

EFFECTS OF STRATEGIC SOURCING IN SUPPLY CHAIN MANAGEMENT IN SELECTED PUBLIC UNIVERSITIES WITHIN NAKURU COUNTY

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ABSTRACT

This research focuses on the effects of strategic sourcing in supply chain management in selected public universities in Nakuru County. This is because there has been a great concern in many public institutions due ineffective strategic sourcing in supply management hindering productivity and service delivery. The specific objectives of the study were establish the effect of strategies sourcing policies in supply chain management; to determine the effect of ICT adoption in strategic sourcing on supply chain management; to determine the effects of strategic operating processes in enhancing supply chain management and to establish strategic sourcing related challenges faced by public universities. The study adopted descriptive design to describe the effects of strategic sourcing on supply chain management. The target population and sample was from Procurement staff from in the public universities in Nakuru County. The study adopted census technique in selecting all the procurement staff to participate in the study. Descriptive statistics: mode, mean, frequencies and percentages as well as inferential statistics, Pearson correlation analysis were used in data analysis. The study found out that although strategic sourcing was moderately applied, the use of strategic sourcing significantly improved supply chain management especially in terms of cost, lead time and quality of goods procured. Organizational factors which include bureaucracies in operations and procurement legislations presented major obstacles to the full implementation of strategic sourcing in public universities. The study, therefore, recommends for public universities to conduct organizational scanning, establishing the most appropriate strategic sourcing tools that could be used to enhance efficiency in supply chain management and implementing them accordingly. University administrations should create an enabling environment for innovation that enhances adoption of various elements of strategic sourcing.

Key Words: *strategic sourcing, supply chain management, public universities, Nakuru County*

Introduction

A supply chain can be visualized as a network of firms servicing and being serviced by several other firms. However, it is conceptually easier to imagine a chain as a river, originating from a source, moving downstream and terminating at a sink.

Strategic sourcing is a critical challenge faced by many firms involved in the latest innovations of supply chain management. With the recent emphasis on just-in-time (JIT) manufacturing philosophy, strategic sourcing that establishes a long-term relationship with suppliers has become even more important and vital for enhancing organizational performance. In today's dynamic environment, strategic relationship with suppliers is a key ingredient to the success of a supply chain. Supply chain management (SCM) is the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers. Supply Chain Management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption (supply chain).

As organizations strive to focus on core competencies and becoming more flexible, they reduce their ownership of raw materials sources and distribution channels. These functions are increasingly being outsourced to other entities that can perform the activities better or more cost effectively. The effect is to increase the number of organizations involved in satisfying customer demand, while reducing management control of daily logistics operations. Less control and more supply chain partners led to the creation of supply chain management concepts. The purpose of supply chain management is to improve trust and collaboration among supply chain partners, thus improving inventory visibility and the velocity of inventory movement (Gillingham, 2003)

Gillingham (2003), defines purchasing as obtaining from external sources all goods and services which are necessary for running, maintaining and managing the company's primary and support activities at the most favourable conditions, purchasing along with such activities as production. Warehousing and transportation is one of the links in the sequence of process by which design and resources are converted into finished goods to satisfy customer needs.

Today, more than ever, it has become increasingly important for public organizations to have an elaborate purchasing system to be able to compete favourably, in this era of high competition. With the current cut throat competition in all industries, business organizations with elaborate retail outlets have high chances of reaching its customers and being able to realize its sales target. However, in their quest of outdoing each other in the business world, companies are also increasingly being faced with the ethical regulations, social responsibility and environmental concerns that they must address in their course of operations. With the present heightened ethical and environmental concerns, companies which operate in ethical manner and care about the environment are bound to succeed in their business endeavors than those ones which are not (Bloomberg and Lemay, 2002).

Strategic sourcing has a lot of effects on organizational productivity, and this has been neglected by many scholars and researchers. The study therefore sought to investigate the effect of strategic sourcing in supply chain management in public universities a case study of selected public universities in Kenya.

The PPOA (2011) sampled Egerton University in assessing the level of compliance with the Public Procurement and Disposal Act, 2005. The team's overall assessment of the compliance level for Egerton was calculated to be 64.05% for the period reviewed with relevant PPDA, regulations and guidelines in respect of sampled procurement transaction reviewed. This was above the target of 60% compliance set in the Performance Monitoring Plan under RPPS II. Although the procurement performance based on the PPDA guidelines was satisfactory, there were some weaknesses that needed to be addressed, to improve procurement performance on account that public universities as procurement entities are

supposed to reflect exemplary performance amongst the various PEs and contribute in knowledge creation on best practices in public procurement. A similar procurement audit at the Kenya Polytechnic University in 2010 revealed that the level of compliance was below the threshold of 60% which exposed the university to high procurement costs and inefficiencies in the supply chain (PPOA, 2010).

Statement of the Problem

Strategic sourcing in Supply chain management in organization is a very important component in the success of operations in any organization. The logic of this trend is that a company increasingly focuses on those activities in the value chain where it has a distinctive advantage, and outsource everything else. This movement has been particularly evident in logistics where the provision of transport, warehousing and inventory control is increasingly subcontracted to specialists or logistics partners. Also, managing and controlling this network of partners and suppliers requires a blend of both central and local involvement. Hence, strategic decisions need to be taken centrally, with the monitoring and control of supplier performance and day-to-day with logistics partners being best managed at a local level (Chopra and Meindl, 2001). According to Graham and Bennet (1998), sourcing activity can be considered strategic only when companies examine supply market options to address critical business issues.

