INFLUENCE OF STRATEGIC PURCHASING ON PERFORMANCE OF PUBLIC HOSPITALS IN NAIROBI COUNTY, KENYA

Jared Onsoti Rangeria  
College of Human Resource and Development,  
Jomo Kenyatta University of Agriculture and Technology  
P. O. Box 62000, 00200 Nairobi, Kenya  
Corresponding Author email: onsontijared@gmail.com

Dr. Samson Nyang’au Paul  
College of Human Resource and Development,  
Jomo Kenyatta University of Agriculture and Technology  
P. O. Box 62000, 00200 Nairobi, Kenya.


ABSTRACT

The purpose of the study was to examine the influence of strategic purchasing management on the performance of public hospitals in Nairobi County with an aim of making recommendations on proper use of strategic purchasing management practices. The study aimed at establishing how vendor optimization, outsourcing, information technology adoption and vendor managed inventory influence performance of public hospitals. To achieve this, the researcher reviewed both theoretical and empirical literature and proposed the research methodology that addressed the gaps identified in literature as well as answer the stipulated research questions. This research study adopted a descriptive research design approach. The researcher prefers this method because it allows an in-depth study of the subject. To gather data, structured questionnaire was used to collect data from 72 staff in procurement, finance and ICT departments from the three biggest public hospitals in Nairobi County; Kenyatta National Hospital, Mama Lucy Kibaki Hospital and Mbagathi District Hospitals. The target population was first stratified then using simple random sampling among the three strata, select the samples. Once collected, data was analyzed using descriptive and inferential statistics. Quantitative data was analyzed using multiple regression analysis. The qualitative data generated was analyzed by use of Statistical Package of Social Sciences (SPSS) version 20. The response rate of the study was 94.44%. The findings of the study indicated that vendor optimization, outsourcing, information technology adoption and vendor managed inventory have a positive relationship with performance in the public hospitals. Finally, the study recommended that public institutions should embrace strategic purchasing management so as to improve performance and further researches should to be carried out in other public institutions to find out if the same results can be obtained.

Key words: Vendor Optimization, Outsourcing, Information Technology Adoption, Vendor Managed Inventory, Performance of Public Hospitals
Background of the Study
The study sets out to investigate the influence of strategic purchasing on performance of public hospitals in Nairobi County. To this end, this chapter builds the case by introducing the problem warranting the study. This chapter presents; the background of the study, problem statement, objectives, research questions, importance of the study, the scope of the study and limitations of the study.

Procurement in the public health sector has become important globally due to the need to deliver high quality medical care to many patients and at a reduced cost (Lysons, 2013). Health care is a fast growing industry and incurs one of the largest expenditures from procurement of medical supplies, pharmaceuticals and health care services. Hospitals also represent the largest cost component of national health sector expenditures and both medical and nonmedical supplies account for one of the largest costs to hospitals (OECD, 2011). Procurement has turned into the strategy for cutting cost and improving quality in order to increase the efficiency of the procurement function and reduce operational costs.

Public sector procurement is concerned with how public sector organizations spend tax payers’ money in goods and services (Hall, 2009). Ordinarily, public procurement should be guided by principles of transparency and accountability and achieving value for money for citizens and tax payers. It is an effective means for reducing waste and corruption thereby increasing public confidence. A sound public sector procurement system needs to have good procurement laws and regulations leading to procurement efficiency (Mentzer, 2010).

The Kenyan government developed the Public Procurement and Disposal Act, 2005 and Regulations 2006 to put in place procedures for efficient public procurement and for the disposal of unserviceable, obsolete or surplus stores, assets and equipment by public entities (Amayi, 2010). Similar to other instruments, the Act characterizes public procurement through well-defined regulations open to public scrutiny, clear, standardized tender documents containing complete information and equal opportunity for all in the bidding process (Hall, 2009). But vested interests, corruption and lack of enough information to suppliers on their obligation in the fulfillment of tenders have affected many public procurement processes.

Specific Objectives
i. To assess the influence of vendor optimization on performance of public hospitals in Nairobi County.
ii. To establish the influence of outsourcing on performance of public hospitals in Nairobi County.
iii. To determine the influence of information technology adoption on performance of public hospitals in Nairobi County.
iv. To evaluate the influence of vendor managed inventory on performance of public hospitals in Nairobi County.

