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# Influence of Procurement Key Performance Indicators on The Performance of State Agencies in Kenya

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## Abstract

**Purpose:** The purpose of the study was to examine influence of procurement key performance indicators on the performance of state agencies in Kenya with an aim of making recommendations on proper us

**Methodology:** The study employed a descriptive research design, targeting the 127 heads of procurement in state agencies in Kenya, who were selected using simple random sampling, from the four strata. The researcher preferred this method because it allows an in-depth study of the subject. Data was collected using self-administered questionnaires. Structured questionnaires were used to collect data. 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 22. The response rate of the study was 82%.

**Results and conclusion:** The results indicate that there is a positive relationship (r=.509) between cost management and performance of state agencies in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). The results also indicate that there is a positive relationship (r=.398) between quality index management and performance of state agencies in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). The results indicate that there is a positive relationship (r=.678) between delivery management and performance of state agencies in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). The results indicate that there is a positive relationship (r=.685) between asset utilization management and performance of state agencies in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). Hence, it is evident that all the independent variables could explain the changes in implementation of performance of state agencies in Kenya, on the basis of the correlation analysis. The findings of the study indicated that cost management, quality index management, delivery management and asset utilization management have a positive relationship with performance of state agencies in Kenya

**Unique contribution to theory, practice and policy:** Finally, the study recommended that public institutions should embrace procurement key performance indicators 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.

**Keywords:** *Cost management, quality index management, delivery management and asset utilization management*

## 1.1 INTRODUCTION

The study sets out to investigate the influence of procurement key performance indicators on the performance of state agencies in Kenya. 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 key performance indicators are considered an important catalyst in the performance of company's world over. This is why the key performance indicators concept has captured the attention of all sides of commerce and industry, as well as that of academics. The large number of academic articles being published in this area is a testimony to the high level of interest in key performance indicators issues (Callendar & Mathews, 2016).

During the past decade, key performance indicators have become one of the most important organizational strategies for achieving competitive advantage. Improving the key performance indicators with which an organization can deliver its products and services is critical for competing in an expanding global market. Key performance indicators begin with the primary assumption that employees in organizations must cooperate with each other in order to achieve the needs of the customer. One can achieve this by controlling manufacturing/service processes to prevent defects (Kingori, 2018).

The direct link of operational efficiency and particularly the supply chain, to the overall organizational performance therefore makes the adoption of key performance indicators crucial to today's organizational success. The study of key performance indicators and how they can be effectively integrated into the organizational strategy is therefore valuable to today's business leaders (Lysons & Farrington, 2018). In today's economic environment doing what you have always done even if you are to do it very well is no longer acceptable, under pressure to contain both costs and produce results despite challenging circumstances, supply managers must transform rather than simply improve your operation. That means adopting the philosophies, methods and processes that will make your organization best in class (Mugerwa, 2016).

What makes an organization best in class will vary from each company but there are strategies that leading companies are adopting. Procurement represents a stage in evolution of civilized human relationships since it enables a desired object to be obtained by training rather than conquest, plunder or justification (Rambo, 2018). Key performance indicators training are conducted and the improvement of processes executed through a well-planned team structure. The ultimate goal of

the team approach is to get everyone, including contractors, designers, vendors, subcontractors, and owners involved.

### 1.2 Problem Statement

In many emerging economies, especially in Africa, state agencies have been the economic growth engine and are the backbone driving government's transformation agenda in those economies (PPOA, 2016). In Kenya, in a bid to restructure the government to facilitate better provision of services and better systems of accountability, the 2010 Constitution seems to have created a fourth arm of the government, that of state agencies which collectively have far reaching functions and mandates (Procurement Reform Project, 2014).

Kenya's vision 2030 emphasizes the need for an appropriate economic pillar strategy for efficient and key performance indicators as a way of making the country globally competitive and a prosperous nation (World Bank, 2017). Nevertheless, most state agencies in Kenya operate at a technical efficiency of about 42% compared to their counterparts in Malaysia that average about 78% (KIPPRA, 2016) raising doubts about the state agencies' capacity to meet the goals of vision 2030.

Kenya's state agencies are burdened by challenges such as misappropriation of the scarce resources, high cost of operations, unreliable vendors, low level technology utilization and declining trend of processes innovation (UNESCO, 2014). In addition, these institutions in Kenya have been experiencing a myriad of problems including low quality goods, overpriced procurement contracts and gross mismanagement (GoK, 2015).

According to statistics from the World Bank (2013) there was a 42.7% drop in profits to Sh629 million from Sh1.64 billion a year earlier at Geothermal Development Company (GDC) and the public sector in general recorded a decline in performance. A report by Transparency International (2016) indicates that in some state agencies such as Kenya Electricity Generating Company (KenGen), the total operating expenditure increased by 52% compared to similar period in 2017. Kenyan state agencies still face challenges although the country has recorded some improvements in the last years. Productivity of state agencies is quite low while at the same time they continue to absorb excessive portion of the budget, becoming a principal cause of long-term procurement problems (Mwenda, 2016). Among the major challenges that are facing the state agencies are the long and time-consuming bureaucratic procedures (Nderu, 2013).

Previous research by McGrath and MacMillan (2016) in the UK, on the survey of the use of key performance indicators in procurement, shows that use of the key performance indicators in their processes improved procurement performance by 72%, while in Kenya, no empirical research has been undertaken to reliably quantify the influence of key performance indicators on procurement performance. For this reason, state agencies in Kenya need to adopt key performance indicators that work for them in order to improve their procurement performance. It is against this backdrop that this study intends to look at the influence of procurement key performance indicators on the performance of state agencies in Kenya.

