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EFFECT OF STRATEGIC PROCUREMENT MANAGEMENT ON PERFORMANCE OF LEVEL FIVE HOSPITALS IN KENYA

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Abstract

Purpose: The purpose of this study was to establish the effect of strategic procurement management on performance of level five hospitals in Kenya.

Methodology: The study collected both primary and secondary data. The data collection instruments were questionnaires. Secondary data was collected from published materials and information from other sources such as world health organization reports, periodicals and health procurement publications. The information was displayed by use of bar charts, qualitative data was collected using open ended questions and was analyzed using content analysis and presented in phrase form. A census study was conducted and questionnaires were used to obtain data. The study targeted 539 staffs at Kakamega, Kisumu, Kiambu, Machakos, Coast, Makueni, Kajiado, Mama Lucy, Embu, Meru, Thika, Garissa and Nyeri County referral hospital in twelve counties. A descriptive research design was used. A stratified sampling method was used to pick 162 respondents from the target population. Data was analyzed using Excel worksheets and statistical package for social science (SPSS) to come up with descriptive statistics which included means, frequencies and percentage. Inferential statistics such as correlation and regression were also used to analyze the data. To ensure reliability in the measurements provided in this study the Cronbachs' Alpha (α) was used.

Findings: The findings obtained show that all the four independent variables had significant relationship between performance of level Five hospitals (the dependent variable) and strategic sourcing ; procurement planning ; e-procurement and; supplier relationship. This means that they played vital roles to the overall performance of the hospitals as shown by the multiple correlation coefficients R. Indeed, the findings show that that there was a rather strong correlation between the predicted and observed values in the regression model. Furthermore the coefficient of determination R² was found to implying that variance in performance of level Five hospitals could be explained by strategic outsourcing, procurement planning, and E-procurement and supplier relationship.

Unique Contribution to Theory, Practice and Policy: Hospitals should strengthen their outsourcing activities and have workable frameworks on how to do so. It is also recommended that there is need to put in place mechanisms for enhancing supplier relationships.

Key Words: *Strategic Procurement Management, Performance Level Five Hospitals*

1.0 INTRODUCTION

Chapter eleven of the constitution, provided for county governments powers, functions and responsibilities to deliver services and for connected purposes. Section 46(1)b of the County Government Act of 2012. Section 148(5) of the Public Finance Management Act of 2012. Within powers of county government it may enter into partnership with any law relating to public or private partnership for provision of any work and services for example procurement and distribution of drugs on county hospitals and to provide strategic and operational planning, monitoring and evaluation of health procurement to level five hospitals in the counties. It is against this background that this proposal is to ensure county hospitals use strategic procurement management and a decentralized model on procurement functions to minimize shortage of drugs and other medical equipment in county hospitals (KLR,2012).

Strategic and effective procurement in health sector ensures the availability of the right medicines in the right quantities, at reasonable prices and at recognized standards of quality. In recent years, some public sector procurement systems particularly in Latin America have introduced e-procurement which essentially means internet tendering (MSH 2012). The strategies to be applied in procurement management in health industry may include limitation of procurement to essential medicine list, increasing procurement volume by aggregating demand, formal supplier qualification and monitoring, order quantities based on reliable estimates of forecasted actual need (MSH, 2012).

In Uganda, strategic planning in health sector was a hierarchical approach with ministry of health which was changed with development for entire health sector and in order to improve on planning for essential medicines and health supplies, the pharmacy division in the Mott set up the quantification and procurement planning unit in 2010 and the information and data derived from this unit formed the basis upon which reforms for health commodities were mobilized to ensure adequate supplies were available (Masembe, 2016).

In Kenya, enforcement of procurement regulations on specialized procurement for medical and non-medical supplies should be done so that set specifications and quality standards are maintained. A clear procurement policy needs to be adopted on whether a push system or a pull system is appropriate. In view of the complicated nature of commodities mainly used the current processes of procurement should be reviewed to reduce wastage and enhance transparency and accountability among stakeholders (SPC, 2013). The county health departments have been provided with guidance on how to shape their health management structures in line with their constitutional functions, this for example may include introduction of e-procurement procedures when conducting procurement in county hospitals (KHSSP, 2014). The guidance takes into account of the County Government Act, 2012 that acknowledges the county executive committee (CEC) member responsible for health as bearing the responsibility for overall coordination and management of county health services including monitoring planning processes and formulation including adoption of policies and plans for efficient procurement services in health services (KHSSP, 2014).

Strategy refers to a plan of how to get a chosen position. In economic terms it is the meaning of how to achieve the ends (Hofar and Schendel, 1978). Supply chain management was a phrase first

coined in the early 1980s to describe the range of activities co-ordinated by an organization to procure and manage suppliers (Oliver and Webber, 1982). Supply chain efficiency is critical to customer satisfaction and this is achieved through successful supply chain strategic and operations that are integrated and capable of delivering. System integration and effective use of information and communication technology is a key requirement and may take form of e-procurement, e-design collaboration, order tracking and delivering system using satellite technology (Hines, 2013).

Statement of the Problem

There is a demand for quality, affordable medical devices, including standard therapeutic, diagnostic and radiotherapy equipments and therefore supply chain solutions involving knowledge and technology to effectively distribute pharmaceutical and medical supplies is needed and therefore need to use Strategic Procurement Management (KHS, 2016). According to data from GBD (Global Burden of Diseases), Most pneumonia deaths occurred in Kakamega 818, Meru 674, Nakuru 593, Mandera 566, and Homabay 534. These deaths were attributed to weak commodity management system leading to frequent shortage of drugs that treat pneumonia in children therefore causing death and this requires strategic form of procurement (SC R, 2017).

There is systemic weakness and opportunities that exist in procurement and dispensing stages of pharmaceuticals and non-pharmaceutical supplies in public health sector. This has been caused by lack of compliance with national specifications for Medical and Non-medical suppliers, disclosure of evaluation criteria in bid documents and capacity building in market survey in acquisition stage and county hospitals do not have a list of suppliers licensed to manufacture and distribute non pharmaceutical supplies in Kenya which has led to procurement of very poor syringes and needles which break while being used causing medical complications (EACC, 2018).

