

## **INVENTORY MANAGEMENT SYSTEMS AND PERFORMANCE OF PUBLIC HOSPITALS IN KENYA; CASE OF COUNTIES UNDER UNIVERSAL HEALTH CARE PROGRAMME**

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**Purpose:** *influence of procurement process audit on procurement performance in public health facilities in Kiambu County, Kenya.*

**Materials and methods** *the study adopted the descriptive research design. Research design is defined as a plan, structure and strategy of investigation conceived to obtain answers to research questions and control variance. The study targeted the employee 109 working in Public Hospitals in Kenya. The study was carried out in Kisumu, Nyeri, Isiolo and Machakos counties under UHC Programme which focus on a Primary Health Care Approach and included scaling up Immunization Services; Maternal and Child Health Services, family planning, antenatal and postnatal care services; Prevention of water borne, vector borne, TB and HIV and sexually transmitted diseases and improving nutrition of women who conceive and follow this through to the first five years of a child's life. The study targeted the employee 109 working in Public Hospitals in Kenya. The study was carried out in Kisumu, Nyeri, Isiolo and Machakos counties under UHC Programme. The study collected both primary and secondary data, where primary data was collected using a questionnaire. It covered the influence Inventory Management systems on Performance of Public Hospitals in Kenya. Qualitative data analysis method was employed to analyse qualitative data gathered using open-ended questionnaires. The study established that JIT offers advantages by allowing hospitals to keep operations runs short and move on to new products quickly and easily if needed. A good inventory management strategy also helps hospitals save money that could otherwise be wasted on slow-moving products.*

**Results:** *The studies established that Material grouping into predefined categories and ensure hospitals always updated about quantities of components and specifications that make up hospital drugs store stock, and manage their reordering schedules as required. Purchase order records: Create a single view of purchase order records. Hospitals can easily identify which products are in demand, both perpetually and seasonally, and prepare to meet customers' needs.*

**Recommendations:** *The study recommends allows hospitals to negotiate better deals with suppliers in many cases. Distributors often offer volume discounts to hospitals if they buy a lot of inventory at once.*

**Keywords:** *Inventory Management systems, ABC Analysis, First in First Out, Enterprise Resource Planning*

## INTRODUCTION

### Background of the Study

The study analyzed the influence of Inventory Management systems on Performance of Public Hospitals in Kenya Specifically, this chapter provides information on the global perspective of Inventory Management systems and public health facilities, performance concept and then narrows down to regional and then local perspectives as well statement of the problem, objectives of the study, research questions justification of the study, and the scope of the study.

According to Musau and Ngeno (2017) Define that Inventory optimization is a method of balancing capital investment constraints or objectives and service-level goals over a large assortment of stock-keeping units (SKUs) while taking demand and supply volatility into account. Strategic inventory planning entails decision making about the design and implied operating capabilities of the company's supply chain network linking suppliers, manufacturing and distribution facilities, and customers. Awanga (2018) explains that for an increasing number and variety of companies, network optimization models have proven effective in holistically analyzing strategic decisions under a variety of data-driven scenarios of the companies' futures. The objective driving a network optimization model is minimization of a wide range of costs, which might include those incurred by supply, manufacturing, warehousing, and transportation investments and activities, subject to constraints on customer service and available resources. Investment costs need to be suitably amortized for each of the periods, usually years (Dickson 2018).

Inventory Optimization takes a holistic approach to balancing the supply chain by providing visibility and understanding of the different parameters that create and shape inventory. The Inventory Optimization module allows users to create policies that determine how changing these parameters impacts on target inventory levels. This enables the best mix of services to the customer at the optimum cost of inventory to achieve that service. Seasonal and trend factors can also be incorporated (Stough, 2017).

### Public Health Facilities

The international community has come to recognize the critical importance of strengthening public health systems as a whole to the achievement of major global health goals. Ranging from the overarching health objectives of the Millennium Development Goals to the more focused objectives of the many specific global health programs According to states that Public health is the science and art of preventing disease, prolonging life and promoting human health through organized efforts and informed choices of society, organizations, public and private, communities and individuals (Kenya Healthcare Federation, 2016).