### 1.3 Objectives of the Study

i. To assess the influence of cost management on performance of state agencies in Kenya.
ii. To establish the influence of quality index management on performance of state agencies in Kenya.
iii. To determine the influence of delivery management on performance of state agencies in Kenya.
iv. To evaluate the influence of asset utilization management on performance of state agencies in Kenya.

## 2.0 LITERATURE REVIEW

### 2.1 The Stakeholder Theory

#### 2.1.1 The Lean Theory

Lean is a functional model which basically discounts the value of economies of scale and focuses on how to reduce costs as a result of small, incremental and continuous improvement. Lean operations have certainly become increasingly significant in cost management. Initially organizations involved in manufacturing of products used to involve themselves in lean manufacturing techniques, this has ceased as lean has expanded beyond manufacturing (Fawcett, Gregory & Mathew, 2014).

Lean operations law seeks to explain how organization should manage its procurement system and needs. It states that procurement can be used as a strategic differentiator by the organization and further goes on to say that not all procurement is about waste (Finch, 2014).

The theory stated that procurement strategies developed by an organization should support the customer's need and expectations. Procurement strategies should not be a driver on how much and when a product will be delivered to a customer, rather, the customers' expectations should be understood and transport strategies is designed purposely to meet those expectations. Real savings can only be realized through day to day management and optimization of operations requirements variability. This therefore implies that cost associated with procurement cannot be achieved through inconsistent procurement network designs (Fisher, 2016). This theory is relevant to the study because cost management is a key component in effective and efficient performance of procurement.

### 2.2 Procurement Key Performance Indicators

#### 2.2.1 Cost Management

Cost management in this study will be considered as a procurement key performance indicator variable that influences procurement performance. The attributes of cost management which will be taken into consideration in this study are: procurement ROI, cost avoidance and cost reduction. Cost management has received a great deal of attention as it integrates financial and nonfinancial

performance measures to help organizations in the learning and improvement of their internal and external processes (Heinrich, 2018).

### 2.2.2 Quality Index Management

Quality index management in this study will be considered as a procurement key performance indicator variable that influences procurement performance. The attributes of quality index management which will be taken into consideration in this study are: supplier quality rating, ration of rejection and reworks percentages. Quality index management are financial and non-financial indicators that organizations use in order to estimate and fortify how successful they are, aiming previously established long-lasting goals. Appropriate selection of indicators that will be used for measuring is of a greatest importance (Kiboi, 2014). Process organization of business is necessary to be constituted in order to realize such effective and efficient system or performance measuring via quality index management. Process organization also implies customer orientation and necessary flexibility in nowadays condition of global competition.

### 2.1.3 Delivery Management

Delivery management in this study was considered as a procurement key performance indicator variable that influences procurement performance. The attributes of delivery management which will be taken into consideration in this study are: purchase order cycle time, turnaround time and lead time index. In a time of economic boom many firms, experience an increase in demand. When demand exceeds the available capacity, many firms tend to increase the order backlog by selling with longer lead times (Matanda & Ndubisi, 2015). Increased order lead times can cause issues with on time deliveries and thus customers are more likely to try alternative suppliers, and in the worst case even change the preferred supplier for an alternative one.

### 2.1.4 Asset Utilization Management

Asset utilization management in this study will be considered as a procurement key performance indicator variable that influences procurement performance. The attributes of asset utilization management which will be taken into consideration in this study are: plant and equipment optimization, human capital specialization and capital appropriation. The production facilities, knowledge and experience of the supplier to increase its capacity should also be taken into account to Judge the best one. The potential production capability of each supplier should be analyzed to meet a specified production plan and also to develop a new product according to the market demand (Joash & Peterson, 2018). Greiling (2017) opine that supplier's capacity to increase delivery quantities within short lead times is important as the buyer may be uncertain about their exact quantity needs over the life of the contract.

