



The Effect of Procurement Practices on Supply Chain Performance of Selected Public Universities in Kenya

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Abstract

In any institution, success is majorly determined by the procurement practices adopted and how well these procurement practices are implemented. The study sought to establish the effect of procurement practices on supply chain performance of selected public Universities in Kenya. The study adopted a cross sectional descriptive survey research design and the target population was all public Universities in Counties in the Eastern and Central Region of Kenya. The sample size comprised of 66 staff members. The study used multiple regression analysis to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. Principle component analysis was used to obtain the regression models. Kaiser Meyer Olkin (KMO) sample adequacy and Bartlett's sphericity tests were used to identify whether the output from the principal component analysis were suitable for regression. The results indicated strategic partnerships ranked first, followed by inventory management, procurement planning and finally financial resource management in terms of significance influence on supply chain performance. The policy implication is that Universities should embark on training of supply chain players to equip them with relevant knowledge. The research findings will be of help to both public and private entities in improving on their supply chains.

Keywords: Procurement practices; Supply chain performance; Public Universities; Kenya.

1. Introduction

Procurement is an ever-growing means of conducting business in many industries around the world. In every institution, procurement serves as one of the core functions of the entity as the procurement processes enable an organization to function seamlessly. Procurement can be described as the process of sourcing for goods and services from external sources, negotiating the prices and obtaining the goods and services for the benefit of the institution (Karanja and Kiarie, 2015). Developing countries have been awakened to the importance of effective management of the public procurement process at both central and local government levels, and its subsequent contribution to improved governance of the public sector. Procurement; a function that was traditionally viewed as a clerical and reactive task has since positioned itself among core organizational functions, and its management is becoming increasingly critical for the well-functioning of any organization. Procurement is becoming important at the local level, in parallel with decentralization and the increasing range of functions performed by local governments in most countries (Schiavo-Campo and Sundaram, 2000).

Procurement practices are a set of activities undertaken by an organization to promote effective management of its supply chain (Sollish and Semanik, 2012). Modern procurement practices are dynamic and interconnected networks that are gradually lengthening and globe-spanning (Christopher, 2012). The role of procurement practices in business set ups has become more important and changed abruptly, from the perceived role of administrative and clerical to a strategic position so as to attain competitive advantage in the organizations (Allal-Chérif and Maira, 2011). Turner (2011), holds that, the adoption of procurement practices presents a paradigm shift from tradition practice hence the need to utilize its value proposition with the aim of achieving competitiveness in the procurement arena.

Performance of supply chain is viewed as a competitive strategy that enhances an institutions productivity and profitability and the intensity of these measures which are resource, output and flexibility based, cannot be overlooked as it affects long term, short term and operational planning and control (Opio, 2016). Furthermore, procurement is the glue that holds the entire supply chain players into place as it coordinates the activities among the players in the supply chain to ensure each member plays their role effectively and efficiently thus ensuring the smooth flow of activities the chain. Thus procurement practices put in place to coordinate all the activities in the

chain will determine the efficiency and effectiveness of the entire supply chain, its flexibility to respond to market dynamics and ultimately impact on the entire performance of the supply chain.

The public procurement system in Kenya has undergone reforms consistent with global trends since the mid 90's, most notably within the periods covering 1997-2001 and 2005 which was the landmark of the reforms which saw enactment of the Public Procurement and Disposal Act, 2005 and Public Procurement and Disposal Regulations, 2006 which amended all other laws relating to procurement in public entities ensuring that all of it is done under the umbrella of the Act thus widening the scope of application of the law and providing a proper basis for enforcement (Authority, 2007). The Act also established an oversight body, the Public Procurement Oversight Authority (PPOA), to act as a regulator of all procurement activities carried out by the public entities and ensure compliance with the Act. Before these reforms, the legal framework governing public procurement was very amorphous, providing a conducive environment for the perpetration of various malpractices in public procurement including the endemic corruption that characterized the system (Authority, 2007). The public procurement reform agenda saw the operationalization of a new public procurement Act, the Public Procurement and Asset Disposal Act 2015 on 7th January 2016 which has shaped the procurement practices in Kenya in terms of new standards. This further put procurement at a strategic level and among the key decision makers (Opio, 2016).