Literature Review
Partnership Theory
This theory was developed in the 17th century by philosopher Hobbes who argued that in supply chain, the common model through which theorists study the relationship between supplier and buyer is known as the partnership theory (Lambert, 2011). In its basic nature, the partnership...
model depicts the buyer and supplier as partners with a common interest which is customer satisfaction (Koh, 2013). Vendor optimization is a business relationship based on mutual trust, openness, shared risks and rewards that enables an organization gain competitive advantage leading in the company achieving a performance that’s far much greater than the firm would have achieved when operating as single entities. This model requires strategic collaborations between the buyer and supplier which is a critical element of any partnership (Palevich, 2012). The theory further states that any vendor optimization strategy is always based on value and present for each other. The solid and long term relationship simply implies involving vendors’ early and continuous improvement of the organization performance (Fawcett, 2009). Suppliers must provide better services that are of high quality than their competition at a price reasonable and still achieve goals to remain in business. Vendor optimization according to Shapiro (2009), increases company efficiency through way of cooperative; both parties obtain cost reduction which leads to price reduction and therefore increasing the market share profit margin as well. This leads to a company gaining a competitive edge and efficiency (Water, 2013).

**The Transaction Cost Economic Theory**

The theory of transaction cost economics, also called social cost theory, is a contractual concept developed by British economist Ronald Coase and refined by American economists Oliver Williamson. Transaction cost economics (TCE) has been the predominant theories used to examine strategic sourcing decisions from a make versus out-source perspective. TCE tenets imply that sourcing decisions involve a comparison of the production costs incurred from producing a process or product internally with the transaction costs associated in purchasing a process or product from an external source-outsourcing or multi sourcing (Stewart, 2015).

The total transaction costs included in the sourcing decision include the direct economic costs associated with sourcing service development and delivery, transaction-based monitoring and control costs incurred to ensure that the sourcer acts in the best interest of the firm, and mediation and legal costs accrued should the sourcer act in a manner inconsistent with the terms of the sourcing contract (Wisner & Leong, 2011). Sourcing transaction costs also increase with asset specificity, for example green procurement specifications, where the increased complexity of interactions required to produce sourcing outputs necessitates increased monitoring and control costs to protect source investments.

**Innovation Diffusion Theory**

Diffusion of innovations is a theory that seeks to explain how, why, and at what rate new ideas and technology spread. Everett Rogers, a professor of communication studies, popularized the theory in his book Diffusion of Innovations; the innovation must be widely adopted in order to self-sustain. Diffusion of Innovation (DOI) theory is a popular model used in information systems research to explain user adoption of new technologies. Rogers defines diffusion as ‘the process by which an innovation is communicated through certain channels over time among the members of a social society’ (Davila, 2009). An innovation is an idea or object that is perceived to be new.

According to DOI, the rate of diffusion is affected by an innovation’s relative advantage, complexity, compatibility, trialability and observability. Croom and Jones (2010) define relative advantage as ‘the degree to which an innovation is seen as being superior to its predecessor’. Complexity, which is comparable to perceived ease of use construct, is ‘the degree to which an innovation is seen by the potential adopter as being relatively difficult to use and understand’. Compatibility refers to ‘the degree to which an innovation is seen to be compatible with existing
values, beliefs, experiences and needs of adopters’. Trialability is the ‘degree to which an idea can be experimented with on a limited basis’. Finally, observability is the ‘degree to which the results of an innovation are visible’ (Samuelson, 2013).

The Lean Theory
The term ‘lean production’ was first used by Womack and Jones to describe the 2:1 difference in productivity they found between car assembly plants in Japan and those in Europe. They subsequently explained how companies could make dramatic improvements in performance by adopting the lean approach to manufacturing pioneered by the Toyota Corporation (Weele, 2009). Lean is a functional model which basically discounts the value of economies of scale brought about by vendor managed inventory (VMI) and focuses on how to reduce costs as a result of small, incremental and continuous improvement of inventory management system. Lean inventory has certainly become increasingly significant in public resources management (Edward, 2009). Lean as a functional model also basically proposes minimization of wastages in material storage handling. Initially organizations involved in manufacturing of products used to involve themselves in lean manufacturing techniques; this has expanded beyond manufacturing (Watson & Zhang, 2012). Lean management of inventory seeks to explain how organization should manage its inventory system and needs.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conceptual Framework</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Vendor Optimization**
- Strategic Collaborations
- Early Supplier Involvement
- Consolidation of Contracts

**Outsourcing**
- Vendor Performance Management
- Core versus Noncore Spend Monitoring
- Realized versus Contracted Savings

**Information Technology Adoption**
- Electronic Data Interchange
- Bar Coding of Inventory
- Electronic Points of Sale

**Vendor Managed Inventory**
- Efficient Customer Response
- Continuous Replenishment Policy
- Centralized Inventory Management

**Performance of Public Hospitals**
- Cost Reduction
- Customer Satisfaction
- Timely Deliveries
Research Methodology

Introduction

This chapter discusses the steps to be followed to completing this study. It involves the collection, measurement and analysis of data. It is broken down to; research design, target population, data collection instruments, data collection procedures and finally data analysis and presentation.