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## 2.2 Conceptual Framework

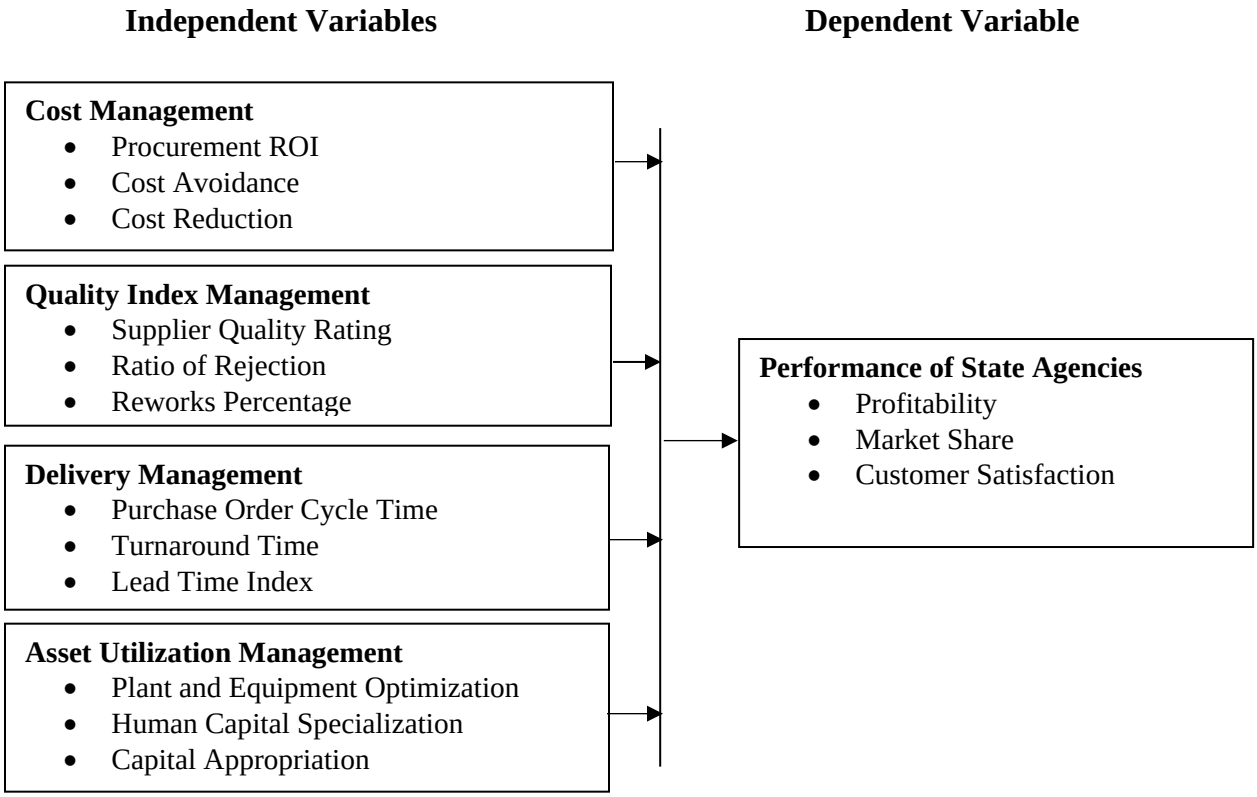


**Figure 1: Conceptual Framework**

## 3.0 METHODOLOGY

The study employed a descriptive research design, targeting the 127 heads of procurement in state agencies in Kenya, who were selected using simple random sampling, from the four strata. The researcher preferred this method because it allows an in-depth study of the subject. Data was collected using self-administered questionnaires. Structured questionnaires were used to collect data. 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 22. The response rate of the study was 82%.

## 4.0 RESULTS FINDINGS

### 4.1 Introduction

This chapter presents results arising from the analysis of data collected using questionnaires.

### 4.2 Response Rate

A sample of 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 127 questionnares were distributed to heads of procurement. Out of the population covered, 104 were responsive respresenting a response rate of 82%. This was above the 50% which is considered adequate in descriptive statistics according to (Kothari, 2014).

**Table 1: Response Rate of Respondents**

| Response | Frequency | Percentage |
|---|---|---|
| Actual Response | 104 | 82 |
| Non-Response | 23 | 18 |
| **Total** | 127 | 100% |

### 4.3 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 (Dunn, 2016). 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 realibilty. This was done on the four objectives of the study. The higher the coefficient, the more reliable is the test.

**Table 2 Reliability Results**

| Variable | No. of Items | Respondents | α=Alpha | Comment |
|---|---|---|---|---|
| Cost Management | 9 | 13 | 0.893 | Reliable |
| Quality Index Management | 9 | 13 | 0.987 | Reliable |
| Delivery Management | 9 | 13 | 0.974 | Reliable |
| Asset Utilization Management | 9 | 13 | 0.976 | Reliable |

### 4.4 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 whether the individuals in a particular study are a respresentative sample of the target population and testing appropriateness of repondent 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.

### 4.4.1 Distribution of Respondents by Gender

The study determined the gender distribution of the respondents. The results summarized in the figure below. The results revealed that majority of the respondent (51%) indicated that they were male, while only (49%) of the respondent indicated that they were female. The percentages may raise the issue of gender equity in public institutions in this country, but that is outside the scope of this study. A study on UK companies found that women and men do not differ in their ability to perform operational tasks, but rather bring a different perspective to strategic decision making (Gianakis, 2018).

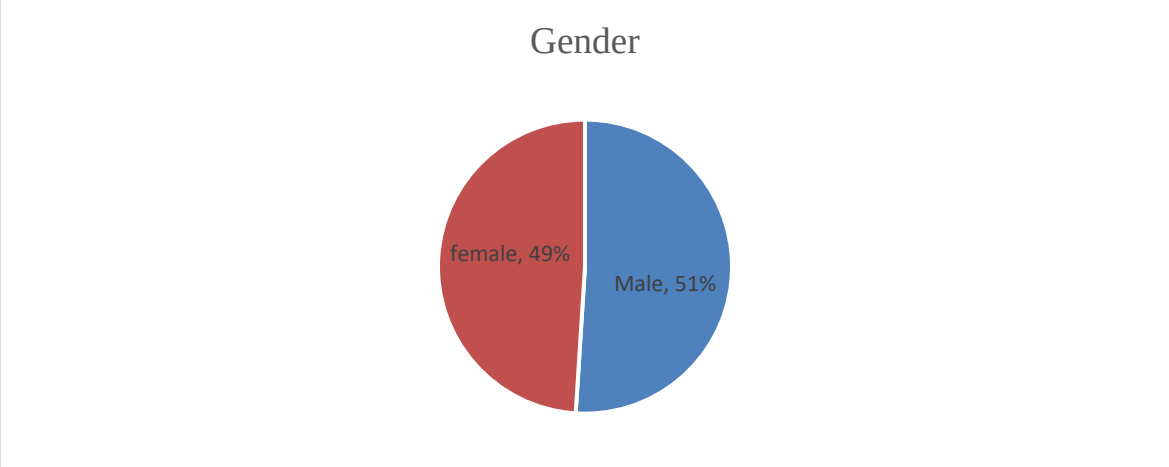


**Figure 2: Distribution of Respondents by Gender**

### 4.4.2 Distribution of Respondents by Age

The study determined the distribution of respondents by age. The results summarized in the table below. The results revealed that majority of the respondent (46.2%) were above 50 years old, (24%) were 31-40 years old, while (29.8%) were between 41-50 years. The findings are in agreement with those of Hall (2014) who established that there are two natural age peaks of the early 30s and mid 40s which correlated to employee performance.