Health care in the United Kingdom is a devolved matter, with England, Northern Ireland, Scotland and Wales each having their own systems of publicly funded healthcare, funded by and accountable to separate governments and parliaments, Public health aims to improve the quality of life through prevention and treatment of disease, including mental health (Yi-Hui, 2015). This is done through the surveillance of cases and health indicators, and through the promotion of healthy behaviors. Common public health initiatives include promoting hand washing and breastfeeding, delivery of vaccinations Effective vaccine management requires accurate vaccine inventory forecasting and needs estimation, as well as adequate stock ordering that follows the delivery schedule, in conformity with cold chain capacity though an optimized inventory system hence ensuring critical medicine are available for emergency purposes.

Healthcare in Rwanda was historically of poor quality, but in recent decades has seen great improvement. Rwanda operates a universal health care system, and is considered to have one of the highest-quality health

systems in Africa. According to Sainathan and Greenbelt (2019), the success has been achieved through Inventory Management systems which enabled the accuracy of vaccine forecasting and needs estimation depends upon the level of implementation national, district or local service delivery and the time period of estimation used month, year, multi-year. The accuracy of the estimation depended upon the quality of data used, as well as the Programme Manager's knowledge of specific programmatic conditions.

In the Kenya context, the expectation is that a devolved health system lead to improvement in efficiency of service delivery, stimulate innovation in the wider sector, improve access to and equity of available services, and promotes accountability and transparency in service delivery. In the devolved government, the Kenya Health Policy 2014 – 2030 provides guidance to the health sector in terms of identifying and outlining the requisite activities in achieving the government's health goals the policy is aligned to Constitution of Kenya and global health commitments .The inventory optimizing systems have designed in the public hospitals designed as a holistic platform for vaccine program performance management, enabling managers at all levels to manage stock and monitor the supply chain. Simple interfaces enable staff at the regional, and eventually district level to input issuances and receipts of vaccine stocks. The inventory optimizing systems uses population and target coverage data to automatically generate warnings when stock levels fall below the levels required to meet forecasted demand. Reports are automatically generated and sent monthly via email to procurement department and drugs store managers to ensure that stock records are up to date. The inventory optimizing systems also includes a mapping application to visually depict stock levels at each store (Kirui & Maina, 2018).

The inventory management platforms are used to bring together stock, cold chain and coverage data by interfacing directly with the District Health Information System for a more holistic analysis of program performance. This approach helps to eliminate stock outs by revising forecasts based on previous months' consumption, identifying opportunities to optimize allocation of supplies, generating new insights into wastage, and ensuring optimal selection and utilization of appropriate equipment at each site (Muthoni & Maitho, 2019).

### **Public Hospitals in Kenya**

Kenya has 47 counties, each with a county hospital which is the referral point for the district hospitals. These are regional centers which provide specialized care including intensive care and life support and specialist consultations. The county hospitals include County referral services These are hospitals operating in and managed by a given county and consist of the former level four and district hospitals in the county and include public and private facilities. The Level 4: National referral services: comprises facilities that provide highly specialized services and includes all tertiary referral facilities. In essence, the decentralized system has consolidated service areas into 4 main categories for ease of governance and responsibility. These responsibilities are shared between the national government and county governments (K.H.F, 2016).

The public health facilities in the county hospitals, from clinics to labs and hospitals use a vast amount of specialized equipment, materials, and medications to serve patients. In order to store and organize these medical supplies, efficient inventory management practices are vital. The inventory is tracked by using different inventory optimizing systems. This is to ensure that inventory levels don't only adversely impact organizational operations due to stock outs, causing staff to spend way too much time to find inventory. According to Muthoni & Maitho (2019) the recent trends in efficient distribution, such as just-in-time (JIT) deliveries and reductions in the amount of inventory held, has caused many public health facilities in the county, to focus more on streamlining their supply chain in an effort to be more competitive while still meeting

the requirements of their customers. These changes are more evident in the health care industry an industry that has not traditionally seen distribution and inventory management as a competitive advantage (Mutiso & Ochiri, 2019).