Since the mid-1980s, there has been significant expansion of public universities in Kenya in response to higher demand for university education. So far, there are 30 public universities that have great opportunities stemming from the increasing number of students both from within and outside the country. This has resulted in increase in the number of purchases of services and goods by the universities required to meet the needs of the student population (Chesang, 2013). This increase in purchase of goods and services by the universities has resulted to a big percentage of university expenditure in Kenya going towards procurement of goods and services which therefore calls for proper procurement practices that enhance supply chain performance in order to allow for the smooth flow of services in the universities.

1.1. Statement of the Problem

Procurement and related processes remain one of the most challenging aspects of institutions in Kenya, more so for public institutions. Procurement is perceived as a loophole for many entities to gain extra access to monies and encourage corruption for services and goods procured. Thus, there have been efforts made for reforms in the area and this has been conducted via joint efforts between the government institutions and development partners such as the World Bank, International Trade Centre and the World Trade Centre. In spite of efforts by public entities in developing countries like Kenya and development partners like World Bank to improve performance of the procurement function and supply chain in general, procurement is still marred by shoddy works, poor quality goods and services and inefficient supply chains. This perennial problem has precipitated a decline of procurement/supply chain performance in public entities (Sanjay, 2000).

Currently public universities are faced with budgetary constraints arising from lower budgetary allocations and ever-increasing costs of goods, works and services. Therefore, a comparison of the large proportion of money spent stemming from the high volume of procurement of goods, works and services versus the challenge of budgetary constraints arising from lower budgetary allocations and ever-increasing costs of goods, works and services, clearly calls for proper management of the procurement activities and formulation of sound procurement practices that best suit public universities. This ensures that they not only comply with the provisions of the ACT but also ensures effective and efficient management of the scarce resources for the smooth running of the universities with a view of enhancing supply chain performance. Moreover, the creation of environments where performance and comfort are key for the employees, is critical in encouraging adoption and implementation of positive procurement practices. Key Performance Indicators and focus on individual's performance is a strategy that can be embraced by universities to encourage efficiency and productivity which then enhance supply chain performance.

Therefore, in view of the challenges faced by public universities regarding procurement and related processes and challenges arising from budgetary constraints arising from lower budgetary allocations and ever-increasing costs of goods and services, this study seeks to establish the effect of procurement practices on supply chain performance in selected Public Universities in Kenya specifically in Eastern and Central regions.

1.2. Objectives of the Study

This study was guided by the following general and specific objectives:

1.3. General objective

The general objective of the study was to establish the effect of procurement practices on supply chain performance in selected Public Universities in Kenya.

1.4. Specific Objectives

The study was guided by the following specific objectives:

- i. To investigate the effect of procurement planning on supply chain performance in selected Public Universities in Kenya.
- ii. To evaluate the effect of financial resource management on supply chain performance in selected Public Universities in Kenya.

- iii. To determine the effect of strategic partnerships on supply chain performance in selected Public Universities in Kenya.
- iv. To assess the effect of inventory management on supply chain performance in selected Public Universities in Kenya.

2. Literature Review

The two key theories used to inform this study include; general systems theory and institutional theory.

