



**INFLUENCE OF PROCUREMENT SYSTEM INTEGRATION ON SUPPLY CHAIN PERFORMANCE IN KENYA'S STATE CORPORATIONS**

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**Accepted: October 7, 2019**

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**ABSTRACT**

*This study looked into the influence of procurement system integration on supply chain performance in Kenya's State Corporations. The study targeted all the 128 state corporations in Kenya which were 128 in total. The study used descriptive research design. Primary data was collected using the questionnaire. Descriptive statistics such as mean and frequencies and inferential statistics (regression and correlation analysis) were used to perform data analysis. Primary data collected using questionnaires was adopted for the study. The study findings indicated employee skills, ICT applications, costs, quality management and time management significantly and positively influences effective procurement system integration on supply chain performance in Kenya's State Corporations. The study concluded that state corporations should enhance their employees' skills, integrate their procurement system to create awareness on system management, ensure there is sufficient ICT applications, integrate their procurement system so as to ensure there is short transaction cycle. The study recommended supply chain companies in state corporations to adopt integrated procurement systems so as to enhance their employees skills thereby leading to awareness on system management. The study further recommended state corporations to equip their employees with relevant skills especially with respect to system utilization. The study recommended state corporations to ensure enhanced their employee skills through integrated procurement systems. There is also need for state corporations to ensure they have integrated procurement system. Supply chain companies in state corporations to ensure they adopt integrated procurement systems to enhance their Enterprise resource planning. Further, supply chain companies to enhance the integration of their procurement systems as it has a positive influence on overall organization quality management. To ensure there is total quality management, supply chain companies in state corporations in Kenya should integrate their procurement systems. Supply chain companies in Kenya should adopt integrated procurement systems.*

**Key Words:** *Employee Skills, ICT Applications, Costs, Quality Management, Time Management, Procurement Systems*

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**CITATION:** Muchiri, S. W. (2019). Influence of procurement system integration on supply chain performance in Kenya's State Corporations . *The Strategic Journal of Business & Change Management*, 6 (4), 262 – 280.

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## INTRODUCTION

The main aim of procurement on the global perspective is to enhance economic activities through sufficient flow of goods and services from the source to the consumers hence benefiting the middle men. Procurement in public sector is one of the activities which developed nations use to enhance service delivery such as allowing citizens and small medium enterprises to participate in government opportunities. Countries such as China, USA and Japan have established transparency in procurement and this has enhanced growth and also development of small businesses hence creating positive environment for economic development (Thai, 2008). Modern procurement activities in Africa were initiated in South Africa with preference regulations being first implemented in this country Quamrul (2009).

Public procurement sector in South Africa has outstanding history since 1996 where varied procurement system integration has been implemented. The aim integrating procurement system was to enhance service delivery and performance through public private partnership (Lungisa, 2015). Procurement system integration also enhances relationship building or supplier relationship management which contributes to risk management in supply and delivery of goods.

According to Kamau and Murangi (2016), the link between Public Procurement and Asset Disposal Act 2015 and procurement system integration has been witnessed to be of success towards addressing governance of supply chain activities is in accordance with international best practices. Transparency in procurement activities and also management of public funds has been witnessed to improve by a margin of fifteen percent compared to financial year 2014-2015 financial year. Some State Corporations such as Kenya National Highways Authority, Kenya Railways and Kenya Revenue Authority have also witnessed cost saving through

IFMIS (Integrated Financial Management Information System). Inspired of it being a system that requires manual interventions.

Kenyan SCs which are also referred to as parastatals are businesses owned by government to meet commercial and social goals. A state corporation in Kenya is created by an Act of Parliament which sets out its mandate or by Presidential Order to carry out the functions specified in the order (GoK, 2012). Ongeti (2014) observes that the fluid and ambiguous definition of Kenyan SCs coupled with failure by actors within government to adhere to the process of establishing these entities over the years led to explosion in the number of SCs.

Subsequently, the present number of SCs is at an unsustainable level given that over 50% of them depend on the exchequer. In addition to growing strain on the exchequer, the proliferation has resulted to duplication and overlap of functions between SCs and Government Ministries. It has therefore become necessary to review and rationalize SCs with a view to consolidate functions and remove overlaps and duplications (PTPR, 2013).

### Statement of the Problem

Procurement systems in State Corporations in Kenya are very popular. However the systems in place are not seamless meaning that manual intervention is required. State Corporations run on various procurement systems that are standalone. These systems cannot complete a procurement process from end to end as they do not feed into each other. Therefore manual interventions are required from time to time. There was the need to intergrate the various systems in place, enhance them and ensure that the organizations' procurement process run from end to end (IPOA, 2016).

Lyson and Farrington (2006) explains that the implementation of automated procurement systems is one of the easiest ways to improve operational efficiency. Procurement systems intergration

ensures;procurement planning,sourcing,contracting,inventory management and payment processing in an organization is undertaken seamlessly. According to Prat,Valletti and Bandiera (2009), inefficiency and poor resource management in public sector results from lack of competence, inefficient systems and also other unethical behaviour such as corruption and poor leadership. The study which was based on system improvement and did not directly focus on the influence of system integration towards improvement of procurement and public service delivery.