### **Concept of Performance**

A good system of inventory optimization is fundamental to successful public health outcomes. It reduces exposure to stocks outs of basic essential medicines which may lead to Wide gaps exist in the inventory management, monitoring and evaluation, resulting in a weak public health system. This is partly due to poor inventory management systems for public health, lack of ABC Analysis and First-In-First-Out in the public health (Yi-Hui, 2015).

According to Masudin & Dewi, (2018) states that Inventory Performance is a measure how effectively and efficiently inventory is used and replenished. The goal of inventory performance metrics is to compare actual on-hand dollars versus forecasted cost of goods sold. Many Lean practitioners claim that inventory performance is the single best indicator of the overall operational performance of a facility. Inventory performance is always measured based on future demand instead of historical usage because last month's consumption is irrelevant to how much inventory will be used next month. That is, the demand portion of inventory performance must be predictive (Shajema, 2018).

The inventory performance indicator measures the fraction of time items are out of stock, assuming a linear trend of outgoing deliveries in each period. This measure is similar to common definitions of out-of-stock used in the retail industry conceptually; our out-of-stock measure assumes that a retailer conducts regular checks of product availability at different points in time over several periods. The out-of-stock ratio can then be calculated by dividing the number of observations in which the product was out-of-stock by all observations (Dasaklis & Casino, 2019).

### **Inventory Management systems**

The main goal of inventory Optimization and supply chain management is to reduce the cost of healthcare without sacrificing service typically by improving the efficiency or productivity of the system. According to Folinas and Coudounaris (2017) Inventory is reviewed continuously or periodically and both approaches are used in joint systems. In the continuous review policy, the inventory levels are checked continuously and when a certain condition is met for the safety stock. The main reason a company keeps an inventory of inventory optimal levels is to perform maintenance in order to restore the system in such a way that it can perform its intended function. The number of economic order quantities in inventory is determined by the demand, caused by corrective as well as preventive maintenance, for each inventory part. Inventory management systems relies on the availability of stock available in order to reduce stock outs First-In-First-Out and inventory management are strongly interconnected and are both be considered simultaneously when optimizing a company's operations(Iqbal & Bhutta, 2018).

When optimizing the inventory systems organizations focus on costs, downtime, service levels and the optimal inventory levels or the minimum stock. The inventory costs include three major parts. A holding cost has to be taken into account. Keeping stock is expensive because companies do not receive any interest on the blocked capital, which would be the case when the capital can be invested in other projects. This ordering cost is mostly a fixed amount assigned to each order that is placed. These order costs might be dependent on whether it is an emergency order or not. The parts purchasing cost is often considered a maintenance cost and sometimes an inventory cost. The inventory ordering systems include a certain lead time and inventory can only be purchased

periodically, shortage costs will be incurred when the number of stock in inventory is insufficient to service the customer (Duong & Wang, 2020).

### **Statement of the Problem**

The challenge of Optimization inventory in Public Hospitals in Kenya is increasing phenomenon which is causing a greater percentage of total losses due to unaccountability, inventory pilvarages, short expiries, inventory stock outs and high inventory holding cost. Shorter and more frequent product cycles which are required to meet the needs of more sophisticated medical industry create the need to manage supply chains containing more products and inventory parts (Muthoni & Maitho, 2019). These counties frequently have 15-30% more inventory than they need and lower service levels. This lead to increasing in inventory holding cost up to 500,000 ksh in each county, labor cost for material handling increasing to 100,000-250,000 in the county hospitals. Lack of inventory management techniques lead 30% reductions in essential medicines and 10-20% increase in lead time for medical deliveries. Inventory inaccuracy reduced profits by 10%, in the second case; misplaced items reduced profits by 25% (K.H.F, 2016).Empirical studies by Iqbal & Bhutta (2018) Agile manufacturing relationship building with TQM, JIT, and firm performance: An exploratory study in apparel export industry of Pakistan focused on manufacturing sector. None of the above studies specially focused on Inventory Management systems s in hospitals in guise of this questions and evidence highlighted herein, the researcher wishes to carry out a study to determine influence Inventory Management systems on performance of public hospitals in Kenya.