**Table 3: Distribution of Respondents by Age**

| Years | Frequency | Percent |
|---|---|---|
| 31-40 Years | 25 | 24.0 |
| 41-50 Years | 31 | 29.8 |
| 50 Years and above | 48 | 46.2 |
| **Total** | **104** | **100.00** |

### 4.4.3 Distribution of Respondents by Level of Education

The respondents were asked to state their highest level of education and the results revealed that majority of the respondent (51%) indicated that their academic qualification was up to master's level. The result further revealed that (49%) of the respondent indicated that their academic qualification was up to degree level. With majority responsdents having degree and above, it is expected that their level of understanding of performance of state agencies is good. This is an indication that the results obtained from respondents interviewed in the present study can be relied upon. These findings concur those of Hatry (2016) who established that majority of who run public procurement are highly educated and that there is evidence linking education and public performance in state agencies.

**Table 4: Distribution of Respondents by Level of Education**

| Education Level | Frequency | Percent |
|---|---|---|
| Undergraduate | 51 | 49 |
| Post-Graduate | 53 | 51 |
| **Total** | **104** | **100** |

### 4.4.4 Distribution of Respondents by Length of Service

The study determined the number of years the respondents had worked in their current office. The respondents were asked to indicate their work duration. The result revealed that majority of the respondents (31.7%) indicated that their work duration was 6-8 years. The result also showed that (30.8%) of the respondent indicated that their work duration was 9 and above years above. The findings of the study are in tandem with literature review by Joiner (2018) who indicated that a duration and experience of employee helps him or her to have better knowledge and skills which contribute to performance.

**Table 5: Distribution of Respondents by Length of Service**

| Length of Service | Frequency | Percent |
|---|---|---|
| 3-5 Years | 39 | 37.5 |
| 6-8 Years | 33 | 31.7 |
| 9 Years and above | 32 | 30.8 |
| **Total** | **104** | **100.0** |

### 4.5 Descriptive Statistics

The study set out to examine influence of procurement key performance indicators on performance of state agencies in Kenya. To this end, four variables were conceptualized as components of performance of state agencies in Kenya. These included; cost management, quality index management, delivery management, asset utilization management.

### 4.5.1 Cost Management

The first objective of the study was to assess the influence of cost management on performance of state agencies in Kenya. The respondents were asked to indicate to what extent cost management

had an influence on optimizing performance of state agencies in Kenya. Results indicated that majority of the respondents 27% agreed that it was to a very effective, 25% said that it was effective, 29% said it was somehow effective, while ineffective was at 19%.

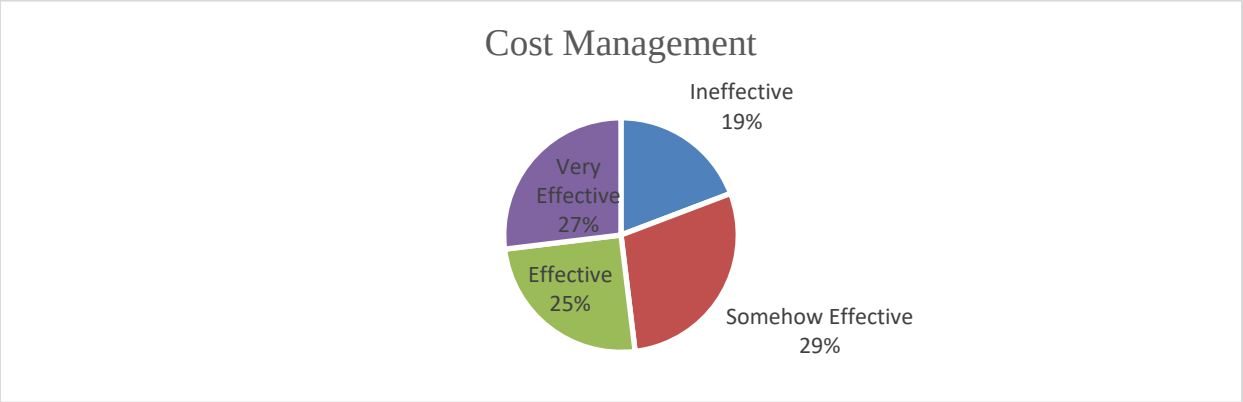


**Figure 3: Cost Management**

The respondents were also asked to comment on statements regarding cost management influence on performance of state agencies in Kenya. The responses were rated on a Likert scale and the results presented in Table 4.6 below. It was rated on a 5-point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The scores of 'strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'neutral' has been taken to represent a statement agreed upon, equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.

The respondents were asked to indicate their responses on influence of cost management on optimizing performance of state agencies in Kenya. The results revealed that majority of the respondent with a mean of (4.13) agreed with the statement that procurement ROI plays a significant role in profitability. The measure of dispersion around the mean of the statements was 0.94 indicating the responses were varied. The result revealed that majority of the respondent as indicated by a mean of (4.27) agreed with the statement cost avoidance plays a significant role in profitability. The standard deviation for was 0.968 showing a variation. The result revealed that majority of the respondent (4.55) agreed with the statement that Cost reduction plays a significant role in profitability. The results were varied as shown by a standard deviation of 0.5.