Since 2010, out of 3124 reports relating to public procurement, 1680 were related to fraudulent acquisition and disposal of public property, 1126 were on public procurement irregularities, 251 were on conflict of interest and 67 on bid rigging. The report also indicated that forty percent of the businesses and individuals pay bribes to acquire tenders which in most cases are paid without delivery of goods and services such as witnessed in National Youth Service (NYS) case. All the prevailing problems associated with lack of proper procurement system integration and transparency (EACC Annual report 2014-2015). This study brought out clearly the influence of procurement system integration in Kenya's State Corporation through prompting to solve varied problems related with ineffective system integration.

### **Objectives of the Study**

The general objective of the study was to determine the Influence of procurement system integration on supply chain performance in Kenya's State Corporations. The specific objectives were;

- To determine the influence of staff competency on supply chain performance in Kenya's state corporations.
- To assess the influence of ICT applications on supply chain performance in Kenya's state corporations.

- To examine the influence of Supply Chain Costs on supply chain performance in Kenya's state corporations.
- To determine the influence of quality management on supply chain performance in Kenya's state corporations.

## **LITERATURE REVIEW**

### **Institutional Theory**

According to Oliveira and Martins (2011) this theory emphasizes that institutional environments are crucial in shaping organizational structure and actions. The institutional theory assists in the study of employee skills and competence as a variable. The theory stipulates that organizational decisions are not driven purely by rational goals of efficiency, but also by social and cultural factors and concerns for legitimacy. Institutions are transported by cultures, structures, and routines and operate at multiple levels. The theory claims that firms become more similar due to isomorphic pressures and pressures for legitimacy. This implies that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders.

### **Technology Acceptance Model (TAM)**

The technology acceptance theory assists the study in evaluating the influence ICT applications as a result of intergration of systems. Wu and Wang (2005) stated that technology acceptance model has been one of the most applied model towards acceptances and understanding implementation of new systems in the private and public sector with aim of enhancing services delivery. Technology acceptance model emphasizes on the need to enhance service delivery through focusing on modification of existing system applications to fit into current perceived usefulness or integration of different technologies to enhance efficiency in services delivery. Technology acceptance model was initiated by Davis in 1989 with aim of predicting acceptability of a technology.

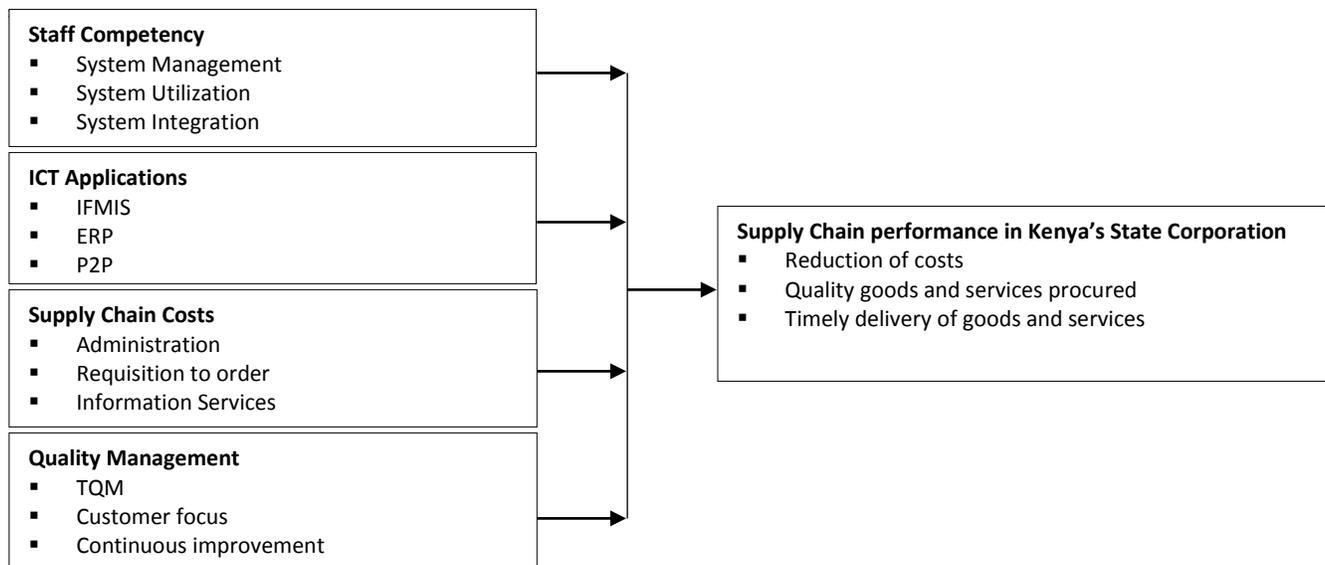
**Transaction Cost Theory**

This theory was coined by Ronald Coase, and helps the study in evaluating cost as factor influencing intergration. Informantion Communication and technology (ICT) is an enabler and plays the leading role in transforming organizations by ensuring reduction of waste in operational activities and faster response to all stakeholders. Systems are expensive to maintain but the acquisition cost cannot be compared to the value it gives as it assists drive costs downwards in organizations that utilize them. The goal is to enhance supply chain activities by making data and information readily available to all stakeholders, including the procuring organization who are the customers and hence reduces operational costs. The term "transaction cost" having been coined by Ronald Coase in 1970s, who used it to develop a theoretical framework for predicting when economic activities should be carried out towards cost reduction. With respect to procurement system integration, Ronald indicated that several aspects