### **General Objective of the Study**

The main objective of this study was to determine the relationship between Inventory Management systems and performance of public hospitals in Kenya; case of counties under UHC programme

### **Specific Objectives**

The study was guided by the following specific objectives:

- i. To determine how ABC Analysis, affects performance of public hospitals in Kenya
- ii. To assess how First-In-First-Out management influence performance of public hospitals in Kenya
- iii. To evaluate how Enterprise Resource Planning affects performance of public hospitals in Kenya

## **LITERATURE REVIEW**

### **Theoretical Review**

The theoretical literature review helps establish what theories already exist, the relationship between them, to what degree the existing theories have been investigated, and to develop new hypotheses to be tested.

### **Inventory Management systems**

According to Ganesh and Uthayakumar (2019) Inventory management systems streamline and centralize the process for controlling the flow and maintenance of inventory to ensure that the right amount of inventory is available at the right time and of the right quality. Inventory management systems are widely used in a variety of industries, from manufacturing to utilities, healthcare, education, government, and more.

In materials management, the ABC analysis or Selective Inventory Control is an inventory categorization technique. ABC analysis divides an inventory into three categories. Items with very tight control and accurate records' items with less tightly controlled and good records, and C items with the simplest controls possible

and minimal records. The ABC analysis provides a mechanism for identifying items that will have a significant impact on overall inventory cost, while also providing a mechanism for identifying different categories of stock that will require different management and controls (Dasaklis & Casino, 2019).

According to Shajema (2018) First-In-First-Out, FIFO stands for first-in, first-out, meaning that the oldest inventory items are recorded as sold first but do not necessarily mean that the exact oldest physical object has been tracked and sold. In other words, the cost associated with the inventory that was purchased first is the cost expensed first. With FIFO, the cost of inventory reported on the balance sheet represents the cost of the inventory most recently purchases.

Enterprise resource planning (ERP) is the integrated management of core business processes, often in real-time and mediated by software and technology. ERP provides an integrated and continuously updated view of core business processes using common databases maintained by a database management system (Shajema, 2018). ERP systems track business resources cash, raw materials, production capacity and the status of business commitments orders, purchase orders, and payroll. The applications that make up the system share data across various departments manufacturing, purchasing, sales, accounting, e that provide the data. ERP facilitates information flow between all business functions and manages connections to outside stakeholders (Kirui & Maina, 2018).

### **Performance of Public Hospitals in Kenya**

The value of the facilities management function in terms of health-care performance relation to organizational core deliverables should be observed. Mechanisms for general organizational facilities management improvement are identified and a number of facilities management performance measuring tools outlined (Yi-Hui, 2015). Inventory performance is always measured based on future demand instead of historical usage because last month's consumption is irrelevant to how much inventory will be used next month. That is, the demand portion of inventory performance must be predictive such as forecast. The correct demand forecast to use for inventory forecasts to use for inventory performance is a month of forward looking COGS or total standard cost for the next month of sales, regardless of how much inventory is actually on hand not look backward when measuring inventory performance(Stough, 2017).

Inventory performance metrics are essential to the health facilities they help organization measure how well supply chain departments are doing at managing in the inventory. The major one's health facilities manager needs to know to equalize inventory levels in the long term. The show how well you are doing at selling your inventory and keeping it flowing at a healthy pace through your warehouse. Having a low means high carrying costs and which may be overstocked on slow-moving items. Having an extremely high ratio may mean you're not ordering enough and you're struggling to keep enough on hand, potentially resulting in shortages. The inventory turnover ratio, EOQ, and reorder point help facilities measure how well they are doing at managing your inventory. These generate concrete numbers that can track over time to see whether or not you're progressing and how to improve (Awanga, 2018).

Inventory performance causes planners and buyers to produce or purchase material, unnecessarily in order to support inaccurate forecasts. This happens quite often. If decision makers refuse to hear the voice of reason and stop the practice of inflating sales forecasts, then at the very least, is cognizant of how to obtain and utilize COGS when evaluating inventory performance (Krichanchai & MacCarthy, 2017).