Research Design

The research was conducted using a descriptive research method. Kothari (2014) explains that descriptive design is used when collecting information about people’s attitude, opinion and habit. John and Johnson (2012) put forward the idea that a descriptive research design is the one in which one plans to observe, discover, describe, compare or analyze the characteristics or attributes of a particular problem or situation. This study employed a descriptive research design to investigate the influence of strategic purchasing on performance of public hospitals in Nairobi County. Neuman (2010) observes that descriptive design is appropriate for the study where the objective is to provide comparative description of the population and cases where researcher wishes to discover association among different variables. In addition, a descriptive design is appropriate since it enabled the researcher to collect enough information necessary for generalization (Ngechu, 2009). This study therefore generalized the findings on the influence of strategic purchasing on performance of public hospitals in Nairobi County.

Target Population

According to Patron (2012) a population refers to the entire group of persons or elements that have at least one thing in common. The target population is the total number of subjects targeted by the study (Kasomo, 2011). The target population consisted of staff working in public hospitals in Nairobi County. The unit of analysis was the Supply Chain, Finance and ICT departments at the Kenyatta National Hospital, Mama Lucy Kibaki Hospital and Mbagathi District Hospitals in Nairobi County. The unit of observation was 72 respondents in procurement department, finance department and ICT department.

<table>
<thead>
<tr>
<th>Sections</th>
<th>Target Population</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenyatta National Hospital</td>
<td>102</td>
<td>40.48</td>
</tr>
<tr>
<td>Mama Lucy Kibaki Hospital</td>
<td>86</td>
<td>34.13</td>
</tr>
<tr>
<td>Mbagathi District Hospital</td>
<td>64</td>
<td>25.39</td>
</tr>
<tr>
<td><strong>Total Population</strong></td>
<td><strong>252</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Sample and Sampling Technique

A sample is a smaller collection of units from a population used to determine truths about that population (Mugenda & Mugenda, 2014). The fundamental principle of sampling of elements
within a population is in order to draw conclusions about the entire population (Kothari, 2014). The formula gives a sample size of 72 respondents; this sample is deemed good representation of the population since the sample size is greater than 10% of the target population according to Ngechu (2009). This study used probability sampling since the population and location of the respondents is known. Specifically, the study used stratified random sampling in order to account for the uneven distribution of respondents in various hospitals. Based on distribution of respondents in the 3 hospitals (table 3.1), the researcher used proportions calculated in the population distribution to come up with a representative sample distribution as shown in table 3.2. The proportions calculated give the number of respondents to be included in the sample for each hospital. Thereafter simple random sampling is used to select the names of respondents from which data is to be collected.

The formula shown is used to determine the sample size (Mugenda & Mugenda, 2014)

\[ n = \frac{N}{1+N(e)^2} \]

Where,

- \( n \) is the sample size for the study
- \( N \) is the study population
- \( e \) is the level of precision

Using the above formula, the sample is calculated as follows;

\[ N = 252, \ e = 10\% \]

\[ 252/ \{1+252 (0.1)^2 \} \]

\[ n = 72; \] The study used a sample size of 72.

<table>
<thead>
<tr>
<th>Sections</th>
<th>Target Population</th>
<th>Sample Size</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenyatta National Hospital</td>
<td>102</td>
<td>29</td>
<td>40</td>
</tr>
<tr>
<td>Mama Lucy Kibaki Hospital</td>
<td>86</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>Mbagathi District Hospital</td>
<td>64</td>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td>Total Population</td>
<td>252</td>
<td>72</td>
<td>102</td>
</tr>
</tbody>
</table>

**Data Collection Instruments**

The study used primary data that was collected through a semi-structured questionnaire to collect information for quantitative and qualitative analysis. Data was collected mainly through questionnaires. A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents (Patron, 2012). The reason for choosing questionnaire as the data collection instrument is primarily due to its practicability, applicability to the research problem and the size of the population (Kombo & Tromp, 2013). A self-administered questionnaire with both open and closed ended questions was developed and administered to obtain information from the 72 respondents. The questionnaire designed in this study comprised of two sections. The first part included the demographic characteristics designed to determine fundamental characteristics of the respondents that can help the study to draw meaningful conclusions. The second part was devoted to the influence of
strategic purchasing on performance of public hospitals in Nairobi County: where the variables of the study were put into focus.