such as system support and integration should be carried out to enhance effectiveness and efficiency which contributes to reduced cost.

**Business Process Re engineering Theory**

The business process reengineering (BPR) theory assists the study in evaluating quality management in the operations of States Corporation. BPR theory is a business management strategy, originally pioneered in the early 1990s, focusing on the analysis and design of workflows and business processes within an organization. BPR theory aimed to help organizations fundamentally rethink how they do their work in order to dramatically improve customer service, cut operational costs, and become world-class competitors. Through this quality is enhanced in all the organizational processes. BPR theory seeks to help companies radically restructure their organizations by focusing on the ground-up design of their business processes.



**Independent Variables**

**Dependent variable**

**Figure 1: Conceptual Framework**

**Empirical Review**

Kraljic ( 2010) indicates that employees training has been a major concern based on the fact that system

integration demands employees with high level of skills. System integration has also enhanced employees' skills through on the job training where employees have been able to develop adverse skills

towards solving problems related to integrated procurement systems and other problems arising as a result of use of procurement system. Use of integrated procurement has also led to different thinking in acquisition and maintaining of skills required by emphasizing much higher quality attributes of forecasting, planning and information sharing towards procurement performance (Giunipero, Hadfield and Eltantawy, 2006).

Nyagaka, Ngari and Richu (2014) stated that the introduction of procurement systems such as IFMIS and ERP has resulted to increased demand on improved employees' skills. The study indicated that ninety nine percent of modern procurement system is based on e-platform and this has resulted to demand for more educated employees with computer based knowledge. The study indicated that procurement system integration has contributed to enhanced employee skills over years with employees having on training and off-training programs on how to deliver based on required standards. ( Sauber et al 2008) stated that the requirement to educate professionals and equip them with new and higher-level skills have consequently become agent with high rise in e-procurement activities and also electronic procurement integration activities. For example management of Integrated Financial Management Information System (IFMIS) and Enterprise Resource(s) Planning (ERP) requires employees with sufficient skills such as information technology skills. Private public partnership has enhanced transfer of skilled employees and also training activities in the public sector towards improvement of procurement activities between the parties. ( Kraljic,2010).

According to Kraljic (2010),technology is a vehicle to enhance supply chain competitiveness and performance by enhancing the overall effectiveness and efficiency of the logistics system. Hence choosing the right technology for various logistics activities or sub-processes is very crucial to any business to gain a competitive advantage in today's competitive market

(Ugboma, Emeghara, Ikeogu, & Ugboma, 2008). For instance, a cycle manufacturer must see how it can integrate the smallest component provider namely, a brake shoe supplier and the dealer at the rural center, in order to optimize production, run and retain the customer instead of losing to the competitor. Today integration in the supply chain is possible due to available technology leading to efficiency in the supply chain only if the supply chain partners adopt the right strategy (Ugboma, Emeghara, Ikeogu, & Ugboma, 2008).

New information technologies and e-business solutions have transformed supply chain operations from mass production to mass customization. (Basu and Siems, 2004) assesses the impact of these innovations on economic productivity, focusing on the macroeconomic benefits as supply chain operations have evolved from simple production and planning systems to today's real-time performance management information systems using advanced e-business technologies.

Kraljic, (2010) defines that the supply management process in most firms, functional managers within each area make independent decisions using similar techniques (Monk & Wagner, 2012). The objective is to provide high quality customer service while minimizing the cost of producing the service. Boateng, S. (2012) states that the purpose of supply management is to support the transformation of raw materials and component parts into shipped or inventory goods (Monk & Wagner, 2012). Ratios of Materials Related Costs these ratios are increasing for various reasons: Material shortages, increased use of synthetic materials, Inflation, complex high-value products. Where else is the potential for cost reduction and competitive advantage so great (Sharonov, 2012).

According to Rotich, (2011) Integrated Supply Management (ISM) in cost management controls significance of average inventory is that inventory

cost is a function of average inventory. Working capital is tied up in material rather than an alternative asset. Opportunity costs as well as costs of storing, insuring, and handling are incurred when inventory exists. Monk & Wagner, (2012). Annual Inventory Ordering Transportation Costs one that provides the desired customer service at minimum cost The customers are manufacturing, sales, distribution, the final consumer, and, of course, purchasing, which is the supplier's customer. The costs of satisfactory customer service are only partly identifiable and quantifiable (Sharonov, 2012).