2.1. General Systems Theory

Ludwig (1950) modeled the General Systems Theory; the theory states, from a biological point of view, that, an organism is an integrated system of interdependent structures and functions made up of cells, and a cell contains molecules, which must work in harmony. Each molecule must know what others are doing, must be capable of receiving messages and must be sufficiently disciplined to obey. Due to the complexity and instability of the external environment, the survival and effectiveness of an organization will depend on how well it scans and adapts to its internal environment (Okumbe, 1998). This theory, informs this study as procurement is a function whose functionality spans across all departments in an organization. Moreover, for an organization to create effective and efficient supply chain each player; user departments, procurement department and suppliers; in the supply chain must perform their individual roles. In addition, for procurement practices such as procurement planning, financial resource management, strategic partnership and inventory management to be implemented successfully in an organization it requires the support of the various user departments and for each user department to play their individual roles in achieving the overall goals of the procurement management practice without any frictions or tensions within the system or practice for there to be efficiency in its operations.

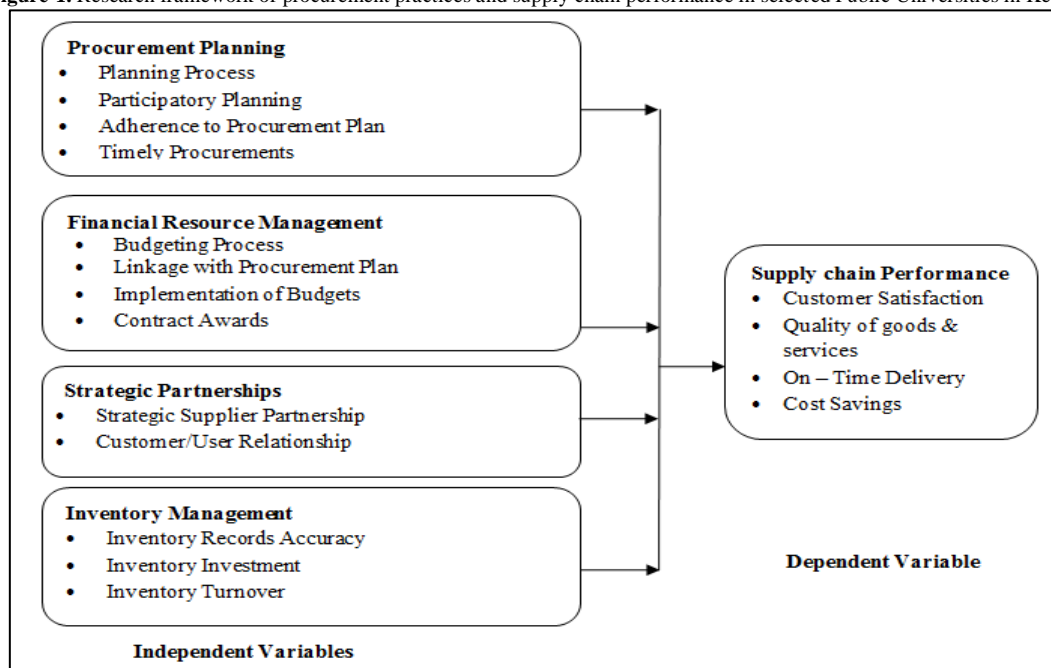
2.2. The Institutional Theory

According to Scott (2003), institutions are composed of cultural-cognitive and regulative elements that together with associated activities and resources give meaning to life. It further explains the three pillars of institutions as regulatory (policy), normative and cultural cognitive. The regulatory (policy) pillar emphasizes the use of rules, laws and sanctions as enforcement mechanism with emphasis on compliance. The normative pillar refers to norms-how things should be done and the values preferred desired. The cultural pillar rests on shared understanding (common beliefs and symbols). Borrowing from this theory, all public procuring entities are guided by rules and regulations drawn from the public procurement act Republic of Kenya (2015) hence each procuring entity has a mandate to develop and implement sound procurement practices within its procurement systems, hence the need to have policies, norms and rules to that effect. From the three pillars of institutions such as organizational culture, social influence, organizational incentives and enforcement are identified as antecedents of compliance to public procurement law and are key pre-requisites for the successful implementation of sound procurement practices which in turn enhance performance of the procuring entity's supply chain hence improved service delivery.