Available information for product qualification is often inadequate. Procurement planners are not aware of the different qualification methods available and how each method should be applied. A strategic approach to product forcibly is rarely implemented and the qualification process is often executed by one person without consulting others professionals or persons experienced in the process (KHS, 2016). Health procurement performance has a great impact on the economy of Kenya and needs to be well managed, for example in all countries in the world, estimates of the financial activities of government involving procurement is 10-30% of GDP (Callender and Mathews, 2011) and therefore required to handle procurement in hospitals with a policy and management concern. Overall health system expenditure has increased from 17 dollars per capita to estimated 40 dollars per capita due to government and donor resources therefore their need to improve procurement efficiency in hospitals to provide better services (KHP, 2012).

Non-strategic vaccine supply and distribution are delaying and limiting the impact of Vaccine. Poor supply chain places the health of millions of people at risk. Nineteen to 38 per cent of vaccines worldwide are accidentally exposed to freezing temperatures, potentially compromising the potency of these vaccines. In Kenya rampant shortage of BCG vaccine for tuberculosis was reported in 2015 and 2016 and this was attributed to delays of procurement agencies in County hospitals in Kenya (WHO, 2016).

2.0 LITERATURE REVIEW

A theory is a framework for observations and facts (Tanner 2014). According to Evenett&Hockman (2005), theories are grouped according to their levels, scope, function and structure –several theories and models have been illustrated by scholars to define the field of supply chain management.

Information System Theory

Information system theory can also be referred as Technology Acceptance Model that models how users come to accept and use a technology. In this own study the use of E- procurement in Kakamega,Kisumu,Nairobi,Machakos and Kiambulevel Fivehospitals. This theory suggests that users when presented with a new technology, a number of factor s influence their decision about how and when they used it. Information System Theory was developed by DAVIS' (1989).It is goal was to predict information system acceptance and diagnose design problems before users have experience with a system.

Information System theory is the Trans disciplinary study of systems in general with the goal of elucidating principles that can be applied to all types of systems at all nesting levels in all fields of research (Bertalanffy, 1972). The aim of information system theory is to build a bridge between the general systems theories formalism and the world of information technologies, dealing with transformation of information whose models in form of computer algorithms and programs could be implemented to differentiate materials objects, including a human's thoughts and language (Peffer, 2007).

The inherent properties of information system theory in procurement are to bouncing a communication signals around the country for suppliers and consumers (Bryce, 2009). An information system is a collection of process to either collect or store data to retrieve data and produce information or a combination of both. (Bryce, 2009). IST predicts user acceptance of any technology is determined by two factors; perceived usefulness and perceived ease of use. Perceived usefulness (u) is defined as the degree to which a user believes that using the system enhanced performance of an individual.Perceived ease of use (EOU) is defined as the degree to which the user believes that using the system would be free from Effort. Therefore, Both EOU and U are specific perception and are anchored to specific beliefs users hold about the system. IST, U and EOU have a significant impact on a user's attitude toward using the system (A) defined as feelings of favorableness or unfavorableness towards the system. Behavioral intentions to use the system (BI) are modeled as a function of A and U .BI then determines actual use (Bagazzi, 2007).

Mathieson found that IST predicted intention to use a spread sheet package better than alternative model. In another comparison of theoretical models, Taylor Todd found that IST provided a good fit to data on the use of a computing resource centre, accounting for 34% of the variance in behavior, 52% of variance in intention and 73% of variance in attitude .In another study examining the efficiency of IST, Adams et al. suggested, both EOU and U may change over time and that perception of EOU may develop only through prolonged usage. The

validity of the perceived usefulness and perceived ease of use of constructs, finding that the IST measures explained 48.7% of the variance in self – (reported system usage (Stramb et al. 2008).

In computer generated measures of use the IST variables explained only about 7% of the variance, suggesting that other factors may be significant predictions of system usage (Chuthur, 2009). This theory relates to information technology because the use of technology is procurement in health sector is essential. E- procurement can be an advantage to the health procurement sector for it can make work easier and decision making faster. This theory instigate the first research question, to what Extent does E- procurement affect procurement performance in health sector?

Economics of Contracting Theory

To ensure Supplier relationships on strategic procurement Management in level Five hospitals the study will be based on Economics of contracting theory. This theory provides implication of Economics of contracting literature which states that suppliers can Exhibit various forms of opportunistic behavior which can damage the value for money received by the buyer. Supplier opportunistic is a problem since buyers either face information a symmetry example agency theory. Therefore, transaction cost Economics suggests a simple, low cost governance mechanism for transaction with a low potential for opportunism. And more complex and high cost bilateral are suggested for more hazardous transactions (NIHR, 2015).

The Economics of Contracting theory in relation to transactional cost theory refer that the latter has the idea of the cost of providing for some good and service if it was purchased in the market place rather than from within the firm. Transaction cost comprises of search and bargain, bargaining and decision, policy and Enforcement cost (Coarse and R.H., 1937). If transactions costs are negligible, the organization of Economic activity is irrelevant, since any advantage one mode of organization appears to hold over another will simply be eliminated by costless contract of (Marcos, Prior (2017).

The criteria for organizing commercial transactions is assumed to be the strictly instrumental one of cost economizing which takes two parts known as economizing on production expenses and economy on transactional costs. To the degree that transactional are negligible, buying rather than making with normally be the most cost-effective means of procurement. More generally, the economizing problem includes choice between a special purpose and a general purpose good or service, in that a general [purpose item affords all of the advantages of market procurement and valued differences are realized but market procurement here may pose hazards (Williamson, 1979).

Empirical Review

Strategic Sourcing is the institutional procurement process that conditionally improves and re-evaluates the purchasing activities of a company. In services identity, Strategic Sourcing refers to as services solutions also called Strategic partnership which is atomized to meet the clients individual needs (Roach, 2016). Strategic sourcing ,being part of the procurement is formed on costs sourcing and opportunity of the company in realizing its long –term goals and therefore a

critical part of strategic c managements that is formed on a company' s sourcing decision making (Rafati&Poels,2015).