Supply chain quality management as encompassing all quality management activities associated with the flow and transformation of goods from raw material stage through the end users finished product stage along with flow of all information related to quality (Ferguson 2000). Naji (2015) stated supplier relationship management and quality approach that with development of communication technology and business globalization, organizations' have witnessed significant change in procurement activities, with electronic procurement becoming the main hub of procurement activities. Change in systems towards effective financial management, buyer supplier management and also cost saving has been the major focus (Monk & Wagner, 2012). This has contributed to change of labour with high rate of employee layoff and introduction of computerised systems such as Integrated Financial Management System, vendor management system and also supplier management systems (Richu, 2014).

Ochieng J & Muehle S (2014) state that quality management approach involves top management commitment ,Customer focus ,Training and education ,Continuous improvement and innovation,supplier management,employee involvement,customer relationships,material management ,Strategic supplier partnership, Information and communication technologies , Corporate culture and close supplier partnership (Giunipero, Hadfield & Eltantawy, 2006).

Richu(2014) notes that use of integrated procurement has also led to different thinking in acquisition and maintaining of skills required by emphasizing much higher quality attributes of forecasting, planning and information sharing towards procurement performance.

Supply chain management (SCM) is the management of activities that involve sourcing,inventory management,logistics inorder to maximize customer value and achieve competitive advantage, logistics, as well as the information systems needed to coordinate these activities. Supply chain management in procurement is fully achieved when all the relevant decisions (what, how and when) to purchase products, whether by competitive tendering procedures or by negotiations strategic supplier relations management and quality, (Cheung, 2010). Supply Chain Management involves sourcing goods of all types of materials, supplies, equipment through a single department (not necessarily centrally located) under the direct control and superintendence of one responsible person. He is directly accountable to the top management for all duties falling within the broad area of purchase function. (Cheung, 2010).

## **METHODOLOGY**

The prevailing study focused on qualitative research design. According to the Presidential Task Force report (2016) there were a total of 128 state corporations in Kenya. The state corporations were grouped in 8 groups in accordance with their mandate. The unit of analysis was the state corporations while the unit of observation was the head of procurement in the state corporations. Census sampling was used as the population of the study was below 200. For the purpose of this study, the questionnaire was used for mainly economical, and appropriateness reasons. This study focused on Statistical Package for Social Sciences (SPSS) where descriptive statistics was presented using means and frequency distribution. The study also focused on

inferential statistics where relationship between variables were presented using Pearson correlation and multiple regression. The study was based on confidence level of 95% with P-value of < 0.05 to show existence of relationship which was presented in linear equation:-  $Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$

Y= Supply Chain performance

a=Constant coefficient

$\beta_1$ ...  $\beta_4$  = the slope representing the degree of change independent variable due to a unit change

$X_1$ = Staff Competency

$X_2$ = ICT Applications

$X_3$ = Supply Chain Cost

$X_4$ = Quality Management

$\epsilon$ = Error term at 95% confidence level

## RESULTS

### Staff Competency

The study sought to determine whether the respondents agreed that employee skills influence Supply Chain performance in their company. The result of the study revealed that majority 53.2% of the respondents agreed that employee skills influences the supply chain performance in the company.

The study also sought to determine the level of respondents agreement on statements regarding staff competency enhancement based on likert scale where; 1 = Not at all 2 = Little extent 3 = Moderate extent 4 = Great extent 5 = Very great extent. The findings revealed that 44% of the respondents indicated that enhanced employees skills had positive influence on supply chain performance to a very great extent, 33.9% indicated great extent, those who indicated moderate extent were 14.7% while only 7.3% indicated little extent. The study findings also showed that 80.7% of the respondents indicated that

procurement system integration had positively contributed to awareness on system management hence resulting to improvement on supply chain performance to a very great extent while only 19.3% of them indicated moderate extent. Moreover, 85.3% of the respondents indicated that employees in the organization had improved skills with respect to system utilization to a very great extent while only 14.7% indicated great extent. Further, the results of the study revealed that 15.6% of the respondents indicated that the organization had increased employee performance as a result of procurement system integration to a very great extent, 25.7% of them indicated great extent, those who indicated moderate extent were 42.2% while 7.3% of them indicated little extent and 9.2% of the respondents indicated not at all. Finally, the results of the study showed 11.9% of the respondents indicated that the organizational structures allowed for experimentation and creativity to a very great extent, 32.1% indicated great extent, those who indicated moderate extent were 24.8% while only 17.4% indicated little extent and 13.8% of them indicated not at all.

The implication of the results was that majority of the respondents indicated that enhanced employee skills improves supply chain performance to a great extent as shown by a mean of 4.01. The responses given by the respondents had little variation (standard deviation=0.89). The findings of the study were consistent with the results of a study by Giunipero, Hadfield and Eltantawy (2006) which indicated that the use of integrated procurement has also led to different thinking in acquisition and maintaining of skills required by emphasizing much higher quality attributes of forecasting, planning and information sharing towards procurement performance

### ICT Applications

The study sought to determine whether the respondents agreed that ICT Applications influence Supply Chain performance in their company. The results of the study showed majority 54.1% of the

respondents agreed that ICT applications influences the supply chain performance in the company.