2.3. Conceptual Framework

The framework presupposes that supply chain performance was the dependent variable, while the independent variables were the procurement practices, which are procurement planning, financial resource management, strategic partnerships and inventory management, as shown in Figure 1.

Figure-1. Research framework of procurement practices and supply chain performance in selected Public Universities in Kenya



2.4. Procurement Practices

The procurement practices adopted included procurement planning, financial resource management, strategic partnerships and inventory management. According to the Authority (2009), the beginning of the procurement process is need realization/identification and identification of the requirements. This should be participatory in nature by involving the users whereby they forward their individual departmental plans. This is informed by the inventory status, projects plan, production schedules, work plans, capital or operational requirements, budgets and the procurement plan. Procurement planning was measured by looking at the planning process, the level of participation involved during the procurement planning process, the level of adherence to the prepared procurement plans and whether the was timely procurement of plans in line with the timelines indicated in the procurement plans. Financial resource management was measured by looking at the budgeting process, the linkage of the prepared procurement plans to the budgets, the implementation of the prepared budgets and whether contracts awards were based on the prepared budgets. Furthermore, financial resource management is an important aspect of the supply chain as for the activities of a supply chain to move smoothly finances must be available and well managed across the supply chain.

In developing countries, public procurement is increasingly recognized as essential in service delivery and it accounts for a high proportion of total expenditure (Basheka and Bisangabasaija, 2010). Strategic supply chain partnership is a collaborative coalition of two or more firms in a market to facilitate joint efforts collaborations in one or more core value creating activities, which include research, product development, marketing, sales and distribution. The objective of supply chain partnership is to reduce costs of acquisition, possession and disposal of goods and services (Maheshwari *et al.*, 2006). Strategic partnership was measured by looking at the supplier and user/customer relationships fostered by the Universities. Miller (2010), views inventory management as all activities put in place to ensure that customers have the needed product or service. It coordinates the purchasing, manufacturing and distribution functions to meet the marketing needs and organizational needs of availing the product to the customers. Inventory management was measured by looking at the accuracy of inventory records, the level of inventory investment made and the level of turnover of the inventory held.

2.5. Supply Chain Performance

Supply chain performance is the extent that supply chain activities are meeting end-customer requirements, including product availability, on-time delivery, and all the necessary inventory and capacity in the supply chain to deliver that performance in a responsive manner. Supply chain performance enables firms to drive rapid change in all aspects of operations. This requires end-to-end visibility into factors that drive performance such as cash-to-cash cycle time, overall supply chain cost or perfect order fulfillment (Oloruntoba and Gray, 2006). Customer satisfaction, quality of delivered goods and services, on time delivery of goods and services and cost savings made were used as measures of supply chain performance.

3. Materials and Methods

The study adopted a cross sectional descriptive survey research design to explore the effects of procurement practices on supply chain performance in the selected public universities in Kenya.

3.1. Sample and Data Collection

All the 11 public universities found in counties in the eastern and central region of Kenya were considered for this study. The study focused on the head of procurement, deputy head of procurement, in-charge stores, deputy in-charge stores, head of finance and deputy head of finance. The heads of these departments and sections and their deputies were chosen because they were in - charge of the entire procurement process and they were involved in coming up and implementing procurement practices that enhanced performance of their organizations and thus they would provide the relevant information required for the study. The study employed the use of questionnaires as the principle data collection tool.

3.2. Model Specification and Analytical Techniques

To determine the effect of procurement practices on supply chain performance, procurement practices is regressed in the subsequent model to test the hypothesis. The analytical model used was as specified in equation (1).

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \text{-----Equation 1}$$

Where; Y was supply chain performance, β_0 the intercept constant, X_1 procurement planning, X_2 Financial resource management X_3 Strategic partnerships and X_4 was inventory management, $\beta_1 - \beta_4$ was the corresponding coefficients of independent variable and ε was the error term.