Suppliers relationship management includes both business practice and software and is a part of information flow component of supply chain between an enterprise and suppliers who may use quite different business practices. This leads to efficiency in acquiring goods and services, managing inventory and processing materials (Mettler,Rohner 2009). Herzlinge, Porter (2015), healthcare is considered to be different from other industries due to high level of regulation, the high promotion of governmental investments ,the associated low pressure in respect of effectiveness and efficiency of state subsidized health care organization and lack of orientation towards customer benefit. Like in other sector, technology is available and this facilitates co-operation (e.g vendor managed inventories, just in time ordering and delivery collaborative procurement planning. Healthcare is under developed in terms its IT infrastructure. Healthcare has clinical and administrative reporting line with different leadership philosophy and target system and this division influences on how to do business with suppliers. (Mettler,Rohner 2009).

Procurement planning is the process of deciding what to buy, when and from what source (Lynch,2016). It is essential to note that to achieve optimum stock levels through the system, professional responsible for the product forecast should have an understanding of when different qualification methods should be applied, what information is required for forecast and frequency in product forecast. A review of product and suppliers specifications as well as administrative procedures for procurement can avert problems later that may affect lead times and availability of product due to suppliers not having capacity to meet demands or suppliers not able to provide required documentations.

Onjala (2017) states that electronic procurement is a form of advanced online technologies .Electronic procurement is the adoption and use of integrated information and communication technologies system in the procurement process such as negotiation, tendering, ordering and post purchase evaluation. Enterprises resource planning refers to the use of software in making requisitions, ordering and receipt of ordered goods and services (Croom&Brandon-jones 2017)

Rogers(2005) states that giving single suppliers more reliable and greater volumes of work allows the suppliers to discount price by volume yet protects the suppliers cost structure. Furthermore collaboration with alliance improves the risk sharing and improves logistic cycle times and an opportunity to work on mutual supply chain opportunities. England &Leenders (1975), Stimson (2002) argues that cost structure in most firms leads to significant leverage potential for purchased items; even minor reduction in purchasing cost. Result in substantial improvement on profit. Seydel 2005, organization have been moving towards sole-sourcing in the process considering multiple section criteria .choosing a vendor has consequently become a complex and important face of procurement. It therefore means vendor selection is multi-criteria decision and one to be more strategic than tactical.

3.0 METHODOLOGY

This study employed a descriptive research design. The study population was the supply chain employees and target population was level Five hospitals in Kenya. the target population was

obtained from 539 staff of level Five hospitals in Kenya. The unit of analysis was level Five hospitals in Kenya while the unit of observation was the procurement related staff in the level Five hospitals in the counties. A stratified sampling method was used to pick 162 respondents from the target population. The study collected both primary and secondary data. The data collection instruments were questionnaires. Secondary data was collected from published materials and information from other sources such as world health organization reports, periodicals and health procurement publications. The information was displayed by use of bar charts, qualitative data was collected using open ended questions and was analyzed using content analysis and presented in phrase form. Data was analyzed using Excel worksheets and statistical package for social science (SPSS) to come up with descriptive statistics which included means, frequencies and percentage. Inferential statistics such as correlation and regression were also used to analyze the data.

4.0 RESULTS AND DISCUSSIONS

4.1 General Information of the Respondents

The research sought to find out information regarding the respondents' designation, gender and age bracket.

4.1.1 Distribution by Designation

The findings as presented in Figure 1 show that 34% of the respondents were supply chain officials while the rest (66%) were from other departments. All in all, these findings show that the respondents were from various departments and could significantly contribute to the subject under investigation.

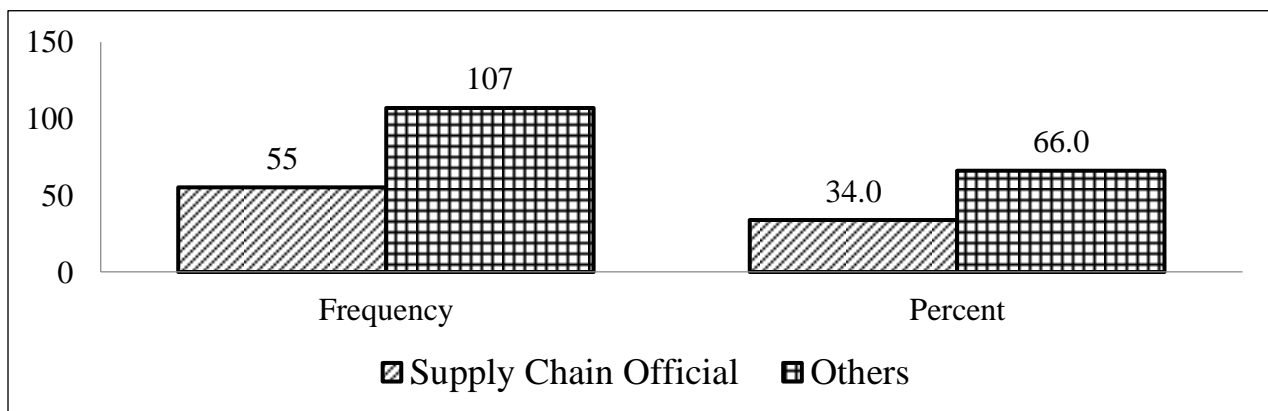


Figure 1: Designations of Respondents

4.1.2 Distribution by Gender

The study went on to investigate the gender of the respondents. The findings obtained show that most of the respondents (74.1%) were male while females were 25.9%. The fact that no gender constituted more than two thirds means that either gender was well represented in the study and that gender bias could be easily avoided.