Data Collection Procedure
The questionnaires were administered using the drop and pick later approach. Follow ups were made to ensure collection of the questionnaires in time as well as assist the respondents on any difficulty they may have been experiencing. This study utilized both primary and secondary data. Questionnaires were used to collect primary data which was distributed to the staff. The questionnaires were accompanied by a brief introduction of the study and purpose of the study for the respondent. According to Dunn (2010), breaching confidentiality, is a matter of concern to all respondents. In view of this, the study withheld the names of the respondents and their respective view with utmost confidentiality.

Pilot Study
Piloting is testing of the instruments by trying them in the field. To enhance validity and reliability of the instruments, a pilot study was conducted at the three hospitals where the questionnaire was administered to a small number of staff equivalent to 10% of the sample size drawn from different departments but with similar characteristics. Oso and Onen (2010) recommend that you plan the number of people who tests the instrument and the plan to incorporate their comments into final instrument revision. The testing is important to establish the content validity and for the improvement of questions format and scales. According to Kothari (2014) the purpose of the pilot study is mainly to pretests the instrument to ensure that the items in the instrument are stated clearly and have the same meaning to all the respondents. The pretest also enables the study to assess the clarity of the instrument and asses the time taken to administer the instrument.

Reliability of Research Instruments
Reliability is the degree to which an assessment tool produces stable and consistent results. To ensure consistency of the questionnaires, pre-testing of the questionnaires was carried out before the main study to ensure reliability. The reliability test helps in improving the items on the questionnaire. The reliability coefficient was calculated and a score of 0.7 was considered high enough for the instrument to be used in the study (Patron, 2012). Likert type questions required Cronbach’s Coefficient Alpha to be calculated for each item. A reliability coefficient of 0.7 and above was assumed to reflect the internal reliability and internal consistency of the instruments and can be generalized to reflect opinions of all respondents in the target population (Kasomo, 2011). Kombo and Tromp (2013) argue that research instruments are measurement devices that must possess adequate reliability. He identifies pre-testing as one comprehensive procedure towards enhancing instrument reliability. This underlies the intent of this study to conducting a rigorous instrument validation exercise through pre-testing.

Validity of Research Instruments
Mugenda and Mugenda (2014) define validity as the ability of an instrument to measure what it is supposed to measure. This focuses on the degree to which the study accurately reflects or assesses the specific concepts that the study attempts to measure. Validity of the instrument begins at the design stage. There is construct validity and content validity. Valuable contribution from the supervisors and relevant academic staff was taken into consideration to determine the construct validity of research instruments (Dunn, 2010). The suggestions put forward by the said
experts were used to modify the items in the questionnaire. Content validity which was employed by this study is a measure of the degree to which data collected using a particular instrument to represent a specific domain or content of a particular concept. Content validity coefficient index of 0.7 was used to test the validity of the questionnaire (Ngechu, 2009).

Data Analysis and Presentation
Data obtained from the field was cleaned, coded and key-punched into a computer and analyzed. Data analysis involves the transformation of data into meaningful information for decision making (Kothari, 2014). The collected data was analyzed quantitatively and qualitatively. In analyzing the qualitative data, the study used descriptive statistics using Statistical Package for Social Sciences V. 20. The software package enables the researcher to analyze the data into percentages, means and standard deviations (George & Mallery, 2013). Descriptive statistics is used to meaningfully describe the distribution of results depending on the variables in the study and the scale of measurements used.

Multiple regression analysis is used to analyze the relationship between single dependent variable and several independent variables (Kothari, 2014). According to Dunn (2010), the assumptions of linear regression must be met by data analyzed, these assumptions state that the coefficients must be linear in nature, the response errors should follow the Gaussian distribution and errors should have a common distribution. The coefficient of determination (R-Square) resulting from the linear regression was used to determine the goodness of fit (Ngechu, 2009). The research used a multiple regression model.

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \]

Where:
- \( Y \) = Performance of Public Hospitals
- \( \beta_0 \) = Constant
- \( \beta_1, \beta_2, \beta_3, \beta_4 \) = Beta Coefficients
- \( X_1 \) = Vendor Optimization
- \( X_2 \) = Outsourcing
- \( X_3 \) = Information Technology Adoption
- \( X_4 \) = Vendor Managed Inventory
- \( \epsilon \) = Error Term

Results

Introduction
This section presents results arising from the analysis of data collected using questionnaires. The current study sought to establish the influence of strategic purchasing management on performance of public hospitals in Nairobi County. The data collected was analysed using descriptive and inferential statistics and the findings presented in tabular summaries and their implications discussed.
Response Rate
A sample of 72 respondents were interviewed using questionnaires that allowed the researcher to drop the questionnaire to the respondents and then collect them at a later date when they had filled the questionnaires. A total of 72 questionnaires were distributed to employees. Out of the population covered, 68 were responsive representing a response rate of 94.44%. This was above the 50% which is considered adequate in descriptive statistics according to (Mugenda & Mugenda, 2014).