The average response for the statements on Procurement ROI plays a significant role in attaining higher market share was (4.22). The results were varied as shown by a standard deviation of 0.955. The average response for the statements on Cost avoidance plays a significant role in attaining higher market share was (4.4). The results were varied as shown by a standard deviation of 0.704. The result revealed that majority of the respondent with a mean of (4.46) agreed with the statement that Cost reduction plays a significant role in attaining higher market share. The measure of dispersion around the mean of the statements was 0.787 indicating the responses were varied.

The result revealed that majority of the respondent as indicated by a mean of (4.44) agreed with the statement Procurement ROI plays a significant role in improving customer satisfaction. The standard deviation for was 0.786 showing a variation. The result revealed that majority of the respondent (4.21) agreed with the statement that Cost avoidance plays a significant role in improving customer satisfaction. The results were varied as shown by a standard deviation of 0.942. The average response for the statements on Cost reduction plays a significant role in improving customer satisfaction was (4.01). The results were varied as shown by a standard deviation of 0.81.

**Table 6: Cost Management**

| Statements | Mean | Std. Deviation |
|---|---|---|
| Procurement ROI plays a significant role in profitability | 4.10 | 0.94 |
| Cost avoidance plays a significant role in profitability | 4.27 | 0.968 |
| Cost reduction plays a significant role in profitability | 4.55 | 0.5 |
| Procurement ROI plays a significant role in attaining higher market share | 4.22 | 0.955 |
| Cost avoidance plays a significant role in attaining higher market share | 4.41 | 0.704 |
| Cost reduction plays a significant role in attaining higher market share | 4.46 | 0.787 |
| Procurement ROI plays a significant role in improving customer satisfaction | 4.44 | 0.786 |
| Cost avoidance plays a significant role in improving customer satisfaction | 4.21 | 0.942 |
| Cost reduction plays a significant role in improving customer satisfaction | 4.11 | 1.096 |
| **Average** | **4.01** | **0.81** |

### 4.5.2 Quality Index Management

The second objective of the study was to establish the influence of quality index management on optimizing performance of state agencies in Kenya. The respondents were asked to indicate to what extent quality index management influenced optimizing performance of state agencies in Kenya. Results indicated that majority of the respondents 25% agreed that it was to a very great extent, 27% said that it was to a great extent, 35% said it was moderate, while little extent and not all were at 5 and 8% respectively.

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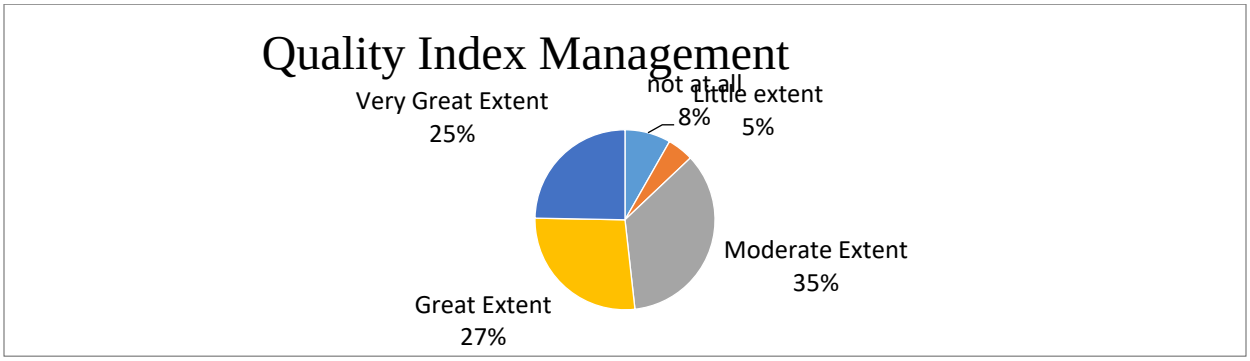


**Figure 4: Quality Index Management**

The respondents were also asked to comment on statements regarding quality index management on optimizing performance of state agencies in Kenya. The results revealed that majority of the respondent with a mean of (3.58) agreed with the statement that Supplier quality rating plays a significant role in profitability. The measure of dispersion around the mean of the statements was 1.0 indicating the responses were varied. The result revealed that majority of the respondent as indicated by a mean of (3.63) agreed with the statement regulating the ration of rejection plays a significant role in profitability. The standard deviation for was 0.9 showing a variation. The result revealed that majority of the respondent (3.6) agreed with the statement that checking the reworks percentage plays a significant role in profitability. The results were varied as shown by a standard deviation of 0.7.

The average response for the statements on Supplier quality rating plays a significant role in attaining higher market share was (3.45). The results were varied as shown by a standard deviation of 1.2. The average responses for the statements on Regulating the ration of rejection plays a significant role in attaining higher market share was (3.5). The results were varied as shown by a standard deviation of 1.0. The results revealed that majority of the respondent with a mean of (3.61) agreed with the statement that checking the reworks percentage plays a significant role in attaining higher market share. The measure of dispersion around the mean of the statements was 0.6 indicating the responses were varied.

The result revealed that majority of the respondent as indicated by a mean of (4.17) agreed with the statement Supplier quality rating plays a significant role in improving customer satisfaction. The standard deviation for was 0.8 showing a variation. The result revealed that majority of the respondent (3.63) agreed with the statement that regulating the ration of rejection plays a significant role in improving customer satisfaction. The results were varied as shown by a standard deviation of 0.8. The average response for the statements on checking the reworks percentage plays a significant role in improving customer satisfaction was (3.66). The results were varied as shown by a standard deviation of 1.