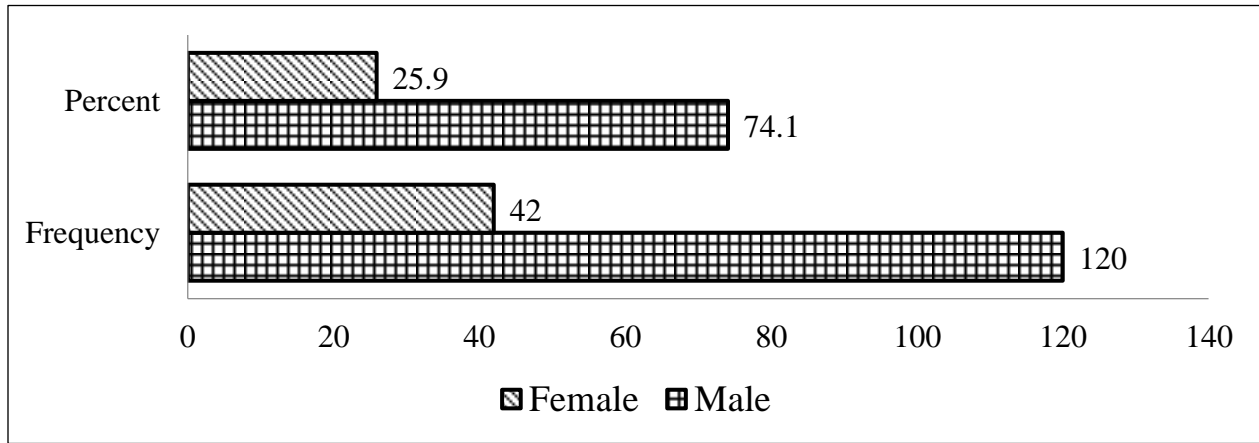


Figure 2: Distributions by Gender

4.1.3 Distribution by Age Bracket

Lastly, the study sought to establish the distribution of the respondents by age brackets. The findings obtained show that most of the respondents (71.0%) were aged between 36 and 45 years. These were followed by those aged 46 to 55 years (15.4%) and those aged 25 to 35 years (11.1%). Only 4 respondents (2.5%) were more than 55 years old. These findings show that the respondents came from various age groups with most of them having been working long enough to significantly contribute to the subject under investigation.

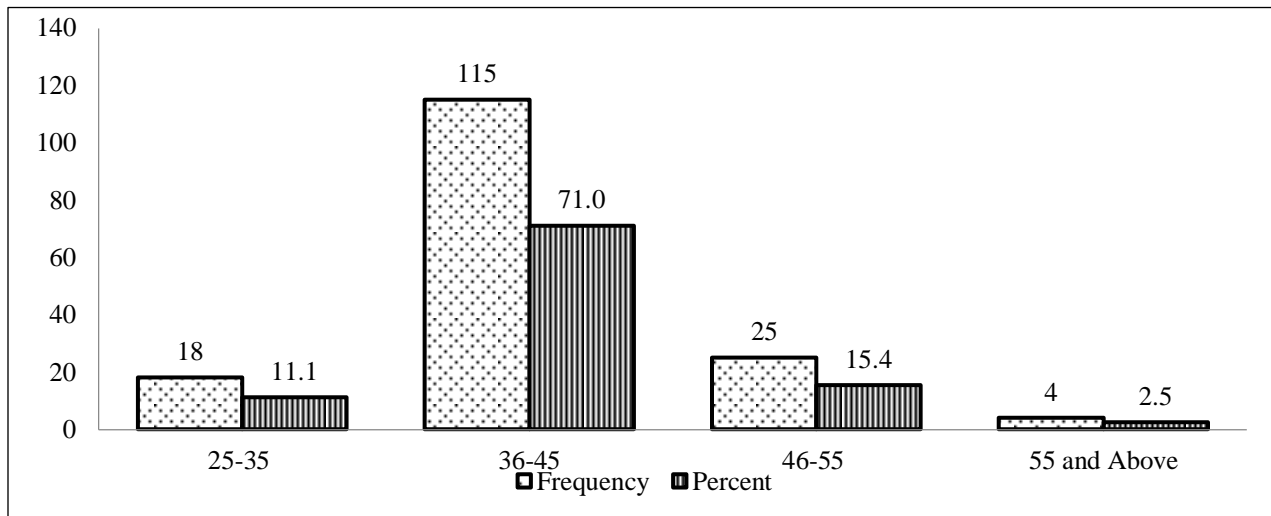


Figure 3: Distributions by Age Bracket

4.2 Descriptive Statistics

Under this section on descriptive statistics, the findings of the study are presented. This is done in line with the study variables. To this, the weighted mean derived from a number of statements

performance of hospitals, strategic sourcing, e-procurement, procurement planning and supplier relationship are presented. The significance of the findings of the study and their relation to past studies is also incorporated.

4.2.1 Strategic Sourcing

The study sought to investigate the effect of strategic sourcing on performance of level Five hospitals in Kenya.” The findings obtained were presented in the following section.

4.2.1.1 Findings on Strategic Sourcing

The findings obtained show that the hospital sometimes outsourced clinical services (WM=2). It also frequently outsourced support services (WM= 3). IT services were also outsourced sometimes (WM=2). It was evident that the hospital never outsourced procurement activities (WM=1). Lastly, there was frequent outsourcing of transport for receiving and fulfillments (WM=3). In this regard, it can be concluded that the hospital often outsourced clinical services and IT services. It also frequently outsourced support services and transport services. Such outsourcing could enhance the performance of the hospital as posited by Lysons and Farrington (2006). However, all procurement activities were undertaken by the hospital which means that the hospital could control the quality of suppliers selected.

4.2.1.2 Strategic Outsourcing According to Open-ended Question

The respondents were asked to provide other aspects of strategic sourcing not mentioned in the likert-type statements that affected procurement performance in the hospitals. To this, the respondents pointed out that using KEMSA as the main supplier has been strategic in terms of supplying of drugs to the county hospitals since procurement process is sometimes cumbersome and long. The county government sometimes gave ceiling in terms of amount the level five hospitals had to use for purchases. In this regard, drawing rights had to be given by county governments therefore leading to constraints in the budget. Sometimes KEMSA did not supply in time and issues of outstanding bills owed to them by level Five hospitals which the county government had to pay affected the hospital, which often reverted to other suppliers who often supplied substandard items in small volumes. In this regard, it is evident that whenever used outsourcing bridged the supply gap when the main suppliers could not do so which could enhance service delivery in the hospital as posited by Lysons and Farrington, (2006). The findings obtained are presented in Table 1.