4. Results

The data in this study were analyzed using descriptive and inferential statistics.

4.1. Summary of Statistics

The study used multiple regression analysis to determine the significance of the relationship between the dependent variable (supply chain performance) and all the independent variables (procurement planning, financial resource management, strategic partnerships and inventory management) pooled together. Factor analysis was used

to construct variables to use in the regression models. Specifically, principle component analysis was used to obtain the regression models. Kaiser Meyer Olkin (KMO) sample adequacy and Bartlett’s sphericity tests were used to identify whether the output from the principal component analysis were suitable for regression. All factors were adequate for use in regression analysis since the significance levels were less than 0.05 as shown in Table 1.

Table-1. Factor Analysis KMO Results

Dependent Variable Indicators	KMO	Chi-Square	Significance
Customer Satisfaction	0.640	24.525	0.000
Quality of Goods & Services	0.519	114.175	0.000
On Time Delivery	0.500	19.709	0.000
Cost Savings	0.481	22.901	0.000

Table-2. Model Summary

Dependent Variable Indicators	R Squared	ANOVA F- Value	(Sig)
Customer Satisfaction	0.583	17.848	(0.000)
Quality of Goods & Services	0.460	10.849	(0.000)
On Time Delivery	0.347	6.774	(0.000)
Cost Savings	0.663	25.034	(0.000)

Predictors: (Constant), Procurement Planning, Financial Resource Management, Inventory Management, Strategic Partnership

The results presented in Table 2 indicate that the coefficient of determination also called R² for customer satisfaction was 0.583 indicating that 58.3% of the corresponding variation in customer satisfaction can be predicted or explained by the procurement practices. Moreover, the R² value for quality of delivered goods and services was 0.460 indicating that 46% of the corresponding variation in quality of delivered goods and services can be predicted or explained by the procurement practices. Similarly, the R² value for on time delivery of goods and services was 0.347 indicating that 34.7% of the corresponding variation in on time delivery of goods and services can be predicted or explained by the procurement practices. In addition, R² value for cost savings made was 0.663 indicating that 66.3% of the corresponding variation in cost savings made can be predicted or explained by the procurement practices.

In addition, the ANOVA results presented in Table 2 indicate that all models were correctly specified as shown by the significant F-values.

4.2. Regression Analysis

Before the variables were regressed, factor analysis was done and the regression results are shown in Table 3.

Table-3. Regression Results

Independent Variables	Dependent Variable							
	Customer Satisfaction		Quality of Goods and Services		On –Time Delivery		Cost Savings	
	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Unstandardized Coefficients - B	Standardized Coefficients - Beta
Procurement Planning (PP)	0.209	0.209 *	0.263	0.263*	-0.192	-0.192	-0.120	-0.120
Financial Resource Management (FRM)	-0.052	-0.052	-0.159	-0.159	-0.174	-0.174	0.016	0.016
Strategic Partnership (SP)	0.297	0.297**	0.289	0.289*	0.438	0.438**	0.848	0.848***
Inventory Management (IM)	0.388	0.388***	0.316	0.316*	0.388	0.388**	0.038	0.038

Key: * Coefficient is significant at 10%, ** Coefficient is significant at 5%, *** Coefficient is significant at 1%. (Values in brackets are Standard Errors)

Procurement planning was positive and significant meaning it influences customer satisfaction at 10%. Moreover, financial resource management was insignificant meaning it has no influence on customer satisfaction. In addition, strategic partnership was positive and significant meaning it influences customer satisfaction at 5%. Inventory management was positive and significant meaning it influences customer satisfaction at 1%. The order of influence of the variables which were significant under customer satisfaction is given by the magnitude of the standardized coefficients. The coefficient of inventory management was the highest in absolute terms at 0.388 meaning it influences customer satisfaction more than strategic partnerships which follows at 0.297 and finally procurement planning had the least influence at 0.209 on customer satisfaction.