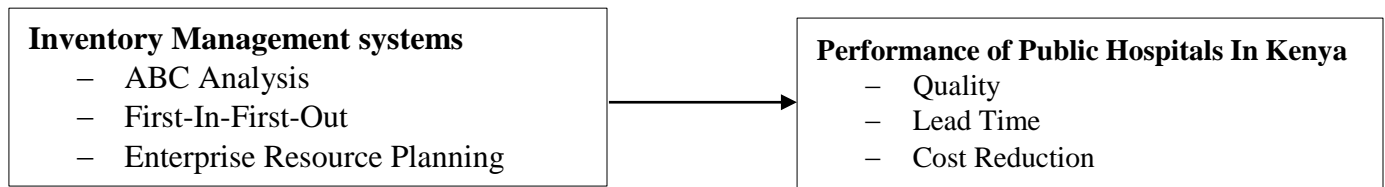


Figure 1: Conceptual framework

## Materials and methods

The study adopted the descriptive research design. Descriptive design was adopted for this study as it would enable the researcher to obtain a cross-referencing data, some independent confirmation of data, and arrange of options. Descriptive studies are not only restricted to facts finding, but might often results in the formulation of important principles of knowledge and solution to significant problems. The study targeted the employee 109 working in Public Hospitals in Kenya The study was carried out in Kisumu, Nyeri, Isiolo and Machakos counties under UHC Programme. 4. The sampling frame consisted of unit of analysis consisting the four counties under the universal coverage in Kenya which include Kisumu County ,Nyeri County, Isiolo County and Machakos County .The unit of observation, consisted of officers attached with daily inventory management responsibilities that includes supply chain officers ,inventory managers, drugs store manager, store keepers and dispatch officers. The study used a census so as to collect accurate information because it takes the entire population into account. For this study the questionnaire method was used, Data collection instruments are the tools used to collect data from persons of interest. The major tools include: questionnaire, interviews, observation, focus groups, experiments and case study. The questionnaires were well structured, with the aim of collecting specific information. The questionnaires were distributed to the respondents between the month of March and April addition, the researcher sought to use additional secondary data to which will give a clear background information on the study problem. Quantitative analysis methods were applied to analyse quantitative data where data was scored by calculating the percentage and means (Klees, 2016). The Statistical Package for Social Sciences (SPSS) computer software version 23 was used specifically for analysing the quantitative data and presenting it inform of tables, pie charts and bar charts. Qualitative data analysis method was employed to analyse qualitative data gathered using open-ended questionnaires.

## RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

### Response Rate

The study targeted a sample of 109 officers attached with daily inventory management responsibilities who includes supply chain officers, inventory managers, drugs store manager, store keepers and dispatch officers working the four counties under the universal coverage in Kenya which include Kisumu County, Nyeri County, Isiolo County and Machakos County , Out of the 109 distributed questionnaires, 98 were filled and returned. This translated to a response rate of 89.9%. This implied that the response was good enough and representative of the population and conforms to Bell & O’Hare, (2020).

*Table 1: Response Rate*

<b>Category</b>	<b>N</b>	<b>Percentage</b>
Responded	98	89.9
Incomplete questionnaires	11	10.1
<b>TOTAL</b>	<b>109</b>	<b>100</b>

### **Descriptive Analysis**

Descriptive statistics are brief descriptive coefficients that summarize a given data set, which can be either a representation of the entire or a sample of a population. Descriptive statistics are broken down into measures of central tendency and measures of variability spread. Measures of central tendency include the mean, median and mode, while measures of variability include the standard deviation, variance, and the minimum and maximum variables (Alavi & Håbek 2016).