The study sought to determine whether the statements relate to the influence of quality management on supply chain performance in Kenya states Corporation. The respondents were asked to indicate the extent to which they agree or disagree based on a Likert scale where 1= strongly disagree, 2= disagree, 3= Not sure, 4= Agree, 5= Strongly Agree. The findings showed that 26.6% of the respondents strongly agreed that sufficient ICT applications influences supply chain performance in the organization, 30.3% agreed, 11% of the respondents indicated unsure while those who indicated disagreed were 21.1% and 11% of them strongly disagreed. Moreover, 44% of the respondents strongly agreed that through procurement system integration employees in the organization had been able to understand utilization of IFMIS systems, 19.3% neither agreed nor disagreed while 24.8% disagreed and only 11.9% of them strongly disagreed. Further, the results of the study revealed that 56.9% of the respondents strongly agreed that Enterprise resource planning had been enhanced as a result of procurement system integration, 11.9% of them indicated agree, those who were unsure were 8.3% while 13.8% of them disagreed and only 9.2% of the respondents strongly disagreed. Also the results of the study showed that 28.4% of the respondents strongly agreed that there was effective use ICT applications in the organization, 12.8% indicated agreed, those who were unsure were 27.5% while only 15.6% both indicated disagree and strongly disagreed. Finally, the results of the study showed that 12.8% of the respondents strongly agreed that effective ICT application had a positive relationship with supply chain performance, those who indicated agreed were 40.4%, those who were not sure were 29.4% while those who disagreed were 3.7% and 13.8%. The implication of the results was that most of the respondents indicated that they

agreed with the statements on ICT as shown by a mean of 3.46. The responses given by the respondents were varied (standard deviation=1.39). The findings of the study were consistent with the findings of a study by Fasanghari(2014) which concluded that Information Technology and Supply Chain Management is much larger as it facilitates inter-organizational communication and in turn, reduces cycle times and develops collaborative work.

### **Supply Chain Cost**

The study sought to determine whether cost has an impact on Supply Chain performance company. The results of the study showed majority 54.1% of the respondents agreed that cost influences the supply chain performance in the company.

The study sought to determine whether the statements relate to the influence of quality management on supply chain performance in Kenya states Corporation. The respondents were asked to indicate the extent to which they agree or disagree based on a Likert scale where 1= strongly disagree, 2= disagree, 3= Not sure, 4= Agree, 5= Strongly Agree. The findings revealed that 25.7% of the respondents strongly agreed that Procurement system integration has resulted to cost reduction, 33.9% indicated agree, those who were not sure 14.7% while 10.1% indicated disagreed and 15.6% of them indicated strongly disagree. The findings also revealed that 48.6% of the respondents strongly agreed that the organization had witnessed effectiveness in administration cost through Intergrated financial management information system, those who indicated agreed were 15.6%, those who were unsure 24.8% while those who indicated disagree were 2.8% and 8.3% of them strongly disagreed. Moreover, 61.5% of the respondents strongly agreed that Procurement system integration had resulted to effective requisition to order cost, 24.8% of them agreed, 5.5% indicated unsure while those who disagreed were also 5.5% disagreed and only 2.8% of them strongly disagreed. Further, the results of the

study revealed that 13.8% of the respondents strongly agreed that through procurement system integration, the organization had witnessed short transaction cycle hence contributing to supply chain performance, 61.5% of them indicated agreed, those who neither agreed nor disagreed were 5.5% while 11% of them disagreed and only 8.3% of the respondents strongly disagreed. Finally, the results of the study showed 40.4% of the respondents strongly agreed that there is a positive relationship between cost and supply chain performance, 29.4% indicated agreed, those who indicated unsure were 8.3% while 16.5% indicated disagreed and only 5.5% of them strongly disagreed. The implication of the results was that most of the respondents indicated that the statements relate to the influence of quality management on supply chain performance in Kenya state Corporation as shown by a mean of 3.84. The responses given by the respondents were less varied (standard deviation=1.21). The findings of the study were consistent with the findings of a study by Rotich (2011) which concluded that Integrated Supply Management (ISM) in cost management controls significance of average inventory is that inventory cost is a function of average inventory. Working capital is tied up in material rather than an alternative asset.

### **Quality Management**

The study sought to determine whether Quality Management has an impact on Supply Chain performance company. The results of the study showed majority 53.2% of the respondents agreed that Quality Management influences the supply chain performance in the company.