Table 1: Findings on Strategic Sourcing

No	Statement	1		2		3		4		5		Total		nted Mea
		F	%	F	%	F	%	F	%	F	%	F	%	
1.	Clinical services are outsourced in our Hospitals considering purchase price?	130	80.4	0	0.0	0	0.0	0	0.0	32	19.6	162	100	2
2.	Support services are outsourced in our Hospitals after consideration of demand drives?	28	17.4	7	4.3	63	39.1	0	0.0	63	39.1	162	100	3
3.	IT services are outsourced in our hospital	99	60.9	32	19.6	0	0.0	32	19.6	0	0.0	162	100	2
4.	Procurement activities are outsourced in our hospital	137	84.8	25	15.2	0	0.0	0	0.0	0	0.0	162	100	1
5.	Transport receiving and fulfillments are outsourced in our hospital in consideration of value for money?	25	15.2	49	30.4	0	0.0	63	39.1	25	15.2	162	100	3

4.2.2 Supplier Relationship

The study sought to determine the effect of supplier relationship on performance of level Five hospitals in Kenya.

4.2.2.1 Findings on Supplier Relationships

As shown in Table 2, all the respondents (100%) agreed to the questions “is there effect of collaborative relationships with suppliers in this health facility?”; “is there effect when this facility decides to build long term relationships with suppliers agree” and; “is there Effect in the link of hospital and supplier relationships in determination of financial performance in this health facility?” Conversely most of the respondents (73.9%) agreed with the question, “does the hospital facility share in planning and flexibility in coordinating activities with suppliers?” with about a quarter (26.1%) disagreeing. These findings show that all the hospitals had collaborative relationships with suppliers as argued by Van Weele (2010). In addition, hospitals had long term relationships with suppliers. These relationships led to enhanced financial performance in hospitals. In most cases, hospitals had mechanisms for coordinating procurement activities with

suppliers. This could have enhanced the supply chain performance as well as the performance of the hospital by extension in corroboration to the premise of PMI (2014).

Table 2: Findings on Strategic Sourcing

No	Statement	1		2		3		4		5		Total		Weighted Mean
		F	%	F	%	F	%	F	%	F	%	F	%	
1.	Clinical services are outsourced in our Hospitals considering purchase price?	130	80.4	0	0.0	0	0.0	0	0.0	32	19.6	162	100	2
2.	Support services are outsourced in our Hospitals after consideration of demand drives?	28	17.4	7	4.3	63	39.1	0	0.0	63	39.1	162	100	3
3.	IT services are outsourced in our hospital	99	60.9	32	19.6	0	0.0	32	19.6	0	0.0	162	100	2
4.	Procurement activities are outsourced in our hospital	137	84.8	25	15.2	0	0.0	0	0.0	0	0.0	162	100	1
5.	Transport receiving and fulfillments are outsourced in our hospital in consideration of value for money?	25	15.2	49	30.4	0	0.0	63	39.1	25	15.2	162	100	3

4.2.2.2 Supplier Relationships According to Open-ended Question

The respondents were also required to write down other effects of supplier relationships on performance in your health organization that had not mentioned in the True or False questions. In this regard, the responses obtained show that there was effective collaboration with suppliers in hospitals where incase a supplier had sold equipment to the hospitals, the supplier was allowed, under contract, to supply the reagents to be used alongside this equipment under a specified time framework. Most hospitals clinical utilizations were shared with suppliers and partners by use of CME'S and this improved supplier relationships. , which is a practice recommended by WHO (2015).

In addition, suppliers in most cases also understand the needs of the hospitals in terms of quality. Some suppliers however chose to manipulate the procurement systems within these institutions

due to the built relationships with supply chain officers. In terms of planning and flexibility, the market prices and products were shared between the hospitals and suppliers therefore making this process efficient which buttresses the position of Rogers (2005).

There was also outsourcing of suppliers across the hospitals under Managed Equipment Services (MES) to install, train users, provide repair and maintenance as well as replacement services for specialized medical equipment and, outsourcing of transport services as most of the hospitals do not have enough vehicles. All this could enhance the performance of hospitals as argued by PMI (2014) as well Burnett (2012) who argued that supplier relationships enhanced good communication and quick response to the procurement needs of the organization. It also led to continued support once goods were supplied. The respondents were required to indicate if they agreed or disagreed to four selected questions on the effect of supplier relationships on the performance of hospitals. The findings obtained are presented in Table 3.

Table 3: Findings on Supplier Relationships

No	Statement	TRUE		FALSE		TOTAL	
		F	%	F	%	F	%
1	Is there effect of collaborative relationships with Suppliers in this health facility and promotion of supplier intergration?	162	100.0	0	0.0	162	100
2	Is there effect when this facility decides to build long term relationships with suppliers and partnerships?	162	100.0	0	0.0	162	100
3	Does the hospital facility share in Planning and flexibility in coordinating activities with suppliers including vendor managed inventory?	42	26.1	120	73.9	162	100
4	Is there Effect in the link of hospital and supplier relationships in determination of financial performance in this health facility?	162	100.0	0	0.0	162	100

4.3.3 Procurement Planning

The third objective of the study was, “to examine the effect of procurement planning on performance of level five hospitals in Kenya.” This section provides the findings obtained.

4.3.3.3 Findings on Procurement Planning

The respondents agreed to four of the questions presented to them. In this regard, they agreed that the county hospitals had strategic prequalification in procurement of health supplies (100%); the products procured by the hospitals were always in compliance with technical specifications (100%) and; product quality was always up to required standards (73.9%). The respondents also pointed out that they could identify any physical characteristics of products often procured in this health facility (73.9%). However, most of the respondents pointed out that the hospital did not procure products protected by patent (disagree at 95.7%). In this regard, it is evident that the hospital had clear procurement planning strategies as proposed by Levison and Laing (2003). This ensured that the goods procured were of the required standards; complied with technical specifications and; that suppliers were prequalified in advance so as to get good suppliers.