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Response</td>
<td>68</td>
<td>94.44%</td>
</tr>
<tr>
<td>Non-Response</td>
<td>4</td>
<td>5.56%</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>100%</td>
</tr>
</tbody>
</table>

Pilot Study
The cronbach’s alpha was computed in terms of the average inter-correlations among the items measuring the concepts. The rule of thumb for cronbach’s alpha is that the closer the alpha is to 1 the higher the reliability (Neuman, 2010). A value of at least 0.7 is recommended. Cronbach’s alpha is the most commonly used coefficient of internal consistency and stability. Consistency indicated how well the items measuring the concepts hang together as a set. Cronbach’s alpha was used to measure reliability. This was done on the four objectives of the study. The higher the coefficient, the more reliable is the test.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Items</th>
<th>Respondents</th>
<th>α=Alpha</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor Optimization</td>
<td>9</td>
<td>8</td>
<td>0.893</td>
<td>Reliable</td>
</tr>
<tr>
<td>Outsourcing</td>
<td>9</td>
<td>8</td>
<td>0.987</td>
<td>Reliable</td>
</tr>
<tr>
<td>Information Technology Adoption</td>
<td>9</td>
<td>8</td>
<td>0.974</td>
<td>Reliable</td>
</tr>
<tr>
<td>Vendor Managed Inventory</td>
<td>9</td>
<td>8</td>
<td>0.976</td>
<td>Reliable</td>
</tr>
</tbody>
</table>

Demographic Information
This section presents the personal details of the respondents and it provides data regarding the study and is necessary for the determination of wether the individuals in a particular study are a representative sample of the target population and testing appropriateness of respondent in answering the questions for generalisation. The study sought to determine the demographic characteristics of the respondents as they are considered as categorical variables which give some basic insight about the respondents. The characteristics considered in the study were; gender, age, their highest level of education attained and their work experience.
Distribution of Respondents by Gender
The study determined the gender of the respondents. The results are submitted in figure 4.1 where 59% of the respondents were male while 41% of the respondents were female. This indicates that majority of staff in public hospitals were male. The percentages may raise the issue of gender equity in public institutions in this county, but that is outside the scope of this study. A study on Europe organizations found that women and men do not differ in their ability to perform tasks, but rather bring a different perspective to strategic purchasing decision making through their increased sensitivity to others (McCrudden, 2013).

![Distribution of Respondents by Gender](image.png)

Distribution of Respondents by Age
The study also determined the age distribution of the respondents. The results summarized in the figure below. The findings indicate that the majority respondents belonged to age bracket of 41-50 years and it was at 44%. Respondents between 31-40 years accounted for 28%. Results also indicated that respondents above 50 years were at 21% while those between the ages of 18-30 years were at 7%. The findings are in agreement with those of Paul (2011) who established that there are two natural age peaks of the early 30s and mid 40s which correlated to employee performance.

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-30 Years</td>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td>31-40 Years</td>
<td>5</td>
<td>28%</td>
</tr>
<tr>
<td>41-50 Years</td>
<td>33</td>
<td>44%</td>
</tr>
<tr>
<td>Above 50 Years</td>
<td>27</td>
<td>21%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Distribution of Respondents by Level of Education

The respondents were asked to state their highest level of education and the results were as captured in tables 4.3. The results indicated that majority of the respondents 48.5% had a degree, 39.7% percent had acquired a master’s degree, and 7.4% had a diploma while 4.4% of the respondents had acquired a certificate. These findings concur those of Onyango (2011) who established that majority of who run public procurement are highly educated and that there is evidence linking education and performance in public hospitals.

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate level</td>
<td>3</td>
<td>4.4</td>
</tr>
<tr>
<td>Diploma level</td>
<td>5</td>
<td>7.4</td>
</tr>
<tr>
<td>Degree level</td>
<td>33</td>
<td>48.5</td>
</tr>
<tr>
<td>Master level</td>
<td>27</td>
<td>39.7</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>100</td>
</tr>
</tbody>
</table>

Distribution of respondents by Length of Service

The study determined the number of years the respondents had worked in their current office. From the findings the majority of the respondents had worked for 3-5 years at 30.9%, 9 years and above was at 25 %, 6-8 years was 20.6% and finally 0-2 years was 23.5%. The findings of the study are in tandem with literature review by Muge (2009) who indicated that a duration and experience of employee helps him or her to have better knowledge and skills which contribute to performance.