Efficiency in supply chain in public institutions in Kenya has been an issue of concern. Many public institutions have been termed inefficient and non compliant with the PPDA. Procurement audits by the PPOA in selected public universities revealed that some public universities had attained the minimum threshold compliance by a marginal gap while others had not (PPOA, 2011; 2010). This implies the need for interventions to improve compliance and efficiency in procurement in public Universities. Universities also serve as grounds for knowledge creation and enhancing best practices, therefore they have a duty to demonstrate to the rest of the country the best practices by being leaders in their implementation. This study therefore sought to establish the strategic sourcing practices and their effects in supply chain management in Public Universities.

General Objective

The main objective of the study was to determine the effect of Strategic Sourcing in Supply Chain Management in selected Public Universities in Nakuru County.

Specific Objectives

1. To establish the effects of strategic sourcing policies on supply chain management in Public Universities.
2. To determine the effects of ICT adoption in sourcing on Supply Chain Management in Public Universities.
3. To determine the effects of strategic sourcing operating processes on supply chain management in Public universities.
4. To establish the challenges experienced in implementing strategic sourcing in public universities.

Research Hypotheses

H₀₁: Strategic sourcing policies do not affect supply chain management in Public Universities in Nakuru County

H₀₂: The level of adoption of ICT in strategic sourcing does not affect supply chain management in Public Universities in Nakuru County

H₀₃: Strategic sourcing operating processes do not affect supply chain management in Public Universities in Nakuru County

Literature Review

Theoretical Framework

There is no single theory to explain the adoption of strategic sourcing in organizations but this study relates the application of strategic sourcing with the game theory.

Game Theory

Game theory is the formal study of conflict and cooperation. Game theoretic concepts apply whenever the actions of several agents are interdependent. These agents may be individuals, groups, firms, or any combination of these. The concepts of game theory provide a language to formulate, structure, analyze, and understand strategic scenarios.

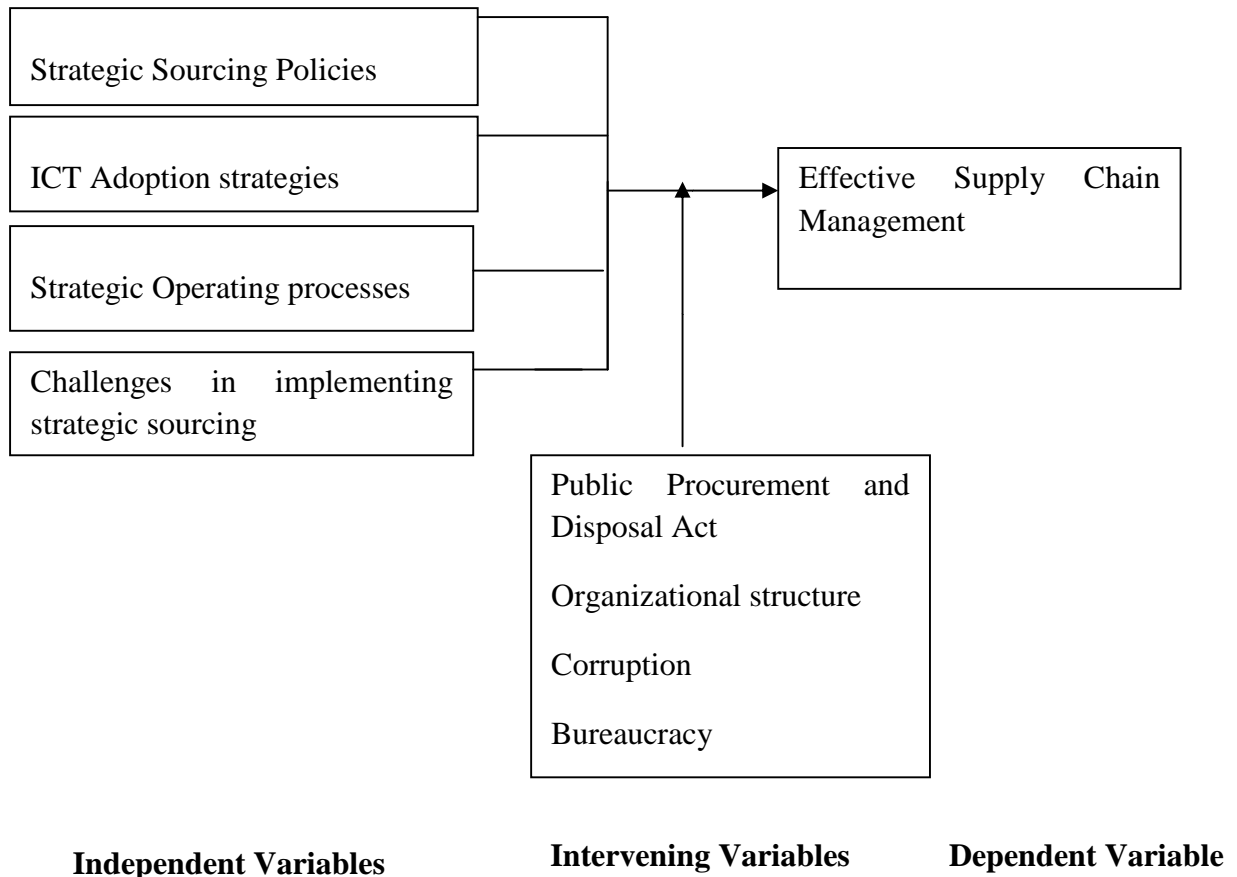
The earliest example of a formal game-theoretic analysis is the study of a duopoly by Antoine Cournot in 1838. The mathematician Emile Borel suggested a formal theory of games in 1921, which was furthered by the mathematician John von Neumann in 1928 in a “theory of parlor games.” Game theory was established as a field in its own right after the 1944 publication of the monumental volume “Theory of Games and Economic Behavior” by Von Neumann and the economist Oskar Morgenstern. This book provided much of the basic terminology and problem setup that is still in use today. In 1950, John Nash demonstrated that finite games always have an equilibrium point, at which all players choose actions which are best for them given their opponents’ choices (Turocy & Von Stengel, 2001).