### **Inventory Management systems**

The respondents were requested to indicate their level of agreement with the given statements that relate to the influence of Inventory Management systems on performance of Public Hospitals in Kenya and results presented on Table 45 A likert scale of 1-5 was used where strongly agree=1, agree=2, not sure=3, disagree=4, and strongly disagree=5. The study indicated that inventory management system offer the flexibility needed to update and manage stock levels on the fly in hospital critical stock which was supported by a mean score of 4.04 and standard deviation of 0.98. From the study findings it was established that thorough understanding of customer demand; sales cycles, and seasonal fluctuations, hospitals develop Inventory Management systems which suits their needs with a mean score of 3.94 and standard deviation 0.82. Further the research found out that Inventory management software, which provides a central database and point of reference for all inventory, coupled with the ability to analyze data, generate reports, forecast future hospital demand with a mean score of 4.10 and standard deviation of 1.00. Respondents strongly agreed that a good inventory management system reduces human error by eliminating manual documentation through the use of barcode labels, barcode scanners supported by a mean score of 4.08 and standard deviation of 0.99. Determining the importance of items or entities helps guide further decisions, such as the level of resources that should be devoted to their oversight hence a better monitoring of inventory with a mean score of 4.02 and standard deviation of 0.98. The study findings indicated that The ERP system integrates varied organizational systems and facilitates error-free transactions and production, thereby enhancing the organization's efficiency supported by a mean score of 3.95 and standard deviation of 1.01. Statistically it was proven that the applications that make up the system share data across various departments purchasing, sales, accounting, that provide the data with a mean score of 4.11 and standard deviation 1.06. From the study findings this implies that Manage returns more effectively by reducing time-to-return through automation of the entire process. The study findings concurred with those of Iqbal & Bhutta (2018), that maintains just the right amount of inventory for each product, without over- or under-stocking any item. It's especially useful if you deal in products that experience a seasonal rise and fall in demand.



*Table 2: Inventory Management Systems*

Statement	Min	Max	Mean	StD
inventory management system offer the flexibility needed to update and manage stock levels on the fly	1.00	5.00	4.04	0.98
thorough understanding of customer demand, sales cycles, and seasonal fluctuations hospitals develop Inventory Management systems	3.00	5.00	3.94	0.82
Inventory management software, which provides a central database and point of reference for all inventory, coupled with the ability to analyse data.	1.00	4.00	4.10	1.00
Processes and policies for labelling, documentation, and reporting. This should include an inventory management technique such as Just in Time, ABC Analysis,	1.00	5.00	4.22	0.88
Improved supplier, vendor, and partner relationships	2.00	5.00	4.37	0.81
A good inventory management system reduces human error by eliminating manual documentation through the use of barcode labels, barcode scanners,	1.00	5.00	4.08	0.99
Reduced Labor costs, Reduction in dead stock and Better organization	2.00	4.00	4.24	0.86
Determining the importance of items or entities helps guide further decisions, such as the level of resources that should be devoted to their oversight	3.00	5.00	4.02	0.98
ABC analysis can be used to help evaluate items according to the amount of money spent on them.	3.00	5.00	3.93	0.93
The ERP system integrates varied organizational systems and facilitates error-free transactions and production, thereby enhancing the organization's efficiency	3.00	4.00	3.95	1.01
The applications that make up the system share data across various departments purchasing, sales, accounting, that provide the data.	3.00	4.00	4.11	1.06

**Inferential Analysis**

**Regression Analysis**

The study conducted regression analysis to determine influence of Inventory Management systems on Public Hospitals in Kenya the study results are shown in the subsequent sections.

In table 3 below, the R Square, which is the coefficient of determination, was used to measure the independent variables variations and their effect on the dependent variable. As observed, The R Square value is 0.665; this value is between 0 and 1. Analytically, this shows that 65.5% of variations in the dependent variable that can be explained by the independent variables hence 65.5% performance of Public Hospitals in Kenya is explained by ABC analysis, First In First Out ,Enterprise Resource Planning while the remaining 33.5 % is associated with factors that are not within the scope of this study.

**Analysis of Variance**

Results in Table 3 indicate that the Total variance 38.694 was the difference in the variance which can be explained by the independent variables (Model) and the variance which was not explained by the independent variables (Error). Based on the findings in Table 3, the results indicate the  $F_{Cal} = 62.239$  at confidence level 95 % and sig are  $0.000 < 0.05$ .  $F_{Cri} = 2.186$ . The calculated value was greater than the critical value ( $62.239 > 2.186$ ) this implies that there was a goodness of fit of the model fitted for this study.