However, most hospitals did not procure products protected by patent. The elaborate procurement planning meant that hospitals could see enhanced performance as argued by Lynch (2016).

4.3.3.2 Procurement Planning According to Open-ended Question

The respondents were also asked to name aspects of E-procurement in strategic procurement performance in the health facility that had not been asked in the true and false questions. To this, the respondent pointed out that the hospitals always bought products without patent since the procurement section had not implemented policies to safeguard the products they purchased. The respondents were provided with true or false questions on the effect of procurement planning on the performance of level Five hospitals. The findings obtained are presented in Table 4.

Table 4: Findings on Procurement Planning

No	Statement	TRUE		FALSE		TOTAL	
		F	%	F	%	F	%
1	In Procurement Forecasting and acquisition Does the countyhospitals prequalification strategic in procurement of health supplies?	162	100.0	0	0.0	162	100.0
2	Does the hospital procure products protected by patent after market analysis?	7	4.3	155	95.7	162	100.0
3	Products in this hospital are always in Compliance with technical specifications	162	100.0	0	0.0	162	100.0
4	Is Product quality always upto required standards with consideration to price?	120	73.9	42	26.1	162	100.0
5	Can you be able to identify any physical characteristics of products oftenly procured in this health facility?	120	73.9	42	26.1	162	100.0

4.4.4 E-Procurement

The study sought to “establish the effect of e-procurement on performance of level Five hospitals in Kenya.” The findings obtained are presented below.

The findings as presented in Table 5 shows that the respondents tended to agree to a moderate (fair extent) to the statements that: their hospitals were electronically linked with vendors (WM=3); that their IT strategy was coordinated at the hospital system level (WM=3) and; that the centralized supply chain strategy was linked to the hospital system level (WM=3). There was however little evidence that the hospitals were electronically linked with distributors as shown by WM of 4 (agreement to a little extent). These findings show that although e-procurement was practiced in the hospitals, the practice was not strong as shown by agreements to fair and little extent. This differs with the (Hill, 2013) who argues that e-procurement was taking the center stage in most organizations.

4.4.4.1 E-Procurement According to Open-ended Question

Lastly, the respondents were asked to indicate other areas of concern regarding effect of procurement planning on performance in their health organizations. The respondents obtained show most level five hospitals had not adopted on E-procurement as they were still using the manual Local Purchasing Order. This denied hospitals enhanced performance. This is particularly so since when practiced though, e-procurement could augment the performance of hospitals by improve purchasing process as posited by Leong (2012).

4.4.4.2 Findings on E-Procurement

The respondents were presented with 4 likert-type statements on a 5 point- scale whereby: 1 = excellent; 2 = good; 3 = fair; 4 = little and; 5 = not at all.

Table 5: Findings on E-Procurement

No	Statement	1		2		3		4		5		Total		weig hted Mean
		F	%	F	%	F	%	F	%	F	%	F	%	
1.	Describe the extent in which your hospital is electronically linked with vendors on E-sourcing	32	19.6	0	0.0	32	19.6	67	41.3	32	19.6	162	100	3
2.	Describe the extent in which your hospital is electronically linked with distributors?	28	17.4	0	0.0	0	0.0	28	17.4	106	65.2	162	100	4
3.	Describe to which extent our IT strategy is coordinated at the hospital system level on E-contract management system?	35	21.7	42	26.1	0	0.0	42	26.1	42	26.1	162	100	3
4.	Describe to which extent the centralized supply chain strategy is linked to the hospital system level on E-payment?	0	0.0	39	23.9	42	26.1	46	28.3	35	21.7	162	100	3

4.5.5 Performance of Hospitals

The researcher sought to determine the level of performance of hospitals due to strategic procurement management. Data was collected using questionnaires.

4.5.5.1 Hospital Performance According to Open-Ended Questions

The respondents were asked to mention other aspects related to the effect of strategic procurement management performance in your organization. To this, the respondents pointed out that there were challenges related to meeting of demands of the hospital as the suppliers were sometimes doing them in bits. This often affected the supply of medical equipment and suppliers. Dealing with suppliers who were not the main dealers were also witnessed in the majority of county hospitals. This often took a lot of resources and time since the hospital had to manage the associated new relationships. This affected the lead time and by extension performance (of the hospital) in line with the premise of (Arney and yadar, 2014).

Procurement methods which were being applied were also very competitive therefore transparency in terms of initial process during tendering as posted by SPC (2013). This meant that quality suppliers could be obtained which enhanced the performance of the hospital. Furthermore, complaints after tendering process had always observed the legal process and the review board had always looked at the complaints submitted by the suppliers as suggested by Ombaka (2014) who was of the same opinion. This led to good relationships with suppliers and eventual good performance of the hospital. During Continuous Medical Education, issues of clinical data are always shared with major suppliers e.g. KEMSA to review performance of their drugs on patients. This meant that supply of good drugs was enhanced, which could also enhance the performance of the hospital in service provision.

4.5.5.2 Finding on Performance of Hospitals

The researcher assessed the level to which the respondents agreed to a number to selected statement on performance of hospitals. The data was captured in a likert-type scale of 1 to 5 where: 1(Very Great Extent), 2(Great Extent), 3(Moderate extent), 4(Small extent) and, 5(Very small extent). Weighted Means (WM) were calculated. In this regard, the closer the WM was to 1 the higher the agreeability and vice versa. With weighted means of 1 and 2 (agreement to very great and great extents) the findings obtained show that hospitals were performing well in terms as a result of strategic procurement management. This can be exemplified by the fact that suppliers delivered goods and services accurately as specified in the orders (WM=1) ; reliable and dependable suppliers (WM=2); suppliers consistently meet our requirements (WM=2); timely delivery by Suppliers (WM=1); suppliers deliver goods and services of acceptable quality consistently (WM=1); suppliers prices are competitive and keep our costs down (WM=1); products are delivered conform to specifications (WM=1); customers complains are resolved rapidly (WM=2); clinical utilization data were shared with hospital supply chain partners (WM=2) and; hospitals shared performance feedback with our supply chain partners (WM=2). It can thus be deduced that hospitals could perform well due to the fact that there was efficient supply chain management as argued by WHO (2013). The findings are presented in Table 6