<table>
<thead>
<tr>
<th>Length of Service</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 years</td>
<td>16</td>
<td>23.5</td>
</tr>
<tr>
<td>3-5 years</td>
<td>21</td>
<td>30.9</td>
</tr>
<tr>
<td>6-8 years</td>
<td>14</td>
<td>20.6</td>
</tr>
<tr>
<td>9 years and above</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>100</td>
</tr>
</tbody>
</table>

Correlation Analysis

Correlation analysis was used to determine both the significance and degree of association of the variables and also predict the level of variation in the dependent variable caused by the independent variables. The correlation technique is used to analyze the degree of relationship between two variables. The results of the correlation analysis are summarized in Table 4.10.
The correlation summary shown in Table 4.10 indicates that the associations between each of the independent variables and the dependent variable were all significant at the 95% confidence level. The correlation analysis to determine the relationship between strategic purchasing and performance of the public hospitals in Nairobi County. Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship \((r=0.744)\) between vendor optimization and performance of public hospitals in Nairobi County. In addition, the researcher found the relationship to be statistically significant at 5% level \((p=0.000, <0.05)\).

The correlation analysis to determine the relationship between outsourcing and performance of public hospitals in Nairobi County, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship \((r=0.663)\) between
outsourcing and performance of public hospitals in Nairobi County. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between information technology adoption and performance of public hospitals in Nairobi County, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship (r=0.721) information technology adoption and performance of public hospitals in Nairobi County. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The correlation analysis to determine the relationship between vendor managed inventory and performance of public hospitals in Nairobi County, Pearson correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship (r= 0.812) between vendor managed inventory and performance of public hospitals in Nairobi County. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

**Regression Analysis**

In this study multivariate regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. Regression analysis was conducted to find the proportion in the dependent variable (performance of public hospitals in Nairobi County) which can be predicted from the independent variables (vendor optimization, outsourcing, information technology adoption and vendor managed inventory).

Table 4.11 presents the regression coefficient of independent variables against dependent variable. The results of regression analysis revealed there is a significant positive relationship between dependent variable and the independent variable. The independent variables reported R value of 0.832 indicating that there is perfect relationship between dependent variable and independent variables. R square value of 0.693 means that 69.3% of the corresponding variation in performance of public hospitals in Nairobi County can be explained or predicted by (vendor optimization, outsourcing, information technology adoption and vendor managed inventory).

Adjusted R square is called the coefficient of determination which indicates how performance of public hospitals in Nairobi County varied with variation in effects of factors which includes; vendor optimization, outsourcing, information technology adoption and vendor managed inventory. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at (β = 0.1194), p=0.000 <0.05).

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.832a</td>
<td>.693</td>
<td>.673</td>
<td>.1194</td>
</tr>
</tbody>
</table>

a) Predictors: (Constant), Vendor Optimization, Outsourcing, Information Technology Adoption and Vendor Managed Inventory  

b) Dependent Variable: Performance of Public Hospitals
ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2.03</td>
<td>4</td>
<td>0.508</td>
<td>35.546</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>0.9</td>
<td>63</td>
<td>0.014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2.93</td>
<td>67</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a) Predictors: (Constant), Vendor Optimization, Outsourcing, Information Technology Adoption and Vendor Managed Inventory

b) Dependent Variable: Performance of Public Hospitals

The significance value is 0.000 which is less than 0.05 thus the model is statistically significant in predicting how vendor optimization, outsourcing, information technology adoption and vendor managed inventory influence performance of public hospitals in Nairobi County. The F critical at 5% level of significance was 26.80. Since F calculated which can be noted from the ANOVA table above is 35.546 which is greater than the F critical (value = 26.80), this shows that the overall model was significant. The study therefore establishes that; vendor optimization, outsourcing, information technology adoption and vendor managed inventory were all important factors influencing performance of public hospitals. These results agree with Asaari and Razak (2010) results which indicated a positive and significant influence of strategic purchasing on performance of public hospitals.