A buyer can structure an analogous situation by negotiating with two sellers independently. Suppose they have comparable financial strength and similar cost structures for a commoditized product. The lowest price each is willing to quote will be the same, at a minimal profit margin. If the bids are not converging, the buyer’s tactic is to continue the negotiation by revising the floor price progressively. If the bids do converge, this is a sign that the prisoner’s dilemma has played out. The bid pattern aids the buyer in price discovery even when supply market scenarios and price structures are fluid. This is especially helpful in the indirect space where not many categories are indexed and easy to track.

All the cards on the table real life is not always as simple as the game implies, of course. Two equal bids might instead be the result of collusion between the sellers. If they are part of a known cartel, game theory won’t apply since it works best in “oligopolistic” situations. This could have a bearing on certain indirect categories like advertising and marketing services as a result of continuous supplier rationalization and supplier stickiness factors. Certain commodities can also become cartelized because of changes in industry structure leading to formation of consortiums. As an example, the market for copier paper shrinks and marginal manufacturers exit, leading to greater concentration. Fewer players mean greater alignment of interests and easier opportunity to collude.

Conceptual Framework

There are two variables on this topic independent and dependent. The independent variable is sourcing decisions while the dependent variable is organizations performance. The research on this topic reveals that there both positive and negative correlation between Strategic Sourcing and effective Supply Chain Management



Conceptual Framework

Source: Author (2013)

Strategic Sourcing Policies

Strategic Sourcing Policies see this activity as being concerned with setting the priorities against which organization operates. Allocation of resources and the ignition of action are included here. While these and other activities form this as a category of their own, there is a degree of overlap with other sets. A related statement which follows is indicative in our view of the problem with man in the organizations. Usually each department will find the bulk of its activities in one or other set. Bulk will tend to determine the main focus and culture that is appropriate to it. It’s argued that the main point here is that expectations of those who design organizations role of purchasing and those who undertake the tasks, will establish the culture and the category in which purchasing has to operate.

ICT Adoption Strategies

Strategic sourcing is a critical challenge faced by many firms involved in the latest innovations of supply chain management. With the recent emphasis on just-in-time (JIT) philosophy, strategic sourcing that establishes a long-term relationship with suppliers has become even more important and vital for enhancing organizational performance. Procurement activities in large part support a firm's inbound logistics and are vital to value creation. A firm's sourcing strategy is therefore a key driver of an effective supply chain (value system). Innovations in technology and increased global competition provide opportunities and challenges that drive firms to continuously evaluate and modify their sourcing strategies.

Effective Supply Chain Management

Our decision making model is based on Albania (2003) and it contains the following components: sourcing location, sourcing relationship and sourcing option. These components are elaborated below. Sourcing can take place on several locations, for which the term 'global sourcing' is used. Murray (2005) define global sourcing as: "global sourcing involves setting up production operations in different countries to serve various markets, or buying and assembling components, parts or finished products world-wide".

According to Albania (2003) a more general definition of global sourcing is needed: "finding and managing sources for production of final products on a world-wide basis". A number of possible options can be distinguished, such as sourcing at the location of the client (in the same building), from somewhere in the country where the client is situated, from neighboring countries, or from other continents. The sourcing locations also need to be clarified: In onsite sourcing the activity is provided at the client location. In onshore sourcing the sourced activity is provided from the same country, but from another location than the premises of the client. Home country, not at client location; in near shore sourcing the sourced activity is provided from an adjoining country or region; In offshore sourcing the sourced activity is provided from another continent/region of the world.

Strategic Sourcing Policies Put in Place in Supply Chain Management

Strategic sourcing is a supply management tool that delivers significant cost reductions and other benefits. More specifically, it's a periodic event that includes the identification and selection of initial commercial arrangements with a selected supplier that either creates or resets a relationship. That sounds simple enough, but what makes strategic sourcing different from a traditional sourcing activity? After all, "identifying and selecting initial commercial arrangements" can just as easily be accomplished with the old "lowest of three bids" process, right? Not quite.

Strategic sourcing requires that organizations divide their spend into categories and then classify the categories based on the importance of that product or service, and on the complexity of the supplier marketplace. From there, the purchasing organization - and the supplier organization - must recognize that various relationships are required. At one end, the least strategic relationships might be based on cost, but at the other end, the most strategic suppliers are chosen for their ability to create new business opportunities or technological advances. Specifically targeting or searching for suppliers in such a formalized manner, to fill this role is what strategic sourcing is all about.

Strategic sourcing is a process where several purchasing activities are streamlined to support a total supply chain vision focusing on the ultimate customer. The following sections provide a review of purchasing literature in terms of the main elements of strategic sourcing: a)

strategic elevation of the Purchasing function, b) internal coordination with other functions, c) supply-base optimization and buyer-seller relationships, and d) integration and early involvement of suppliers in planning and design processes (Mullins, 2005).