Similarly, procurement planning was positive and significant meaning it influences quality of delivered goods and services at 10%. Moreover, financial resource management was insignificant meaning it has no influence on quality of delivered goods and services. Strategic partnership was positive and significant meaning it influences quality of delivered goods and services at 10%. Similarly inventory management was positive and significant meaning it influences quality of delivered goods and services at 10%. On quality of delivered goods and services, the order of influence of the variables which were significant is given by the magnitude of the standardized coefficients. The coefficient of inventory management was the highest in absolute terms at 0.316, meaning it influences quality of delivered goods and services more than strategic partnerships which follows at 0.289 and lastly procurement planning at 0.263 with the least influence on quality of delivered goods and services.

Procurement planning was insignificant meaning it has no influence on, on time delivery of goods and services. Financial resource management was also insignificant meaning it has no influence on, on- time delivery of goods and services. Moreover, strategic partnership was positive and significant meaning it influences on -time delivery of goods and services at 5%. Inventory management was positive and significant meaning it influences on -time delivery of goods and services at 5%. The order of influence of the variables which were significant under on time delivery of goods and services is given by the magnitude of the standardized coefficients. The coefficient of Strategic partnership was the highest in absolute terms at 0.438 meaning it influences on time delivery of goods and services more than inventory management, which follows at 0.388.

Procurement planning was insignificant meaning it has no influence on cost savings. Financial resource management was also insignificant meaning it has no influence on cost savings. Moreover, strategic partnership was positive and significant meaning it influences cost savings at 1%. Inventory management was insignificant meaning it has no influence on cost savings. On cost savings made, the order of influence of the variables which were significant is also given by the magnitude of the standardized coefficients. Strategic partnership was the highest in absolute terms at 0.848 meaning it has the most influence on cost savings.

5. Discussion

Strategic partnership influenced all supply chain performance indicators, (customer satisfaction, quality of delivered goods and services, on time delivery of goods and services and cost savings) since all coefficients were statistically significant at 5%, 10%, 5% and 1% respectively. This implies that the changes in strategic partnerships had the highest impact on the changes of supply chain performance. The findings are in agreement with [Kiprop \(2015\)](#) that proper strategic partnership affected performance of banks and embracing strategic partnerships is the next key to business success and improved performance and productivity. Moreover, the findings further agree with a study by [Chepkwony and Chirchir \(2017\)](#) which found a positive correlation between strategic partnership practice and supply chain performance in tea firms and concluded that the more the tea firms embraced partnership practice the higher supply chain performance and concluded that strategic partner relationship is a critical issue for any business, especially in supply chain activities. The findings further agree with [Amit and Zott \(2001\)](#) that the importance of close relationships among trading partners as a key source of advantage to both buyer and seller. The findings are also consistent with [Lee et al. \(1997\)](#) that inter-organizational relationships would arguably lead to enhanced supply chain performance and greater potential benefits for all parties in the supply chain.

Moreover, inventory management coefficients influenced three of the supply chain performance indicators, (customer satisfaction, quality of delivered goods and services and on time delivery of goods and services) as the coefficients were statistically significant 1%, 10% and 5% respectively. The findings agree with those of [Augustine \(2013\)](#) that gave a positive correlation between good inventory management practices and organizational cost reduction which in turn impacts on supply chain performance. The findings are also in tandem with those of [Wagura \(2015\)](#) that proper inventory management systems and practices significantly influence supply chain performance in that it impacts on quality service delivery, cost and flexibility. A study by [Meng \(2006\)](#) alludes that Supply chain performance is an outcome of appropriate inventory management and with effective inventory management, procurement goals would be achieved and the whole supply chain optimized.