The study also sought to determine whether the statements relate to the influence of quality management on supply chain performance in Kenya states Corporation. The respondents were asked to indicate the extent to which they agreed or disagreed with the statements based on a Likert scale where 1= strongly disagree, 2= disagree, 3= Not sure, 4= Agree,

5= Strongly Agree. The results of the study revealed that 27.5% of the respondents indicated that they strongly agreed that Procurement system intergration has positive influence on overall organization quality management, 34.9% indicated agreed, those who indicated that they wer unsure were 12.8% while only 16.5% indicated disagreed and 10.1% of them indicated strongly disagreed. Majority, 80.7% of the respondents strongly agreed that total quality management had been witnessed in the organization as a result of enhanced procurement system integration, 19.3% indicated that they were unsure. The findings of the study also revealed that 78.9% of the respondents strongly agreed that Procurement system integration had resulted to customer focus in the organization hence resulting to supply chain performance while only 21.1% of them indicated agreed. Moreover, 57.8% of the respondents strongly agreed that the organization had witnessed continuous improvement with respect to procurement system integration activities while 42.2% of them indicated agreed. Finally, the results of the study revealed that 57.8% of the respondents strongly agreed that there was a relationship between quality management and supply chain performance in Kenya state corporations, 21.1 % both indicated agree and unsure. The implication of the results was that most of the respondents indicated that the statements relate to the influence of quality management on supply chain performance in Kenya's states Corporations by a mean of 4.37. The responses given by the respondents had a small variation (standard deviation=0.76). The findings of the study were consistent with the findings of a study by Naji (2015) who stated that supplier relationship management and quality approach that with development of communication technology and business globalization, organizations' have witnessed significant change in procurement activities, with electronic procurement becoming the main hub of procurement activities.

## Supply Chain Performance

On the extent to which supply chain performance in the state corporations in Kenya, respondents were asked to indicate the extent to which it was affected. The data was collected from the different indicators of the variable supply chain performance in the state corporations which was ordinal categorical. The data was therefore presented in frequency tables with the mode being used as the appropriate measure of central tendency. The first indicator for the dependent variable required to know the supply chain performance in the state corporations was timely delivery of goods and services was, 60% of the respondents had 0-20%, 8% had 20-30%, 7% had 30-40%, 25% had 40-50%, 0% had over 50%. The modal class of the respondents who had over 0%-20% timely delivery of products. The mode was found to be 1 which implied that on average the supply chain performance in the state corporations on timely delivery of goods and services was between 0%-20%. When the respondents were asked what the level of transparency and accountability of procurement funds was, 50% of the respondents 0-20%, 5% had 20-30%, 13% had 30-40%, 30% had 40-50%, 2% had over 50%. The modal class of the respondents who had over 0%-20% transparency and accountability. The mode was found to be 2 which implied that on average the level of transparency and accountability of procurement funds in organizations was between 0%-20%. Finally, the respondents were asked what the level of quality of procured goods and services offered was, 55% of the respondents 0%-20%, 15% had 20-30%, 10% had 30-40%, 15% had 40-50%, 5% had over 50% The modal class of the respondents who had between 0%-20%, quality level. The mode was found to be 1 which implied that on average the level of quality of procured goods and services offered was between 0%-20%.

## Inferential Analysis Results

### Correlation Results

The findings of the study revealed that there was a positive and significant correlation between staff competency in procurement system integration on supply chain performance in Kenya's State Corporations as shown by a Pearson coefficient of 0.535 and a p-value of 0.000. This implied that enhanced staff competency, integration of procurement system so create awareness on system management, improvement of skills with respect to system utilization by the employees, increased employee performance as a result of procurement system integration and presence of a relationship between procurement system integration and enhanced employee skills leads to a positive and significant influence on procurement system integration on supply chain performance in Kenya's State Corporations. The study findings are consistent with the results of a study by Kraljic (2010) which indicated that system integration has also enhanced employees' skills through on the job training where employees have been able to develop adverse skills towards solving problems related to integrated procurement systems and other problems arising as a result of use of procurement system.

The results of the study indicated that there was positive and significant association between ICT in procurement system integration on supply chain performance in Kenya's State Corporations as shown by a Pearson coefficient of 0.316 and a p-value of 0.001. This meant that increase in the availability of sufficient ICT, integration of employees through procurement system in the organization so as to enable the understanding and utilization of IFMIS systems, enhancement of enterprise resource planning through the procurement system integration, effective use of ICT applications in the organization and effective ICT application leads to a positive and significant influence on procurement system integration on supply chain performance in

Kenya's State Corporations. The study findings were consistent with the results of a study by Fasanghari (2014) which concluded that Information Technology and Supply Chain Management is much larger as it facilitates inter-organizational communication and in turn, reduces cycle times and develops collaborative work.

Moreover, the correlation results showed that Supplier costs had a positive and significant association with procurement system integration on supply chain performance in Kenya's State Corporations as shown by a Pearson coefficient of 0.702 and a p-value of 0.000. This implied that the use of procurement system integration to reduce cost, adoption of Integrated financial management information system, use of procurement system integration to improve the requisition to order cost, adoption of procurement system integration to ensure short transaction cycle and the presence of a positive relationship between cost and supply chain performance leads to a positive and significant influence on procurement system integration on supply chain performance in Kenya's State Corporations. The study findings are consistent with the results of a study by Rotich (2011) which concluded that Integrated Supply Management (ISM) in cost management controls significance of average

inventory is that inventory cost is a function of average inventory. Working capital is tied up in material rather than an alternative asset.