Internal Coordination between supplier and purchasing: The inter-dependence between Purchasing and other functions is becoming stronger. Purchasing increasingly takes part in activities that have been traditionally assumed to be other functions' responsibilities, such as product design and development. In return, the traditional purchasing decision of which vendor to select is expanding to involve departments other than procurement, especially when long-term relationships and outsourcing are utilized (Cavinato, 1991). The resulting increased internal coordination is evident from greater integration, more top-management involvement and stronger cross-functional teams. Earlier research has shown that better integration among different functions lead to price reduction and savings, inventory reduction, reduced clerical work and better delivery and service (Mentzer, 2001).

Effect of ICT Adoption Strategies on Supply Chain Management

Today, more than ever, it has become increasingly important for business organizations to have an elaborate procurement system to be able to compete favourably in this era of high competition. With the current cut throat competition in all industries, business organizations with elaborate retail outlets have high chances of reaching its customers and being able to realize its sales target. However, in their quest of outdoing each other in the business world, companies are also increasingly being faced with the ethical regulations, social responsibility and environmental concerns that they must address in their course of its operations.

With the present heightened ethical and environmental concerns, companies which operate in ethical manner and care about the environment are bound to succeed in their business endeavors than those ones which are not. Retail supply chains in the fashion industry are networks distributions options which performs the roles of procurement of, conversion of the materials into intermediary and finished goods, and the distributing of these end products to customers. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm (Arnott, 2007).

Operating Processes

Public procurement has, for long, been overshadowed with inefficiency, corruption and disregard of fundamental "value for money" considerations. This has adversely impacted the rate and quality of progress in realizing the objectives of national development, especially in developing and transition countries (Mullins, 2002)

Employees may neither engage in, nor give the appearance of engaging in, dishonest or unethical actions. Both are injurious to the public's perception of honest government. As a government employee, you might have access to procurement and other nonpublic information that could affect a contract bid or the award process (Wymer and Regan, 2005). Improper disclosure of such protected information could violate numerous laws, as well as ethics rules. It also could subject you to administrative actions, as well as civil or criminal penalties.

Management in contracting authorities should ensure that there is an appropriate focus on good practice in purchasing and, where there is a significant procurement function that procedures are in place to ensure compliance with all relevant guidelines. Officials involved in procurement must not make improper use of their position (Tan *et al.*, 2009). Officials may

have access to very confidential and/or market sensitive information. It is unethical to use inside information provided to the agency as part of a tender process, either for the material benefit of the official or for another person. Criminal sanctions apply to such behaviour.

Challenges Facing Implementation of Strategic Sourcing

Accordingly, many purchasing organizations are being challenged to increase the level of "sourcing" to tap into promising opportunities and to fend off competition. Unfortunately, many companies are ill equipped for the challenge: though global sourcing employs the same set of activities as domestic sourcing, there is also greater complexity. Based on the experience, most companies need to enhance the skills of their purchasing organizations to pursue sourcing effectively. Sourcing has become growing phenomenon in the world trade, Considerable growth in sourcing is not surprising that a sizeable amount of research has now been devoted disintegration of production. Productivity is achieved when firms minimize its costs and maximizes its profit. Sourcing and organizations providing are two variables but sourcing is independent while productivity is dependent (Albania, 2003).

Critique of Existing Literature

Procurement staff will need training, particularly in how to resolve dilemmas and competing priorities. Useful monitoring and due diligence tools include Supplier Engagement Forums and supplier questionnaires during tendering and at other stages of the relationship such as contract renewal. Public officials should not accept benefits of any kind from a third party which might reasonably be seen to compromise their personal judgment or integrity. According to Thomson & Jackson, (2007), the actions of public officials must be above suspicion and not give rise to any actual or potential conflict of interest and their dealings with commercial and other interests should bear the closest possible scrutiny. It is not possible to give guidelines for every conceivable situation that may arise but if a doubt arises about a particular situation line management should be consulted.

Accountability shows how the public interest has been protected in the expenditure of public funds. Maintaining integrity in public procurement is one of the most important pillars of modern national procurement systems (Barrett, 2000). Ensuring the accountability of procurement officials is perhaps the most essential aspect of this goal. The accountability of procurement officials is not only important from a public or administrative law perspective, but also has economic implications

Summary and Research gap

This chapter presents the data collected from primary and secondary sources. This literature was significant to the study as it discusses the effect of Strategic Sourcing in Supply Chain Management in Public Universities. Most of the literature concentrates on Strategic Sourcing done at work place since it is an important way of maximizing human resource; strategic sourcing policies put in place in Supply Chain Management; the benefits of implementing Strategic Sourcing in supply chain partnership management and ethical issues affecting the supply chain management process in the public sector.

It is evident that effective sourcing decision will only be made when all relevant factors have been considered and weighted against the risks and opportunities, which will apply not all source decisions, will justify the same level of attention, but major purchase will always repay careful decision making. The study shows once adopted sourcing is the freeing of management time to concentrate on core business operations improving organizational focus make capital funds available and gain access to world class capabilities. The study therefore bridges the gap by conducting a survey study of selected public universities. It is apparent

from the literature review that a gap exists between the Strategic Sourcing in Supply Chain Management.

Methodology

Research Design

The study was conducted using descriptive survey research design. According to Kombo and Tromp (2006), descriptive studies describe the state of affairs as it exists and aims at exploring social relations and describes realities and experiences of the respondents. This study sought to highlight the effects of strategic sourcing practices on supply chain management in public Universities. This was achieved by eliciting information from procurement staff on the state of strategic sourcing in their institutions as well as analyzing and presenting the findings on the same. This situation did not require manipulation of variables hence descriptive design was appropriate.