**4.5.4 Coefficient Analysis**

Regression results revealed that ABC Analysis has significant influence on performance of Public Hospitals in Kenya by  $\beta_1=0.109$ ,  $p=0.001<0.05$ ,  $t= 1.227$  the implication is that a unit increase in ABC Analysis leads to an increase in on performance of Public Hospitals in Kenya as indicated by  $\beta_1=0.109$ . Regression results revealed that First-In-First-Out has significant influence on performance of Public Hospitals in Kenya by  $\beta_2=0.338$ ,  $p=0.000<0.05$ ,  $t= 4.038$  the implication is that a unit increase in First-In-First-Out leads to an increase in on performance of Public Hospitals in Kenya as indicated by  $\beta_2=0.338$ ,

Regression results revealed that Enterprise Resource Planning has significant influence on performance of Public Hospitals in Kenya by  $\beta_3=0.063$ ,  $p=0.003<0.05$ ,  $t= .583$ . the implication is that a unit increase in Enterprise Resource Planning leads to an increase in on performance of Public Hospitals in Kenya as indicated by  $\beta_3=0.063$

*Table 3: Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.816a	.665	.654	.371		
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.737	3	8.579	62.239	.000b
	Residual	12.957	94	.138		
	Total	38.694	97			
Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	T	Sig.
1	(Constant)	2.553	.174		14.668	.000
	ABC Analysis	.109	.089	.197	1.227	.001
	First In Firs Out	.338	.084	.539	4.038	.000
	Enterprise Resource Planning	.063	.107	.109	.583	.003

a. Dependent Variable: performance of Public Hospitals in Kenya

b. Predictors: (Constant), *ABCAnalysis*, *FirstInFirstOut*, *EnterpriseResourcePlanning*

**Regression Optimal Model**

$$Y=2.183 +0.419X1+0.144X2+0.526X3+ \epsilon$$

The model is given as follows;  $Y=\beta_0+ \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$

Where:

Y= Organisation Performance

$\beta_0$ =Constant of Regression

X1= Vendor Managed Inventory

X2= Just In Time Inventory Management

X3 = Inventory Management systems

$\epsilon$  = Error of Regression

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

### Summary of Findings

This study sought to ascertain the Influence of Inventory Management systems and performance of Public Hospitals in Kenya. Data analysis results were presented using charts and tables. Multiple linear regression results have shown that four predictors can explain 76.7% of Inventory Management systems and performance of Public Hospitals in Kenya Vendor Managed Inventory, Just in Time Inventory Management, Inventory Management systems an Inventory Turnover Ratio.

The study objective was to evaluate how Inventory Management systems affects Performance of Public Hospitals in Kenya Regression results revealed that Inventory Management systems has significant influence on performance of Public Hospitals in Kenya by  $\beta_3=0.526$ ,  $p=0.001<0.05$ ,  $t= 5.325$ . The studies established that Material grouping into predefined categories and ensure hospitals always updated about quantities of components and specifications that make up hospital drugs store stock, and manage their reordering schedules as required. Purchase order records: Create a single view of purchase order records. Hospitals can easily identify which products are in demand, both perpetually and seasonally, and prepare to meet customers' needs.

The study concluded that Inventory management devices, such as barcode scanners and inventory management software, help drastically improve hospital efficiency and productivity. These devices help eliminate manual processes so drug store officers can focus on other more important areas of the business. The inventory management has real-time and monetary benefits. By keeping track of which products you have on-hand or ordered the effort of having to do an inventory recount to ensure your records are accurate. A good inventory management strategy also helps hospitals save money that could otherwise be wasted on slow-moving products.

The study recommends Inventory Management systems should be used by the hospitals to avoid product overstock and outages. It is a tool for organizing inventory data that before was generally stored in hard-copy form or in spreadsheets. is a software system for tracking inventory levels, orders, sales and deliveries It can also be used in the organizations to create a work order, bill of materials and other production-related documents enables organization Inventory optimization: Maintain just the right amount of inventory for each product, without over- or under-stocking any item. It's especially useful if you deal in products that experience a seasonal rise and fall in demand.

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