Coefficients of Determination

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients B</th>
<th>Std. Error</th>
<th>Standardized Coefficients Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>1.197</td>
<td>1.119</td>
<td></td>
<td>1.07</td>
<td>0.028</td>
</tr>
<tr>
<td>Vendor Managed Inventory</td>
<td>0.913</td>
<td>0.186</td>
<td>0.895</td>
<td>1.013</td>
<td>0.000</td>
</tr>
<tr>
<td>Outsourcing</td>
<td>0.628</td>
<td>0.268</td>
<td>0.591</td>
<td>0.34</td>
<td>0.002</td>
</tr>
<tr>
<td>Vendor Optimization</td>
<td>0.255</td>
<td>0.329</td>
<td>0.138</td>
<td>0.774</td>
<td>0.004</td>
</tr>
<tr>
<td>Information Technology Adoption</td>
<td>0.245</td>
<td>0.206</td>
<td>0.353</td>
<td>0.193</td>
<td>0.003</td>
</tr>
</tbody>
</table>

a) Predictors: (Constant), Vendor Optimization, Outsourcing, Information Technology Adoption and Vendor Managed Inventory

b) Dependent Variable: Performance of Public Hospitals
The research used a multiple regression model

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon \]

Where

- \( Y \): Performance of Public Hospitals
- \( \beta_0 \): Constant
- \( X_1 \): Vendor Optimization
- \( X_2 \): Outsourcing
- \( X_3 \): Information Technology Adoption
- \( X_4 \): Vendor Managed Inventory
- \( \epsilon \): Error Term

The regression equation is:

\[ Y = 1.197 + 0.913X_1 + 0.628X_2 + 0.255X_3 + 0.245X_4 \]

The regression equation above has established that taking all factors into account (vendor optimization, outsourcing, information technology adoption and vendor managed inventory) constant at zero, performance of public hospitals in Nairobi County will be an index of 1.197. The findings presented also shows that taking all other independent variables at zero, a unit increase in vendor optimization will lead to a 0.255 increase in performance of public hospitals in Nairobi County. The P-value was 0.044 which is less 0.05 and thus the relationship was significant.

The study also found that a unit increase in outsourcing will lead to a 0.628 increase in performance of public hospitals in Nairobi County. The P-value was 0.022 and thus the relationship was significant. In addition, the study found that a unit increase in information technology adoption will lead to a 0.245 increase in the performance of public hospitals in Nairobi County. The P-value was 0.023 and thus the relationship was significant.

Lastly, the study found that a unit increase in vendor managed inventory will lead to a 0.913 increase in the performance of public hospitals in Nairobi County. The P-value was 0.000 and hence the relationship was significant since the p-value was lower than 0.05. The findings of the study show that, vendor managed inventory contributed most to the performance of public hospitals in Nairobi County.

Summary of Findings

The study sought to examine the influence of strategic purchasing on performance of public hospitals in Nairobi County. The study targeted staff of public hospitals in Nairobi County, specifically finance, procurement and ICT departments. A total of 68 employees participated. The summary of the study findings presented herein followed the research objectives formulated in chapter one of the study.

Vendor Optimization

The study sought to assess influence of vendor optimization on performance of public hospitals in Nairobi County as the first objective of the study. A majority of respondents were found to highly agree that the public hospitals had embraced vendor optimization with regard to its procurement activities. Strategic collaborations and consolidation of contracts were common in the public hospitals. Correlation and regression results revealed that this was an important variable that could perhaps be explained by the observation from the findings that vendor optimization was an important factor in influencing performance of public hospitals.
Outsourcing
The influence of outsourcing on performance of public hospitals in Nairobi County was the second objective of the study. A majority of respondents were found to highly agree that the public hospitals had embraced outsourcing with regard to its procurement activities. Vendor performance management and core versus noncore spend monitoring were common in the public hospitals. Correlation and regression results revealed that this was an important variable that could perhaps be explained by the observation from the findings that outsourcing was an important factor in influencing performance of public hospitals.

Information Technology Adoption
The study endeared to assess influence of information technology adoption on performance of public hospitals in Nairobi County as the third objective of the study. A majority of respondents were found to highly agree that the public hospitals had embraced information technology adoption with regard to its procurement activities. Electronic data interchange and electronic points of sale were common in the public hospitals. Correlation and regression results revealed that this was an important variable that could perhaps be explained by the observation from the findings that information technology adoption was an important factor in influencing performance of public hospitals.

Vendor Managed Inventory
The study sought to assess influence of vendor managed inventory on performance of public hospitals in Nairobi County as the last objective of the study. A majority of respondents were found to highly agree that the public hospitals had embraced vendor managed inventory with regard to its procurement activities. Efficient customer responses and centralized inventory management was common in the public hospitals. Correlation and regression results revealed that this was an important variable that could perhaps be explained by the observation from the findings that vendor managed inventory was an important factor in influencing performance of public hospitals.