Target Population

The study will target four public universities with campuses in Nakuru County, that is Kenyatta University, Egerton University, Jomo Kenyatta University of Agriculture and technology, and Nairobi University.

Sampling Frame and Technique

According to Oso and Onen (2005), sampling frame is the population from which the study sample will be drawn. In this study, the sampling will be drawn from the employee payrolls for all the university workers. These will be obtained upon request from the human resource officers in the institutions under study.

According to Kasomo (2007), a sample is often described as being representative if certain known percentage, frequency distributions of elements' characteristics within the sample are similar to the corresponding distributions within the whole population. The bigger the sample size the less the sampling biasness. According to Mugenda and Mugenda (2003), a minimum of 10% of the target population should be included in the sample when dealing with a heterogeneous sample. This study adopted census sampling technique where all the procurement staff of public universities in Nakuru County were involved in the study.

Data Collection Procedure

The researcher personally administered the questionnaires to the respondents and this was done after receiving permission from the University administrations to carry out the research in the identified area. Respondents were assured both verbally and in writing that their responses would be held confidential and would be used only for research purposes.

Data Processing and Analysis

At the end of data collection, all completed questionnaires were coded and organized for computer analysis. The data was analyzed using Statistical Package for the Social Sciences (SPSS) version 21.0 to generate findings in the data collected. The study sought to analyze for the effects of strategic sourcing on supply chain management whereby this was accomplished using descriptive statistics which included: mean, frequencies and percentages. Research hypotheses were tested by establishing the cause effect relationships between the independents and dependent variables using the Pearson correlation analysis. Presentation of the findings was made in appropriate and well interpreted tables, diagrams and figures.

Research Findings

General Information

The study adopted a census design where all the 88 procurement staff in the public universities were issued with questionnaires. However, only 83 (94.3%) were returned. Majority of the procurement staff in public universities and who participated in the study were female 43(51.8%). This implies that universities are considering gender balance in recruitment of their staff. The age bracket with majority of the procurement staff from the public universities was 36-45 years accounting for 39.8%. This implies that most of the staff are slightly above the age bracket for the youth.

The findings on the highest education level of staff indicate that most of the procurement staff in public universities in Nakuru have diploma education level 48.2% followed by undergraduate degrees (26.5%) while masters were 5.3%. None had O'level education alone. This shows that universities have a strict minimum criteria for recruiting procurement staff beginning from diploma. Also this implies that target respondents were in a position to respond the questionnaire accordingly. Majority of the procurement staff 36.1% had worked in the current organization for a period of between 6 – 10 years while a few 19.3% had worked for over 15 years. This implies that most of the staff who took part in the study had experience with the current procurement systems used.

Emphasis on Strategic Sourcing

On whether the management of Egerton University procurement department emphasized on the use of strategic sourcing, majority of the procurement staff (81.9%) agreed while 18.1% disagreed. This indicates that procurement functions in public universities have to some extent adopted the use strategic sourcing in their organizations. Majority of the staff (51.8%) identified that strategic sourcing was moderately applied in their organization; none cited less extent or no practice at all. 39.8% indicated practice to a large extent while 8.4% cited strategic sourcing at a very large extent. This implies that application of strategic sourcing was moderately practiced at universities.

Strategic Sourcing Policies in Supply Chain Management

The first objective of the study was to establish the effect of strategic sourcing policies on supply chain management in Public Universities. This was achieved by first identifying the strategic sourcing policies in place and then determining how these affected the cost of procuring goods and lead time. Strategic policies were measured using statements to rate the opinions of procurement staff. Majority of the staff (50.6%) agreed that their organization put on mechanisms for regular review of procurement practices, 78.3% agreed that their organizations had mechanisms for realignment of organizational procurement needs with emerging market trends. Majority (44.6%) also strongly agreed that there were policies for guiding the analysis of how well current purchasing practice meets cost and performance criteria for the organisation, none strongly disagreed. On the policies for guiding in commodity profile analysis, spending patterns and trends for commodity usage, majority 48.2% of the procurement staff strongly agreed that they existed while 7.2% agreed. The organizations were also rated moderate on the existence of policies for the implementation of procurement assessment results cited by 51.8% who agreed, while 6.0% disagreed.

Strategic Sourcing Policies in Place

The most practiced policy was policies for guiding the analysis of how well current purchasing practice meets cost and performance criteria for the organization (mean = 3.81), followed by Policies to guide commodity profile analysis, spending patterns and trends for commodity usage patterns (mean = 3.76), while the least practiced was guidelines for implementation of procurement assessment results (mean = 3.63)

Effects of Strategic Sourcing Policies on Cost of Procuring Goods

When staff were asked to indicate the effects of strategic procurement policies in place, majority (53.0%) indicated that the policies have led to significant decline in the procurement costs while 26.5% indicated that the costs had gone down by a small margin. This implies that the presence of strategic sourcing policies in place has influenced the strategic procurement practices that have an impact on reducing the cost of procuring goods and services.

Effects of Strategic Sourcing Policies on Lead Time

Strategic sourcing policies in place have led to reduced lead times though by small margins as identified by 68.7% of the procurement staff. However, minority (19.3%) were of the opinion that the policies significantly increased the procurement costs. 12% indicate no change. This signifies mixed feelings on whether the strategic sourcing policies in place affect procurement performance by shorting the time taken in raising an order and in the procurement of goods and services.

Relationship between Strategic Sourcing Policies and Supply Chain

In the study H_{01} : Strategic sourcing policies do not affect supply chain management in Public Universities in Nakuru County. Upon testing this using Pearson correlation analysis at a significance level of 0.05, the results are as per Table 1.