**Table 7: Quality Index Management**

| Statements | Mean | Std. Deviation |
|---|---|---|
| Supplier quality rating plays a significant role in profitability | 3.58 | 1.0 |
| Regulating the ration of rejection plays a significant role in profitability | 3.63 | 0.9 |
| Checking the reworks percentage plays a significant role in profitability | 3.6 | 0.7 |
| Supplier quality rating plays a significant role in attaining higher market share | 3.45 | 1.2 |
| Regulating the ration of rejection plays a significant role in attaining higher market share | 3.5 | 1.0 |
| Checking the reworks percentage plays a significant role in attaining higher market share | 3.61 | 0.6 |
| Supplier quality rating plays a significant role in improving customer satisfaction | 4.17 | 0.8 |
| Regulating the ration of rejection plays a significant role in improving customer satisfaction | 3.63 | 0.8 |
| Checking the reworks percentage plays a significant role in improving customer satisfaction | 3.66 | 1.0 |
| **Average** | **3.77** | **1.134** |

### 4.5.3 Delivery Management

There was also need to establish influence of delivery management on optimizing performance of state agencies in Kenya as the third objective. Results indicated that majority of the respondents 47% agreed that it was to a very great extent, 45% said that it was to a great extent, 2% said it was moderate; little extent was 2% and not all at 4%.

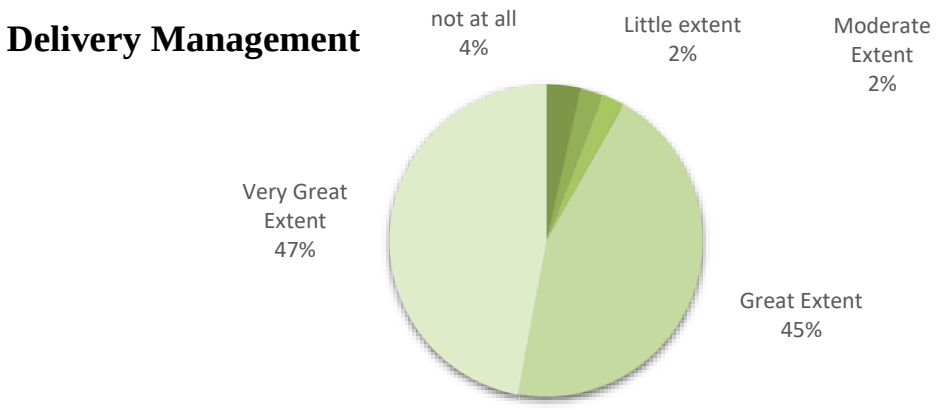


**Figure 5: Delivery Management**

The respondents were asked to indicate their levels of agreement on statements regarding strategic partnership. The results revealed that majority of the respondent with a mean of (3.8) agreed with the statement that Purchase order cycle time plays a significant role in profitability. The measure of dispersion around the mean of the statements was 0.9 indicating the responses were varied. The result revealed that majority of the respondent as indicated by a mean of (4.9) agreed with the statement Turnaround time plays a significant role in profitability. The standard deviation for was 0.9 showing a variation. The result revealed that majority of the respondent (3.4) agreed with the statement that Lead time index plays a significant role in profitability. The results were varied as shown by a standard deviation of 1.3.

The average response for the statements on Purchase order cycle time plays a significant role in attaining higher market share was (3.6). The results were varied as shown by a standard deviation of 1.2. The average response for the statements on Turnaround time plays a significant role in attaining higher market share was (4.1). The results were varied as shown by a standard deviation 0.8. The results revealed that majority of the respondent with a mean of (4.1) agreed with Lead time index plays a significant role in attaining higher market share. The measure of dispersion around the mean of the statements was 0.9 indicating the responses were varied.

The result revealed that majority of the respondent as indicated by a mean of (4) agreed with the statement Purchase order cycle time plays a significant role in improving customer satisfaction. The standard deviation for was 1 showing a variation. The result revealed that majority of the respondent (4.2) agreed with the statement that Turnaround time plays a significant role in improving customer satisfaction. The results were varied as shown by a standard deviation of 0.8. The average response for the statements on Lead time index plays a significant role in improving customer satisfaction was (3.9). The results were varied as shown by a standard deviation of 0.9.

**Table 8: Delivery Management**

| Statements | Mean | Std. Deviation |
|---|---|---|
| Purchase order cycle time plays a significant role in profitability | 3.8 | 0.9 |
| Turnaround time plays a significant role in profitability | 4.9 | 0.9 |
| Lead time index plays a significant role in profitability | 3.4 | 1.3 |
| Purchase order cycle time plays a significant role in attaining higher market share | 3.6 | 1.2 |
| Turnaround time plays a significant role in attaining higher market share | 4.1 | 0.8 |
| Lead time index plays a significant role in attaining higher market share | 4.1 | 0.9 |
| Purchase order cycle time plays a significant role in improving customer satisfaction | 4.0 | 1.0 |
| Turnaround time plays a significant role in improving customer satisfaction | 4.2 | 0.8 |
| Lead time index plays a significant role in improving customer satisfaction | 3.9 | 0.9 |
| **Average** | **3.8** | **0.9** |

### 4.5.4 Asset Utilization Management

There was also need to establish the influence of asset utilization management on optimizing performance of state agencies in Kenya. Results also showed that 3% of respondents indicated to very great extent, great extent was at 12%, moderate extent was 37%, while little extent was at 27% and not at all was at 21%.

