annual procurement is not prepared in good time**



## Effect of E-Procurement on Inventory Management

E-Procurement (or business to business networks) is an online system by which companies can be connected directly to suppliers for the purpose of buying products and services at the lowest cost possible. E-procurement essentially replaces its offline version called tendering.

**Table 3: Effects of E-Procurement on the Procurement Process**

Statement	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
E-procurement system on procurement leads to quality purchase	85%	10%	5%	0%	0%
e-procurement system on procurement leads to less time in the process	87%	11%	2%	0%	0%
e-procurement system makes the procurement process less costly	97%	1%	2%	0%	0%

Despite the hospital having e-procurement 85% of the respondents strongly believed e-procurement system would lead to quality purchase and less time of the procurement process. When asked whether e-procurement makes the process less costly 97% strongly agreed. Majority of the respondents appreciated the need for e-procurement as a remedy to shorten ordering cycles, a wider adoption of “Just In Time” practices and increased supplier involvement in product.

## Conclusions

From the research objectives and research question, what are the procurement procedures currently used in Kajiado County hospital, does the hospital have a e-procurement system and how does it affect inventory management, what are the recommendations for improving inventory management in Kajiado County hospital have been by large extent achieved. Nevertheless, several challenges are facing inventory management process hence resulting to some extent achievement of intended inventory management in public sector objective by the government. Such challenges include lack of transparent tender awarding and pre-qualification of supplier not made public. Delays were noted to be another challenge which was caused by the processes of initiating a request for supplies to the supplier, non-availability of some pharmaceuticals from the Kenyan market or in the global market, legislation issues also come in to play as these products had to be authorized to be used in Kenyan market hence delays while awaiting approval and other logistical issues. Lack of effective e-procurement which could have been fast and reduce the delays was also seen as a hindrance

## Recommendations

For effective role of inventory management to be achieved the government through the ministry of Health needs to lay more emphasis on enforcing the laid out procedures in Kajiado County hospital by conducting regular audits. It was evident that at times, the procurement procedures were not fully observed and shortcuts were used to ensure goods and services are procured in the hospital. Also the procurement department should ensure that the hospital is well equipped with procurement plan as it would provide the organization with the information about the purchase of goods and services, how vendor will be chosen, what kind of contract will be used, how vendor will be managed and who will be involved at each stage of the process. E-procurement should be implemented in Kajiado County hospital since with proper implementation is an organized form of open communication. It allows managers to confirm, cutting down on unnecessary purchases and cost and therefore inventory management. E-procurement in the public sector should also increase transparency in procurement through electronic publishing of tender notices and contract awards and this enhances accountability and reduces the instances of corruption therefore inventory management.

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