Table 6: Finding on Performance of Hospitals

Strategic Procurement Management		1		2		3		4		5		Total		Weighted Mean
No.	Statement	F	%	F	%	F	%	F	%	F	%	F	%	
1.	Based on Maintaining Supplier relationships do Suppliers deliver goods and services accurately as specified in the orders?	148	91.3	14	8.7	0	0.0	0	0.0	0	0.0	162	100	1
2.	Do you have Reliable and dependable suppliers?	127	78.3	7	4.3	4	2.2	14	8.7	11	6.5	162	100	2
3.	When Strategic Sourcing is done Do Suppliers consistently meet your requirements?	109	67.4	7	4.3	7	4.3	25	15.2	14	8.7	162	100	2
4.	Timely delivery by Suppliers	109	67.4	53	32.6	0	0.0	0	0.0	0	0.0	162	100	1
5.	Suppliers deliver goods and services of acceptable quality consistently	123	76.1	7	4.3	$\frac{3}{2}$	19.6	0	0.0	0	0.0	162	100	1
6.	Suppliers/purchase prices are competitive and Value for Money is obtained	130	80.4	0	0.0	$\frac{3}{2}$	19.6	0	0.0	0	0.0	162	100	1
7.	In Procurement Planning, After Product Forecasting and Acquisition, do the Products delivered conform to specifications?	144	89.1	18	10.9	0	0.0	0	0.0	0	0.0	162	100	1
8.	Do you operate Formal Customer complaint and resolution procedure?	102	63.0	32	19.6	0	0.0	7	4.3	21	13.0	162	100	2
9.	Clinical utilization data are shared with our supply chain partners	102	63.0	14	8.7	7	4.3	39	23.9	0	0.0	162	100	2
10.	We share performance feedback with our supply chain partners on E-Procurement and other Platforms	81	50.0	60	37.0	0	0.0	21	13.0	0	0.0	162	100	2

4.6 Inferential analysis

4.6.1 Correlation Analysis

The study undertook Correlation analysis to find out if there was any significant relationship between the independent and the dependent variables. The findings obtained were presented in Table 7.

Table 7: Correlation Matrix

		Correlations				
		Performance of Level Five Hospitals	Strategic Sourcing	Procurement Planning	E-Procurement	Supplier Relationship
Performance of five Hospitals	Pearson Correlation	1				
	Sig. (2-tailed)					
Strategic Sourcing	Pearson Correlation	.590**	1			
	Sig. (2-tailed)	.000				
Procurement Planning	Pearson Correlation	.364*	.671**	1		
	Sig. (2-tailed)	.013	.000			
E-Procurement	Pearson Correlation	.519**	.880**	.591**	1	
	Sig. (2-tailed)	.000	.000	.000		
Supplier Relationship	Pearson Correlation	.728**	.810**	.500**	.713**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	46	46	46	46	46

** . Correlation is significant at the 0.01 level (2-tailed).
 * . Correlation is significant at the 0.05 level (2-tailed).

The findings obtained show that there was significant relationship between performance of level Five hospitals (the dependent variable) and strategic sourcing ($r=0.590$, $p<0.05$); procurement planning ($r=0.364$, $p<0.05$); e-procurement ($r=0.519$, $p<0.05$) and; supplier relationship ($r=0.728$, $p<0.05$). Based on these findings, the researcher went on to carry out regression analysis to probe the relationship further.

4.6.2 Regression Analysis

Regression analysis was carried out to test the relationship between the dependent and the independent variables.

4.6.3 Model Summary

Table 4.9 presents the summary of the regression model adopted by this study.

4.6.4 Multiple Regression

As shown in Table 8, the multiple correlation coefficients R had a value of 0.728. Multiple R is the correlation between the observed values of independent variables and the value of dependent variable predicted by the multiple regression models. As such, the findings show that there was a rather strong correlation between the predicted and observed values in the regression model. Furthermore the coefficient of determination R² which is the proportion of variance in the dependent variable that can be explained by the independent variables was found to be 0.531 implying that 53.1 % of variance in performance of level Five hospitals could be explained by strategic outsourcing, procurement planning, and E-procurement and supplier relationship. Conversely, the adjusted R² value of 0.485 means that 48.5% of variance in the performance of level Five hospitals in Kenya can be accounted for by the population the sample was taken from.

Table 8 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.728a	.531	.485	.20448

a. Predictors: (Constant), Supplier Relationship, Procurement Planning, E-Procurement , Strategic Sourcing

Table 9 shows the analysis of variance (ANOVA) output. The F-ratio in the ANOVA table (Table 9) tests whether the overall regression model is a good fit for the data. That is, the ANOVA shows whether the model, overall, results in a significantly good degree of prediction of the outcome variable. The table shows that the joint independent variables statistically significantly predict the dependent variable, $F = 11.587, p < 0.05$ and that other variables not included in this model may have accounted for the remaining variance. In other words, the regression model was a good fit for the data.

Table 9 Analysis of Variance

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.938	4	.484	11.587	.000a
	Residual	1.714	41	.042		
	Total	3.652	45			

a. Predictors: (Constant), Supplier Relationship, Procurement Planning, E-Procurement , Strategic Sourcing

b. Dependent Variable: Performance of Level Five Hospitals

Under regression coefficients, table 9, the positive beta values of the strategic sourcing, procurement planning, e-procurement and supplier relationship means that increase in strategic sourcing, better procurement planning, increase in use of e-procurement and enhancement of supplier relationship would lead to better performance of level Five hospitals. In order to test the relationships between each of the independent and dependent variable, the t statistic that tests

whether a β value is significantly different from zero ($\beta=0$) was considered. It is evident from Table 4.11 that strategic outsourcing ($\beta =0.099$, $t = 1.031$, $p<0.05$) made a significant contribution to the performance of Level Five Hospitals. This agrees with Lysons and Farrington (2006) who found out that outsourcing enhanced organizational performance. Procurement planning ($\beta =0.145$, $t = 2.641$, $p<0.05$) also made a significant contribution to the performance of Level Five Hospitals, which agrees with Lynch (2016) who points out that elaborate procurement planning meant enhanced performance.