Table 1: Relationship between Strategic Sourcing Policies and Supply Chain Performance

		Correlations		
		Strategic sourcing policies	How policies affects cost	How policies affect lead time
Strategic sourcing policies	Pearson Correlation	1	-0.521**	-0.453**
	Sig. (2-tailed)		0.010	0.007
	N	83	83	83
How policies affects cost	Pearson Correlation	-0.521**	1	0.640**
	Sig. (2-tailed)	0.010		0.002
	N	83	83	83
How policies affect lead time	Pearson Correlation	-0.453**	0.640**	1
	Sig. (2-tailed)	0.007	0.002	
	N	83	83	83

** . Correlation is significant at the 0.01 level (2-tailed).

From the test results in Table 6, the implementation of strategic sourcing policies significantly reduces the procurement costs: $r = -0.521$, $P < 0.05$. Further, the results reveal

that adoption of strategic sourcing policies significantly reduces lead time in the acquisition of goods and services for public universities: $r = -0.453$, $P < 0.05$.

Therefore the study rejects H_{01} and accepts H_{11} which states that Strategic sourcing policies affects supply chain management in Public Universities in Nakuru County since it has been confirmed. These findings concur with (Mullins, 2005) who found out that having a clearly defined sourcing strategy significantly improves both the quality of the results and the speed required to achieve an organization's sourcing objectives.

ICT Adoption in Sourcing in Supply Chain Management

The second objective was on identifying the level of ICT adoption as a strategic sourcing tool and its effects on procurement performance. This was to establish from the staff whether ICT was employed in the various function of sourcing and the findings in this question revealed that all the staff agreed that ICT was used in sourcing of goods and services for the organization.

In the findings, the staff identified that the most common use of ICT in strategic sourcing was through the emailing of Requests for Quotations/proposals (mean = 4.45) where 75.9% indicated that this was used to a very large extent. This was followed by the use of vendor management system (mean = 3.67) which was adopted to a large extent according to 51.8% of the procurement staff. Use of enterprise resource planning (3.64) was also another method through which ICT was used as a strategic sourcing tool. 32.5% of the procurement staff cited implementation to a very large extent while 31.3% cited large extent. Online tendering and online buying were less practiced (Mean = 2.61, 3.10 respectively).

The findings on Table 4.8 imply that ICT is adopted as a tool for strategic sourcing in public universities. However, the most common way of adoption is on the sending of RFQs. Little attention is given to online tendering and online buying despite that opportunities they present in cutting down cost, and time in sourcing. Therefore mailing of quotations online is mostly used while online tendering and buying is poorly used in public universities in Nakuru County.

Effects of ICT as a Strategic Sourcing Tool on Supply Chain Performance

The use of ICT as a strategic sourcing tool was identified to have affected the supply chain performance in various extents: in increasing efficiency, 60.2% cited that ICT has improved efficiency to a very large extent in enhancing accuracy of information, 49.4% cited very large extent while 37.3% cited large extent. In enhancing customer relations, 51.8% of the procurement staff indicated that use of ICT has enhanced sourcing to a large extent. ICT has also reduced procurement costs to a large extent according to 60.2% of the procurement staff in public universities. In reducing the procurement time, 32.5% cited that lead time was reduced to a very large extent while 41.0% indicated that it was reduced to a large extent, finally on the quality of service, 37.3% cited that the quality of service improved to a large extent while 27.7% indicated that quality improved to a very large extent. This implies that use of ICT which is a key aspect in strategic sourcing improved the efficiency of procurement, accuracy of procurement information shared, customer relations, procurement costs, lead time in procurement and also improved the quality of goods and services procured.

Relationship between ICT Adoption in Strategic Sourcing and Supply Chain Performance

The second hypothesis of the study was H_{02} : The level of adoption of ICT in strategic sourcing does not affect supply chain management in Public Universities in Nakuru County.

This was tested by establishing the relationship between the mean level of ICT adoption and six dimensions of supply chain management as shown on the results in table 2.

Table 2: Relationship between ICT adoption in Strategic Sourcing and Supply Chain Performance

Table 10

		Increase in efficiency	Accuracy of information	Enhances good customer relation	Reduced procurement costs	Reduced lead time	Improved quality of service
ICT adoption	Pearson Correlation	0.577**	0.402**	0.401**	0.475**	0.369**	0.375**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.001	0.000
	N	83	83	83	83	83	83

** . Correlation is significant at the 0.01 level (2-tailed).

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

Correlation results on Table 4.10 indicate that there was a significant correlation between the level of adoption of ICT as a strategic sourcing tool and: increased supply chain efficiency $r = 0.577$, $p < 0.05$; accuracy in the information shared $r = 0.402$, $p < 0.05$; enhanced good customer relationships $r = 0.401$, $p < 0.05$; reduced procurement costs $r = 0.475$, $p < 0.05$; reduced lead time $r = 0.369$, $p < 0.05$; and improvement on the quality of service $r = 0.375$, $p < 0.05$. This implies that the use of ICT as a strategic sourcing tool significantly improves nearly all aspects of supply chain management in public universities in Nakuru County. The study therefore rejects H_{02} and accepts H_{12} which states that the level of adoption of ICT in strategic sourcing affects supply chain management in Public Universities in Nakuru County. This concurs with Folinas et al. (2004) who found out that the adoption of e-procurement systems envisage the enablement of streamlined and seamless supply chains whereby networks of suppliers, manufacturers and retailers are enabled to share information for developing collaborative competitive practices such as collaborative forecasting, planning and replenishment.