Lastly, the results of the study showed quality management had a positive and significant association with procurement system integration on supply chain performance in Kenya's State Corporations as shown by a Pearson coefficient of 0.387 and a p-value of 0.000. This implied that an increase in quality management practices such as procurement system integration, enhanced procurement system integration, use of procurement system integration to improve customer focus in the organization, presence of a relationship between quality management and supply chain performance in Kenya state corporations leads to a positive and significant influence on procurement system integration on supply chain performance in Kenya's State Corporations. The study findings were consistent with the results of a study by Naji (2015) who stated that supplier relationship management and quality approach that with development of communication technology and business globalization, organizations' have witnessed significant change in procurement activities, with electronic procurement becoming the main hub of procurement activities.

**Table 1: Correlation Results**

Correlations		Staff Competency	ICT applications	Supplier Costs	Quality management
<b>Staff Competency</b>		Pearson Correlation	1		
		Sig. (2-tailed)			
<b>ICT</b>		Pearson Correlation	-0.137	1	
		Sig. (2-tailed)	0.157		
<b>Supplier Costs</b>		Pearson Correlation	.414**	0.042	1
		Sig. (2-tailed)	0.000	0.666	
<b>Quality management</b>		Pearson Correlation	.263**	0.033	.451**
		Sig. (2-tailed)	0.006	0.736	0.000

\* Correlation is significant at the 0.05 level (2-tailed).

### Regression Results

The study findings revealed that Staff Competency, ICT, Supplier Costs and Quality management all accounts for 74.1% of the variation in procurement system integration on supply chain performance in

Kenya's State Corporations. This was shown by a by an R-square value of 0.741. The regression results showed that R was 0.861 which showed that the correlation between the independent variables and the dependent variable is positive.

**Table 2: Model Summary**

	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.861	0.741	0.728	0.2174

The results of the study also showed that the overall regression model linking staff competency, ICT, Quality management, Supplier Costs and the supply chain performance was significant as indicated by a significant F (5,103) statistic as indicated by (0.000) significance level which was less than 0.05 at 5% level

of significance. F calculated was 58.948 while F critical was 2.303. F calculated was greater than the F critical (58.948>2.303), this showed that the overall model was statistically significant at 5% significance level. The results of the study were as shown in table 3.

**Table 3: Analysis of Variance**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.928	5	2.786	58.948	.000
	Residual	4.867	103	0.047		
	Total	18.796	108			

The the optimal multivariate Regression Model for the study was as indicated below;

$$\text{Supply Chain Performance} = 0.165 + 0.281 \text{ Staff Competency} + 0.140 \text{ ICT Applications} + 0.364 \text{ Costs} + 0.204 \text{ Quality Management}$$

The results of the study indicated that staff competency had a positive and significant effect on procurement system integration on supply chain performance in Kenya's State Corporations ( $\beta = 0.281$ , Sig = 0.000). This implied that enhancement of staff competency, adopting procurement system integration to create awareness on system management, improvement of skills by the organization employees with respect to system utilization use of procurement system integration to the organization to increase employee performance led to 0.281 unit increase in effective procurement system integration on supply chain performance in Kenya's State Corporations. The findings agreed with

the findings of a study by Kraljic ( 2010) which indicated that system integration has also enhanced employees' skills through on the job training where employees have been able to develop adverse skills towards solving problems related to integrated procurement systems and other problems arising as a result of use of procurement system. Moreover, the findings of the study also indicated that ICT application had a positive and significant effect on procurement system integration on supply chain performance in Kenya's State Corporations ( $\beta = 0.14$ , Sig = 0.000). This implied that an increase in the availability of sufficient ICT applications, integration of employees through procurement system at the organization so as to enable the understanding and utilization of IFMIS systems, enhancement of enterprise resource planning through the procurement system integration, effective use of ICT applications in the organization and effective ICT

applications leads to 0.14 unit increase in effective procurement system integration on supply chain performance in Kenya's State Corporations. The findings agreed with the findings of a study by Fasanghari (2014) which concluded that Information Technology and Supply Chain Management is much larger as it facilitates inter-organizational communication and in turn, reduces cycle times and develops collaborative work.

In addition, the findings of the study also revealed that that costs had a positive and significant effect on procurement system integration on supply chain performance in Kenya's State Corporations. ( $\beta = 0.364$ , Sig = 0.000). An increase in integration of procurement systems, adoption of Intergrated financial management information system, use of procurement system integration to improve the requisition to order cost, adoption of procurement system integration to ensure short transaction cycle and the presence of a positive relationship between cost and supply chain performance leads to 0.364 unit increase in effective procurement system integration on supply chain performance in Kenya's State Corporations. The findings agree with the findings of a study by Rotich (2011) which concluded that Integrated Supply Management (ISM) in cost

management controls significance of average inventory is that inventory cost is a function of average inventory. Working capital is tied up in material rather than an alternative asset.