E-procurement ($\beta =0.403$, $t = 6.689$, $p<0.05$) also made a significant contribution to the performance of Level Five Hospitals. This agrees with the findings of Leong (2012) who argues that e-procurement could augment the performance of hospitals. Lastly, supplier relationship ($\beta=0.426$, $t=5.909$, $p<0.05$) made a significant contribution to the performance of Level Five Hospitals. This is in agreement with PMI (2014) as well Burnett (2012) who argued that supplier relationships contributed to the overall performance of the organization.

Table 9: Coefficients

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.429	.166		2.575	.014
	Strategic Sourcing	.171	.166	.099	1.031	.005
	Procurement Planning	.408	.154	.145	2.641	.010
	E-Procurement	.965	.144	.403	6.689	.000
	Supplier Relationship	.932	.158	.426	5.909	.000

a. Dependent Variable: Performance of Level Five Hospitals

Table 9 reveals the relative contribution of the four independent variables to the variation of the dependent variable, expressed as beta weights. Herein, the significant t-test values ($P<0.05$) obtained for each of the independent variables shows that all the variables can be fitted in the following regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where

Y = Performance of Level Five Hospitals

X1= Strategic Sourcing

X2= Procurement Planning

X3= E-Procurement

X4= Supplier Relationship

ε =error term.

When using the unstandardized coefficients β values, the estimated multiple regression equation can be fitted as follows:

Performance of Level Five Hospitals = 0.429+ (0.171* Strategic Sourcing) + (0.408*Procurement Planning) + (0.965*E-Procurement) + (0.932* Supplier Relationship) + 0.166.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on the study findings, a number of conclusions can be made. It can thus be deduced that hospitals could perform well due to the fact that there was efficient supply chain management. In this regard, suppliers could be obtained at competitive prices and with short lead times. There were also good relationships with suppliers which could lead to sustainable procurement of equipment and medical supplies. The combined effect of these factors was good performance among hospital staff.

Regarding strategic sources, it can be concluded that the hospital often outsourced clinical services and IT services. It also frequently outsourced support services and transport services. Such outsourcing could enhance the performance of the hospital. However, all procurement activities were undertaken by the hospital which means that the hospital could control the quality of suppliers selected.

As far as supplier relationship was concerned, the study findings show that all the hospitals had collaborative relationships with suppliers. In addition, hospitals had long term relationships with suppliers. These relationships led to enhanced financial performance in hospitals. In most cases, hospitals had mechanisms for coordinating procurement activities with suppliers. This could have enhanced the supply chain performance as well as the performance of the hospital by extension.

On procurement planning, the findings show that the hospital had clear procurement planning strategies. This ensured that the goods procured were of the required standards; complied with technical specifications and; that suppliers were prequalified in advance so as to get good suppliers. However, most hospitals did not procure products protected by patent. The elaborate procurement planning meant that hospitals could see enhanced performance.

E procurement could play a vital role in the performance of level Five hospitals. However, and although it was practiced in the hospitals, the practice was not strong as shown by agreements to fair and little extent. Indeed most level Five hospitals had not adopted on E-procurement as they were still using the manual Local Purchasing Order. This denied hospitals enhanced performance in some instances.

Evidently, all the four independent variables had significant relationship between performance of level Five hospitals (the dependent variable) and strategic sourcing ($r=0.590$, $p<0.05$); procurement planning ($r=0.364$, $p<0.05$); e-procurement ($r=0.519$, $p<0.05$) and; supplier relationship ($r=0.728$, $p<0.05$). Based on these findings, the researcher went on to carry out regression analysis to probe the relationship further. This means that they played vital roles to

the overall performance of the hospitals as shown by the multiple correlation coefficients R which had a value of 0.728. Indeed, the findings show that there was a rather strong correlation between the predicted and observed values in the regression model. Furthermore the coefficient of determination R² was found to be 0.531 implying that 53.1 % of variance in performance of level Five hospitals could be explained by strategic outsourcing, procurement planning, and E-procurement and supplier relationship. Conversely, the adjusted R² value of 0.485 means that 48.5% of variance in the performance of level of V hospitals in Kenya can be accounted for by the population the sample was taken from.

Recommendations

There hospitals should strengthen their outsourcing activities and have workable frameworks on how to do so. In the case of some form of medical equipment, there was need to outsource procurement activities to professional procurement firms so as to cut down on cost of procurement while still ensuring that quality was not compromised. There was also need to review procurement policies so as to give flexibility to county governments to outsource from other entities if KEMSA could not deliver in time.

It is also recommended that there is need to put in place mechanisms for enhancing supplier relationships. This could be done by allocating a budget for ensuring feedback mechanisms in workshops and other forums so as to strengthen the existing relationships. This was vital since it could enhance the overall performance of the hospitals. The Managed Equipment Services (MES) to install, train users, provide repair and maintenance as well as replacement services for specialized medical equipment needed also to be strengthened so as to realize stronger relationships.

There was need for continuously enhance the capacity of procurement staffs to undertake procurement planning activities. Training could be done on negotiations, formulation of competent bid documents that were clear on compliance and quality requirements among others. There was also need to put mechanisms for guiding the purchase of unpatented products so that quality could be ensured.

Mechanisms for ensuring e-procurement should also be put in place. This could be done through training of hospital staff on e-procurement and its benefits. There was also need to procurement and put in place the right IT infrastructure for use in e-procurement. All manual Local purchase Orders needed to be digitized in the bid to ensure that e-procurement could be easily undertaken in the hospitals. There was also need to ensure that hospitals were electronically linked with vendors and that the centralized supply chain strategy was linked to the hospital system level so as to enhance the adoption of e-procurement in hospitals and the performance of such hospitals by extension.

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