Procurement planning coefficients influenced two of the supply chain performance indicators, (customer satisfaction and quality of delivered goods and services) as each of the two coefficients were statistically significant at 10%. The study findings are consistent with a study by [Patrick and Wallace \(2016\)](#) which established that procurement planning positively impacted procurement service delivery to a large extent. Further, a study by [Ocharo \(2013\)](#) revealed that procurement plans influence procurement performance in the sense that they provide focused and efficient utilization of available resources, help in budgeting and planning and therefore with adequate provision of funds due to procurement plans, performance is assured. [Basheka \(2009\)](#), further validates the results where the study findings revealed that procurement planning is one of the primary functions of procurement with a potential to contribute to the success of operations and improves services. Moreover, [Willy and Njeru \(2014\)](#) reiterated that preparation of annual procurement plans, frequency of formulation of procurement plans and the evaluation of the same contributes to the corporation's procurement performance and also ensures timely allocation of resources therefore impacting positively on procurement performance and therefore good plans result to effectiveness and efficiency in attaining projected results. [Onyango \(2012\)](#), on the other hand contend that lack of good planning and establishment of departmental needs affect the procurement efficiency and service delivery.

Financial resource management had no influence on supply chain performance indicators, (customer satisfaction, quality of delivered goods and services, on time delivery of goods and services and cost savings) since all the coefficients were insignificant in all regression equations. This means that financial resource management

does not influence supply chain performance. This may be attributed to the changes in user purchase needs which arise due to unforeseen circumstances, thus limiting adherence to procurement plans which in turn affects the overall University budget. This can also be attributed to uncontrollable factors in the Macro environment such as changes in the prevailing market prices. Moreover, during departmental planning and budgeting some departments prepare procurement plans and budgets independently without linking them together to reflect the purchase needs and their cost implications. The results echo the findings of a study by Namusonge (2013) which revealed the challenges associated with financial resource management where the financial resources did not satisfy the institutional needs with regards to procurement, whereby the prices at which the items were bought during a financial year exceeded the planned and budgeted amounts leading to insufficient funds thus impacting planning and the entire supply chain performance. Further a study by Denis and Kilonzo (2014) revealed that resource allocation in many public organizations in developing countries is always inadequate due to budgetary deficits. Moreover, a study by Davis (2002) contends that resource allocation is an important aspect in determining how effective the whole process will be and therefore this calls for public entities to try and balance resource allocation and even allocate more funds to procurement departments, because procurement is the base of all other departments and its success percolates down to the whole organization and it is imperative that procurement resource allocation planning is done in a manner that takes care of the pursued strategic fit in the public entities.

6. Conclusion and Recommendations

The study considered the impact of procurement practices on supply chain performance of selected Public Universities in Kenya. By adopting factor analysis and a multiple regression, the study revealed that of the four procurement practices adopted by the study (procurement practices, financial resource management, strategic partnership and inventory management) only three of the procurement practices namely; strategic partnership, inventory management procurement planning were significant in helping public universities achieve supply chain performance, with strategic partnership having the highest significance, followed by inventory management then procurement planning. The study contributes to the current literature of supply chain and how it can perform effectively and efficiently. The results have crucial implications on supply chain performance in public universities by recognizing the influence of the adopted procurement practices on supply chain performance, which helps the accounting officers of these public entities recognize the role of the adopted procurement practices in gaining supply chain performance in their institutions.

The study recommends training on the procurement practices in order to come up with ways to ensure effective and efficient implementation of the procurement practices in their institutions so as to achieve optimum supply chain performance. Moreover, to avoid procuring items of poor quality, delays in supply and provision of services, ethics in procurement processes have to be respected. This can be achieved by anchoring the ethical standards to be followed in the institutional procurement policy and ensuring adherence and compliance to them. Equally, management of the procurement process should always be administered by qualified, competent and experienced procurement professionals, meaning that during recruitment of procurement staff, minimum qualifications have to be set before hand to ensure only qualified professionals are shortlisted and finally hired. This will not only help maintain good procurement standards but also will help achieve high levels of efficiency and effectiveness.

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