Strategic Sourcing Operating Processes in Supply Chain Management

In this section, the study sought to determine the strategic sourcing processes implemented by public universities and their effect on supply chain management specifically on cost, lead time and quality of goods purchased.

Rating by the level of emphasis on the adoption of various strategic sourcing practices and activities in the universities, the use of credit and debit cards was the most common practice (mean = 4.29) where 51.8% indicated that this was highly emphasized. The second most adopted practice was centralized purchasing for all goods (mean = 4.06), 41.5% indicated that this was very highly emphasized while 36.6% cited that they it was highly emphasized. Negotiations for strategic payment terms were also adopted (mean = 3.84), majority of the procurement staff 55.4% cited that it was highly emphasized. Use of long term contracts, and e- procurement were moderately emphasized, and supply chain integration, though it was largely adopted, organizations emphasis on the same was less, 56.6% cited that it was highly emphasized while 33.7% cited that it was moderately emphasized. Auctioning of obsolete items was also emphasized though to a moderate level at a mean of 3.84, 53.0% of the staff cited that it was emphasized in their departments.

This implies that generally universities in Nakuru County adopt certain aspects of strategic sourcing though in some cases there may be no defined objectives to pursue them. The simplest most common one is the use of fueling cards given to university drivers, and centralized purchasing. Therefore, centralized Purchasing for all organization goods and services are more emphasized while Supply chain intergration, long term contracts are moderately emphasized in public universities in Nakuru county.

Effects of Strategic Sourcing Processes on Cost Saving

In minimizing the cost of goods purchased, the use of credit and debit cards was identified as most efficient sourcing practice (mean = 4.16) where 51.8% termed it as very efficient, followed by auctioning of obsolete goods (mean = 4.14) where 48.2% termed it as very efficient and use of centralized purchasing cited by 55.4% as efficient and 28.9% as very efficient. Long term contracts were identified to have the least effect in cost minimization (mean = 3.17). The rating on the efficiency is also dependent on the application of strategic sourcing practices in the various institutions.

Effects of Strategic Sourcing Processes on Lead time

The findings show that in minimizing lead time, the use of debit/credit cards has had the biggest effect of all other strategic sourcing processes (mean =3.95) where 42.2% of the procurement staff indicate that this has been an efficient tool in cutting lead time while 27.7% rated is as very efficient. The second strategic sourcing procedure thought to have affected lead time is supply chain integration (mean = 3.92) which according to 42.2% of the procurement staff has been very efficient. Auctioning of obsolete goods and products has however been found to have the least effects on lead time (mean =3.11) since majority 54.2% cited moderate effects. This implies that strategic sourcing tools which cut down on the procedures involved and bureaucracies in the searching for potential suppliers and approval of orders have greater impact in cutting down on the lead time. For instance, use of credit card involves direct purchase of goods.

Effects of Strategic Sourcing Processes on Quality Improvement

The findings show that value engineering plays the highest role in enhancing quality improvement of procured goods (mean 3.89) according to 34.9% of the staff who termed it as very efficient, and 21.7% who termed it as efficient. Centralized purchasing was identified as the second most efficient process of improving on quality (mean =3.81) where 44.6% termed it as efficient, while 19.3% termed it as very efficient. The least contributing practice was auctioning which had little effects on the quality of goods procured (mean = 3.04). These findings imply that strategic sourcing practices had an impact on the quality of goods procured in the public universities in Nakuru County. However, majority of the strategic sourcing practices only had a moderate effect on the same.

Relationship between Strategic Sourcing Processes and Supply Chain Management

The third hypothesis H_{03} : Strategic sourcing operating processes do not affect supply chain management in Public Universities in Nakuru County. This was tested using Pearson correlation analysis between the level of emphasis on the various strategic sourcing processes applied and three dimensions of supply chain management that is: cost saving, quality improvement and lead time.

Table 3: Relationship between Strategic Sourcing processes and Supply Chain Management

		Emphasis on procedures	Cost saving	Quality improvement	Lead time
Emphasis on procedures	Pearson Correlation	1	0.753**	0.687**	0.760**
	Sig. (2-tailed)		0.010	0.008	0.005
	N	83	83	83	83

** . Correlation is significant at the 0.01 level (2-tailed).

Correlation results revealed that there existed significant and also very strong relationships between the level of emphasis of various strategic sourcing processes and: cost savings $r = 0.753$, $p < 0.05$; quality improvements $r = 0.687$, $p < 0.05$ and lead time $r = 0.760$, $p < 0.05$. This implies that the adoption and emphasis on strategic sourcing processes significantly affects the supply chain performance hence management. The study, therefore, rejects the null hypothesis H_{03} and accepts the alternative hypothesis H_{13} which states that strategic sourcing operating processes affect supply chain management in Public Universities in Nakuru County.

Challenges Experienced in Implementing Strategic Sourcing

Strategic sourcing is a new concept in procurement whose implementation does not go on without challenges. The most experienced challenge in implementing strategic sourcing in public universities in Nakuru Town was the bureaucratic procedures involved in procurement where 30.1% agreed while 27.7% strongly agreed. Organization culture was ranked second, support by the university management ranked third while compliance to the public procurement and disposal act was ranked fourth.

This implies that despite the benefits offered by strategic sourcing in enhancing procurement performance, organizational factors played a key role in ensuring the success in its implementation: the organizational policies, culture and procedure of doing things. The bureaucracies introduced by the PPDA also pose a great challenge innovating on the existing supply chains in which strategic sourcing was a key element. Therefore, bureaucratic procurement procedures by the institution was a major challenge experienced in implementing strategic sourcing.