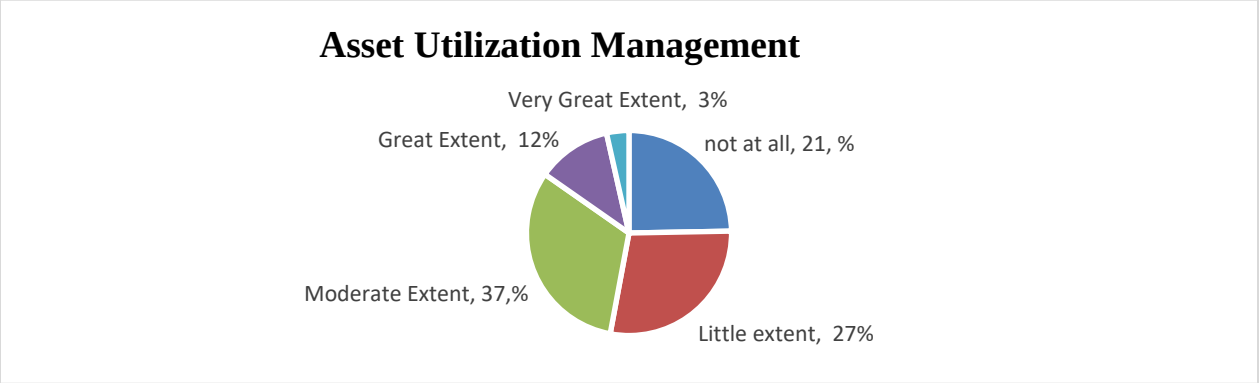


**Figure 6: Asset Utilization Management**

The respondents were asked to indicate their views on asset utilization. The results revealed that majority of the respondent with a mean of (4.5) agreed with the statement that Plant and equipment optimization plays a significant role in profitability. The measure of dispersion around the mean

of the statements was 0.5. The result revealed that majority of the respondent as indicated by a mean of (3.9) agreed with the statement Human capital specialization plays a significant role in profitability the standard deviation for was 0.8 showing a variation. The result revealed that majority of the respondent (3.2) agreed with the statement that Capital appropriation plays a significant role in profitability. The results were varied as shown by a standard deviation of 1.4

The average response for the statements on Plant and equipment optimization plays a significant role in attaining higher market share was (4.5). The results were varied as shown by a standard deviation of 0.5. The average response for the statements on Human capital specialization plays a significant role in attaining higher market share was (4.4). The results were varied as shown by a standard deviation 0.6. The results revealed that majority of the respondent with a mean of (4.4) agreed with the statement Capital appropriation plays a significant role in attaining higher market share. The measure of dispersion around the mean of the statements was 0.9 indicating the responses were varied.

The result revealed that majority of the respondent as indicated by a mean of (4.3) agreed with the statement Plant and equipment optimization plays a significant role in improving customer satisfaction. The standard deviation for was 0.7 showing a variation. The result revealed that majority of the respondent (4.5) agreed with the statement that Human capital specialization plays a significant role in improving customer satisfaction. The results were varied as shown by a standard deviation of 1.0. The average response for the statements on Capital appropriation plays a significant role in improving customer satisfaction was (4.1). The results were varied as shown by a standard deviation of 1.0.

**Table 9: Asset Utilization Management**

| Statements | Mean | Std. Deviation |
|---|---|---|
| Plant and equipment optimization play a significant role in profitability | 4.5 | 0.5 |
| Human capital specialization plays a significant role in profitability | 3.9 | 0.8 |
| Capital appropriation plays a significant role in profitability | 3.2 | 1.4 |
| Plant and equipment optimization play a significant role in attaining higher market share | 4.5 | 0.5 |
| Human capital specialization plays a significant role in attaining higher market share | 4.4 | 0.6 |
| Capital appropriation plays a significant role in attaining higher market share | 4.4 | 0.9 |
| Plant and equipment optimization play a significant role in improving customer satisfaction | 4.3 | 0.7 |
| Human capital specialization plays a significant role in improving customer satisfaction | 4.2 | 1.0 |
| Capital appropriation plays a significant role in improving customer satisfaction | 4.1 | 1.0 |

| | | |
|---|---|---|
| **Average** | **4.2** | **0.8** |

### 4.6 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 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 procurement key performance indicators affecting performance of state agencies in Kenya, Pearson correlation coefficient computed and tested at 5% significance level.

The results indicate that there is a positive relationship (r=.509) between cost management and performance of state agencies in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). The results also indicate that there is a positive relationship (r=.398) between quality index management and performance of state agencies in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05).

The results indicate that there is a positive relationship (r=.678) between delivery management and performance of state agencies in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). The results indicate that there is a positive relationship (r=.685) between asset utilization management and performance of state agencies in Kenya. In addition, the researcher found the relationship to be statistically significant at 5% level (p=0.000, <0.05). Hence, it is evident that all the independent variables could explain the changes in implementation of performance of state agencies in Kenya, on the basis of the correlation analysis.