Performance of Public Hospitals
The study endeared to determine influence of strategic purchasing on performance with reference to public hospitals in Nairobi County. The regression results revealed that strategic purchasing strategies identified in the study, that is, vendor optimization, outsourcing, information technology adoption and vendor managed inventory combined could explain approximately 69.3% of the variations in the performance of public hospitals. The other 30.7% may be attributed to other strategies not explained by the model or the variables. Quality of goods purchased recorded positive growth, timely purchases and stock out reduction further recorded positive growth, cost reductions due to minimal or no reworks also recorded positive growth. From inferential statistics, a positive correlation is seen between each predictor variable and performance of the public hospitals. The strongest correlation was established between vendor managed inventory and performance of the public hospitals. All the independent variables were found to have a statistically significant association with the dependent variable at ninety five percent level of confidence.
Conclusion of the Study
Based on the study findings, the study concludes that performance of public hospitals can be improved by vendor optimization, outsourcing, information technology adoption and vendor managed inventory.

First, in regard to vendor managed inventory, the regression coefficients of the study show that it has a significant influence of 0.913 on performance of public hospitals. This implies that increasing levels of vendor managed inventory by a unit would increase the levels of performance of the public hospitals by 0.913. This shows that vendor managed inventory has a positive influence on performance of public hospitals.

Second in regard to outsourcing, the regression coefficients of the study show that it has a significant influence of 0.628 on performance of public hospitals. This implies that increasing levels of outsourcing by a unit would increase the levels of performance of the public hospitals by 0.628. This shows that outsourcing has a positive influence on performance of public hospitals.

With regard to vendor optimization, the regression coefficients of the study show that it has a significant influence of 0.255 on performance of public hospitals. This implies that increasing levels of vendor optimization by a unit would increase the levels of performance of the public hospitals by 0.255. This shows that vendor optimization has a positive influence on performance of public hospitals.

Lastly, in regard to the fourth objective, the regression coefficients of the study show that it has a significant influence of 0.245 on performance of public hospitals. This implies that increasing levels of information technology adoption by a unit would increase the levels of performance of the public hospitals by 0.245. This shows that information technology adoption has a positive influence on performance of public hospitals.

Drawing on this research, lack of vendor optimization, outsourcing, information technology adoption and vendor managed inventory in public hospitals is leading to poor performance. Though the public hospitals are striving hard to improve their performance there are still issues of poor quality products, long lead time and high cost of projects/products. It was articulated that the current phenomenon of poor performance in the public sector can be reversed if the government and other stakeholders ensure vendor optimization, outsourcing, information technology adoption and vendor managed inventory are embraced in the procurement function. Thus, it is evident that all the independent variables identified in this study were all important strategic purchasing activities that influenced the performance of public hospitals.

Recommendations of the Study
Vendor Optimization
To ensure that public hospitals have better performance they should focus more on using their vendor optimization so as to ascertain the realistic financial capacity of vendors, their realistic technical capacity and ensure that there is consistency of quality in goods supplied. In the same regard, they should involve suppliers early enough to enable them to come up with appraisals that articulate with their organizational goals such as strategic collaborations.

Outsourcing
With regard to the second objective, it would be constructive for public hospitals to invest more in outsourcing to reduce the cost of procurement through unnecessary reworks and ensure
professional suppliers get it right the first time. This should be done consistently with the partnerships, training and capacity building.

Information Technology Adoption
In relation to information technology adoption, the organizations should form strategic technological alliances with their vendors so as to have a more improved working relationship characterized by electronic data interchange and barcoding of inventory. If public hospitals embrace systems integration among its suppliers then there will be cost reduction and timing of delivery will improve.

Vendor Managed Inventory
Concerning vendor managed inventory, there is need for public hospitals to always set aside a substantial part of their resources for activities that spend a huge amount of total resources, and this entails the inventory levels management. This is because decisions made here have major effects on sustainability measures. In the same regard, they should embrace continuous replenishment policy to enable them to come up with cost efficient strategies that articulate with their organization objectives.

The study recommends that procurement staff in the public hospitals should ensure that they strictly follow procurement procedures to ensure that goods supplied are of the right quality, in the right quantity, at the right time, to the right place from the right source. This will aim 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. More checks and controls should be introduced to check on the integrity of the sourcing systems.

Acknowledgment
My utmost gratitude goes to God, the almighty for granting me the sanity and strength to write this project, my supervisor Dr. Samson Nyang’au Paul for his input, support and guidance during this period. My sincere gratitude also goes to the academic staff in JKUAT for their assistance during the development of this project, thank you for your support.

References


KIPPRA. (2010). *The Demographic Governance Support Programme (DGSP).* Nairobi: KIPPRA.


USAID (2012). *Selecting and implementing vendor managed inventory systems for public health supply chain*: Deliver Project, USAID.