Research Findings

The study's main purpose was to determine the effects of strategic sourcing in supply chain management in selected Public Universities in Nakuru County. The specific objectives were to establish the effect of strategic sourcing policies on supply chain management; to determine the effect of ICT adoption in sourcing on Supply Chain Management; to determine the effects of strategic sourcing operating processes on supply chain management and to establish the challenges experienced in implementing strategic sourcing in public universities in Nakuru County. A survey was done on among procurement staff in four universities where procurement staffs opinions were sought using a questionnaire, the opinions were rated on a five point scale. The major findings are presented as per the objectives.

Effects of Strategic Sourcing Policies on Supply Chain Management

Strategic sourcing policies in place were measured by rating the opinions of procurement staff. Overall, majority of the staff agreed that their organization put on mechanisms for regular review of procurement practices, over three quarters agreed that their organizations

had mechanisms for realignment of organizational procurement needs with emerging market trends. There were also policies for guiding the analysis of how well current purchasing practice met the cost and performance criteria for their universities. In the universities, there were also policies for guiding in commodity profile analysis, spending patterns and trends for commodity usage. The universities were also rated moderate on the existence of policies for the implementation of procurement assessment results. As a result of the existing strategic sourcing policies, majority of the procurement staff cited that the policies have led to significant decline in the procurement costs while reduced lead times

Effects of ICT Adoption in Sourcing on Supply Chain Management

Various forms of ICT are applied in strategic sourcing as identified by procurement staff though the application varied in magnitude. The most common use of ICT in strategic sourcing was through the emailing of Requests For Quotations/proposals followed by the use of vendor management system. Enterprise resource planning was also adopted through to a less extent in strategic sourcing. Online tendering and online buying were less practiced.

The use of ICT as a strategic sourcing tool was identified to have various effects on the supply chain performance which translates to supply chain management. ICT has improved efficiency in supply chain to a very large extent in addition to enhancing accuracy of information shared which is critical in sourcing and making sourcing decisions. In enhancing customer relations, 51.8% of the procurement staff indicated that use of ICT has contributed a lot in their organizations. ICT has also contributed in reducing procurement costs to a large extent and reduced the procurement lead time by shortening the procedures and increasing efficiency. The quality of service has also improved to a large extent according 27.7% of the procurement staff.

Effects of Strategic Sourcing Operating Processes on Supply Chain Management

In the third objective the strategic sourcing practices in place were also established and their effects on supply chain performance. Rating by the level of emphasis on the adoption of various strategic sourcing practices and activities in the universities revealed that the use of credit and debit cards was the most common practice followed by centralized purchasing for all goods consumed in the institution. These were either adopted consciously or unconsciously as strategic sourcing tools in the organizations. Procurement staff also indicated that in negotiations for strategic payment terms and supply chain integration measures were also adopted. Long term contracts, and e- procurement were moderately emphasized.

The use of credit and debit cards was identified as most efficient strategic sourcing practice which was efficient in cutting down cost, together with auctioning of obsolete goods and centralized purchasing. Long term contracts also minimized procurement costs. In minimizing lead time, the use of debit/credit cards has had the biggest effect of all other strategic sourcing processes followed by supply chain integration. Auctioning of obsolete goods and products has however been found to have the least effects on lead time. Value engineering plays the highest role in enhancing quality improvement of procured goods followed by centralized purchasing. Auctioning had little effects on the quality of goods procured.

Challenges Experienced In Implementing Strategic Sourcing

The concept of strategic sourcing being a new strategy in modern procurement practice was faced by a myriad of challenges. First the bureaucratic procedures involved in procurement of goods and services was a main challenge to strategic sourcing whose main objective is to cut

down the time and costs of acquiring goods and services. Organization culture, support by the university management ranked and compliance to the public procurement and disposal act were also identified to present significant challenges to the implementation of strategic sourcing in Public Universities which according to PPOA were public procuring entities subject to the provision of the procurement laws in the country.

Conclusions

Following the study findings and discussions thereof, the study makes the following conclusions: First the implementation of strategic sourcing policies in and organization presents a key strategy to enhancing supply chain efficiency. The policies are aimed at significantly reducing the procurement costs, and reducing lead time in the acquisition of goods and services. In public institutions, these are key challenges to procurement efficiency. The study also concludes that although the full potential of ICT has not been harnessed in public universities in enhancing procurement performance, to some extent ICT has been adopted either planned or unplanned as a strategic sourcing tool. However, the level of adoption remains moderate. Use of ICT as a strategic sourcing tool increases supply chain efficiency, accuracy in the information shared, enhances good customer relationships, reduces procurement costs, lead time and improves on the quality of goods and services procured either directly or indirectly.

Emphasis of such strategic sourcing processes as: centralized purchasing for all organizational goods and services, long term contracts, e-procurement, auctioning obsolete products, negotiating for strategic payment terms, value engineering for the organization products, use of credit/debit cards such as fueling cards and supply chain integration enhances cost savings, quality of goods and services and lead time. Finally the study concludes that organizational factors play a key role in the implementation of strategic sourcing in organizations.

Recommendations

The study recommends several measures to be taken by public universities in Nakuru County:

1. Universities should conduct organizational scanning to establish the most appropriate strategic sourcing tools that could be used to enhance efficiency in supply chain management and enlist them for adoption.
2. The use of ICT as a strategic sourcing tool should be enhanced in public universities since it presents opportunities for enhancing strategic sourcing.
3. Strategic sourcing is a current concept that builds on organizations ability to innovate on existing procedures therefore the organizations should create an enabling environment that enhances adoption of various elements of strategic sourcing.

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