**Table 10: Summary of Pearson's Correlations**

| Correlations | | Cost Management | Quality Index Management | Delivery Management | Asset Utilization Management | Performance of State Agencies |
|---|---|---|---|---|---|---|
| Cost Management | Pearson Correlation | 1 | | | | |
| | Sig. (2-Tailed) | | | | | |
| Quality Index Management | Pearson Correlation | .263** | 1 | | | |
| | Sig. (2-Tailed) | 0.007 | | | | |
| Delivery Management | Pearson Correlation | .350** | .346** | 1 | | |
| | Sig. (2-Tailed) | 0 | 0 | | | |
| Asset Utilization Management | Pearson Correlation | .363** | .516** | .543** | 1 | |
| | Sig. (2-Tailed) | 0 | 0 | 0 | | |
| Performance of State Agencies | Pearson Correlation | .509** | .398** | .678** | .685** | 1 |
| | Sig. (2-Tailed) | 0 | 0 | 0 | 0 | |

** Correlation is Significant at the 0.05 Level (2-Tailed).

### 4.7 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 state agencies in Kenya) which can be predicted from the independent variables (cost management, quality index management, delivery management, asset utilization management).

Table 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. R square value of 0.647 means that 64.7% of the corresponding variation in performance of state agencies in Kenya can be explained or predicted by (cost management, quality index management, delivery management, asset utilization management) which indicated that the model fitted the study data.

Adjusted R square in table 4.11 is called the coefficient of determination which indicates how performance of state agencies in Kenya varied with variation in effects of factors which includes; cost management, quality index management, delivery management, asset utilization management. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 0.647$), $p=0.000 <0.05$).

**Table 11: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .805[a] | .647 | .633 | .166295 |

a. Predictors: (Constant), Cost Management, Quality Index Management, Delivery Management, Asset Utilization Management
b. Dependent Variable: Performance of State Agencies

**Table 12: ANOVA**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.027 | 4 | 1.257 | 45.449 | .000[b] |
| | Residual | 2.738 | 99 | 0.028 | | |
| | Total | 7.765 | 103 | | | |

a. Predictors: (Constant), Cost Management, Quality Index Management, Delivery Management, Asset Utilization Management
b. Dependent Variable: Performance of State Agencies

The significance value is 0.000 which is less than 0.05 thus the model is statistically significance in predicting how cost management, quality index management, delivery management, asset utilization management influence performance of state agencies in Kenya. The F critical at 5% level of significance was 26.5. Since F calculated which can be noted from the ANOVA table above is 45.449 which is greater than the F critical (value= 26.5), this shows that the overall model was significant. The study therefore establishes that; cost management, quality index management, delivery management, asset utilization management were all important procurement key performance indicators influencing performance of state agencies. These results agree with Rotich (2017) results which indicated a positive and significant influence of procurement key performance indicators on performance of state agencies.

**Table 13: Coefficients of Determination**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | β | Std. Error | Beta | | |
| 1 | (Constant) | 2.353 | 0.202 | | 11.619 | 0.000 |
| | Cost Management | 0.183 | 0.037 | 0.392 | 4.948 | 0.000 |
| | Quality Index Management | 0.158 | 0.045 | 0.232 | 3.546 | 0.001 |
| | Delivery Management | 0.121 | 0.023 | 0.383 | 5.272 | 0.000 |
| | Asset Utilization Management | 0.001 | 0.036 | 0.001 | 0.021 | 0.040 |

a. Predictors: (Constant), Cost Management, Quality Index Management, Delivery Management, Asset Utilization Management
b. Dependent Variable: Performance of State Agencies

The research used a multiple regression model

$$Y= \beta_0+ \beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+Ɛ$$

The regression equation will be;

$$Y=2.353+ 0.183X_1 + 0.158X_2 + 0.121X_3 + 0.001X_4$$

The regression equation above has established that taking all factors into account (cost management, quality index management, delivery management and asset utilization management) constant at zero, performance of state agencies in Kenya will be an index of 2.353

The findings presented also shows that taking all other independent variables at zero, a unit increase in cost management will lead to a 0.158 increase in implementation of the performance. The P-value was 0.001 which is less 0.05 and thus the relationship was significant.

The study also found that a unit increase in businesses process outsourcing will lead to a 0.001 increase in implementation of the optimal procurement performance. The P-value was 0.04 and thus the relationship was significant. In addition, the study found that a unit increase in delivery management will lead to a 0.121 increase in the optimal procurement performance. The P-value was 0.000 and thus the relationship was significant.

Lastly, the study found that organisational benchmarking will lead to a 0.183 increase in the optimal procurement performance. 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, asset utilization management contributed most to the optimal procurement performance.

## 5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary of the Findings

The regression equation above has established that taking all factors into account (cost management, quality index management, delivery management and asset utilization management) constant at zero, performance of state agencies in Kenya will be an index of 2.353

The findings presented also shows that taking all other independent variables at zero, a unit increase in cost management will lead to a 0.158 increase in implementation of the performance. The P-value was 0.001 which is less 0.05 and thus the relationship was significant.

The study also found that a unit increase in businesses process outsourcing will lead to a 0.001 increase in implementation of the optimal procurement performance. The P-value was 0.04 and thus the relationship was significant. In addition, the study found that a unit increase in delivery management will lead to a 0.121 increase in the optimal procurement performance. The P-value was 0.000 and thus the relationship was significant.

Lastly, the study found that organisational benchmarking will lead to a 0.183 increase in the optimal procurement performance. 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, asset utilization management contributed most to the optimal procurement performance.

### 5.2 Conclusion

Drawing on this research, lack of cost management, quality index management, delivery management, and asset utilization management in state agencies is leading to poor procurement performance. Though the state agencies are striving hard to improve their procurement 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 procurement performance in the public sector can be reversed if the government and other stakeholders ensure cost management; quality index management, delivery management, and asset utilization management are embraced in the procurement function.

### 5.3 Recommendations

The study recommended that public institutions should embrace procurement key performance indicators 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.

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