Regression results also showed that quality manangement had a positive and significant effect on procurement system integration on supply chain performance in Kenya's State Corporations. ( $\beta = 0.204$ , Sig = 0.049). An increase in quality management practices such as procurement system integration, enhanced procurement system integration, use of procurement system integration to improve customer focus in the organization, presence of a relationship between quality management and supply chain performance in Kenya state corporations leads to 0.364 unit increase in effective procurement system integration on supply chain performance in Kenya's State Corporations. The findings agreed with the findings of a study by Naji (2015) who stated that supplier relationship management and quality approach that with development of communication technology and business globalization, organizations' have witnessed significant change in procurement activities, with electronic procurement becoming the main hub of procurement activities.

**Table 4: Regression Coefficients**

<b>Coefficients</b>	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>
(Constant)	0.165	0.286		0.577	0.565
Staff Competency	0.281	0.048	0.328	5.823	0.000
ICT applications	0.140	0.026	0.284	5.446	0.000
Supply Chain Costs	0.364	0.052	0.439	7.045	0.000
Quality management	0.204	0.058	0.023	3.517	0.049

## CONCLUSION

The study made conclusions per objective based on the summary findings. The conclusions enabled the study to come up with the recommendations. The study concluded that employee's skills positively and significantly influenced effective procurement system integration on supply chain performance in Kenya's State Corporations. The study concluded that

enhanced employees skills, integration of procurement system to create awareness on system management, improvement of skills with respect to system utilization by the employees, increased employee performance as a result of procurement system integration and presence of a relationship between procurement system integration and enhanced employee skills positively influences

effective procurement system integration on supply chain performance in Kenya's State Corporations.

Moreover, the study concluded that ICT application positively and significantly influences effective procurement system integration on supply chain performance in Kenya's State Corporations. The study concluded that an increase in the availability of sufficient ICT applications, integration of employees through procurement system in the organization so as to enable the understanding and utilization of IFMIS systems, enhancement of enterprise resource planning through the procurement system integration, effective use of ICT applications in the organization and effective ICT application positively influences effective procurement system integration on supply chain performance in Kenya's State Corporations.

The study also concluded that costs positively and significantly influences effective procurement system integration on supply chain performance in Kenya's State Corporations. The study established that the use of procurement system integration has resulted to cost reduction. The study also established that the organization has witnessed effectiveness in administration cost through IFMIS. The study further concluded that procurement system integration has resulted in effective requisition to order cost. The study also established that through procurement system integration, the organization has witnessed short transaction cycle hence contributing to supply chain performance. Additionally, the study established that there is a positive relationship between cost and supply chain performance.

Further, the study concluded that quality management significantly and positively influences effective procurement system integration on supply chain performance in Kenya's State Corporations. The study established that procurement system integration positively influences the overall organization quality management. The study

concluded that total quality management has been witnessed in the organization due to enhanced procurement system integration. The study established that procurement system integration has led to customer focus in the organization thereby resulting in supply chain performance.

Finally, the study concluded that time management positively and significantly affects effective procurement system integration on supply chain performance in Kenya's State Corporations. Procurement system integration has positive influence on time management. The study established that the organization has witnessed effective procurement cycle time due to procurement system integration hence affecting supply chain performance. The study further established that there is time delivery of procurement services in the organization. The study also established that the integration of procurement systems have led an improvement in warehousing activities. The study further concluded that the integration of procurement system has led to an improvement in sourcing leading to a reduction in order cycle time.

## **RECOMMENDATIONS**

The study recommended supply chain companies in state corporations to adopt integrated procurement systems so as to enhance their employees skills thereby leading to awareness on system management. The study further recommended state corporations to equip their employees with relevant skills especially with respect to system utilization. The study recommends state corporations to ensure enhanced their employee skills through integrated procurement systems as this will improve their performance and efficiency.

The study recommended the supply chain companies in state corporations in Kenya to ensure there are sufficient ICT applications. There is also need for state corporations to ensure they have integrated procurement system so as to enable their employees

to understand and utilize IFMIS systems. The study further recommends supply chain companies in state corporations to ensure adopt integrated procurement systems to enhance their Enterprise resource planning.

Further, the study recommended the supply chain companies to enhance the integration of their procurement systems as it has a positive influence on overall organization quality management. To ensure there is total quality management, supply chain companies in state corporations in Kenya should integrate their procurement systems. The study also recommends the supply chain companies in Kenya to adopt integrated procurement systems since it has a

positive influence on time management, reduces order cycle time, improves warehousing activities.

#### **Recommendations for Further Study**

The study recommended future scholars to investigate more on other determinants influence of procurement system integration on supply chain performance in Kenya's State Corporations a since employees' skills, ICT applications, costs, quality management and time management account for 74.1% of the variation in effective procurement system integration on supply chain performance in Kenya's State Corporations. Further studies should also be carried out to establish factors that influence effective procurement system integration on supply chain performance in private sector in Kenya.

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