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SUPPLY CHAIN RELATIONSHIP MANAGEMENT PRACTICES AND SUSTAINABLE PERFORMANCE OF PUBLIC PROCUREMENT IN LAKE REGION ECONOMIC BLOCK, KENYA

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ABSTRACT

The study sought to establish the effects of supply chain relationship management practices on sustainable public procurement in Kenya. Descriptive research design was adopted by the study. The Lake Region Economic Bloc (LREB) that covers 11 counties was used as the focus area of the study. County departments, National government departments and agencies were the targets of the study. A total of 290 officers who are in charge of evaluation of bids, contract administration and users were selected for the sample frame. Different departments of County executives, County assemblies, National government departments and agencies with a population of 1,118 officers were targeted. The researcher therefore distributed 290 questionnaires. Out of 290 questionnaires distributed, 278 were completely filled and returned to the researcher, this gave a response rate of 95.9%. This response rate was found to be within the acceptable limits for further analysis and reporting. The study adopted descriptive design where descriptive statistics were developed to facilitate the generation of inferential statistics by use of both univariate and multi-vicariate analysis. The study found that supply chain relationship management is statistically significant in explaining sustainable public procurement in Kenya. The influence was found to be positive. This means that unit improvement in supply chain relationship management would lead to an increase in sustainable performance of public procurement in LREB, Kenya. To improve supply chain relationship management in the context of sustainable public procurement, it is crucial to promote collaboration and communication among various stakeholders. Government agencies, suppliers, and other relevant parties should establish clear channels of communication and collaboration mechanisms

Key Words: Supply Chain Relationship Management Practices, sustainable public procurement performance, Supply Chain Network Theory

Background OF the Study

Sustainability and sustainable development have become terms of common usage in public policy around the world. Kuhlman & Farrington (2010) believe sustainability is derived from economic and ecological narratives that define the usage of scarce resources. Kotob (2015) citing Carter & Rogers (2008) looked at sustainability from the economic, social and environmental aspects while incorporating the business aspects of risk management, transparency, strategy and culture. Emas (2015) in reference to Bruntland 1987 report noted that sustainability describe the trade-off between environmental sustainability and economic development. Klarin (2018) citing Sachs (2010) suggests how there is no development without sustainability or sustainability without development. Sustainability therefore is the hallmark of human development.

The Rio ('92) declaration on environment and Development which was anchored on the integration of three components of sustainable development, economic development, social development and environmental protection formed the basis for sustainability approach to development across the world. Pursuant to the ideals of sustainability in development, the nations of the world held a summit dubbed '*The World Summit on Sustainable Developmen*t' in Johannesburg, South Africa in 2002. The summit made a lot of resolutions that form the framework of public governance for the 21st century and beyond. These fundamental resolutions require nations to promote sustainable governance at the domestic level. Thus, sound environmental, social and economic requirements should be anchored in public policy documents. Similarly, it required governance institutions to be responsive to the needs of the people, promote the rule of law, anti-corruption measures, gender equality and an enabling environment for investment that promote sustainable development.

The United Nations 2030 Agenda for Sustainable Development comprising of 17 Goals and 169 targets, sets out an ambitious vision for sustainable development which integrates economic, social and environmental dimensions. In pursuant and operationalization of these ideal, the SDG 12 seeks to achieve sustainable consumption and production by promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Notably, under target 12.7, the agenda seeks to promote public procurement practices that are sustainable, in accordance with national policies and priorities. In line with this framework, the EU (2020) policy document on Sustainable Development Strategy calls for the integration of economic, social and environmental considerations into operational procedures to achieve coherence and mutual reinforceability.

The world's annual public procurement spend is about $13 trillion, equivalent to one-sixth of global GDP (Chatham House, 2020). This has the potential to exert huge impact on global economy especially in promoting sustainable development. Nordic report (2021) noted that integration of sustainability aspects in national expenditure frameworks enhance the success of sustainability agenda among the countries of Northern Europe. Thus sustainable procurement of electronic, infrastructure and life style goods should be premised on sustainably responsive supply chain management practices.

Chin, et al (2015) in Global Conference on Sustainable Manufacturing in Berlin, Germany, observed that owing to the current global environmental demands, organizational performance metrics have radically changed to include greater emphasis on environmental and social performance while achieving the high economic performance. Such focus entails the triads; organization, environment and society that are mutually dependent for a shared value (Paulraj, 2011). In order to achieve organizational sustainability, firms need to pay attention to supply chain

management practices (Chinet al 2015). Rao (2006) argued that collaborative practices with suppliers must include designing and procuring green product, sustainable supplier development practices and helping suppliers to build their own environmental and social programs.
Roos (2013) in a study occasioned by GIZ on SPP in Least Income Countries (LICs) and its implications for World Bank financed projects noted that high-income countries like Germany, Norway and the United Kingdom have taken the lead in implementing Sustainable Public Procurement (SPP) by implementing policy and legal frameworks that inform the configuration of SCMPs both at the upstream and downstream. Such policies entailed investment of resources to build capacity in private businesses supply chains. Zimon, Tyan & Sroufe, (2019) in an empirical study that focused on Taiwanese industry found out that sustainability aspects should be inbuilt into supply chain management practices. Such aspects may consist of; ISO 14001 environmental management system, and corporate social responsibility. These aspects influence sustainability in both private and public sector supply chains. For instance Casieret, et al (2015) in a review of SPP implementation in Latin America and Caribbean countries identified key supply chain management practices which should in-build sustainability to ensure successful implementation of SPP. These practices included; market consultation (market research), specification development, supplier evaluation, award of contract based on Most Economic Assessed Tender (MEAT) criteria and monitoring and evaluation practices.

The UNCITRAL model law on Public Procurement (2014) includes provisions on environmental and social criteria, while the WTO Government Procurement Agreement similarly provides for procurement decisions to be based on environmental and social sustainability (The International Institute for Sustainable Development, 2014). In South Africa, SPP focus areas are supported by a strong foundation of governance systems which include redesign of the central supplier database as well as deliberate efforts on supplier development (South Africa, Western Cape Provincial Government, 2015). African Development Bank (2020) citing SDG (12.7.1) noted that sustainability requirements can be integrated at the various stages of public project cycle from identification, preparation, through appraisal, negotiations, and to contract implementation.

In Ugandan public procurement operations, sustainability has been implemented to varying degrees. Nantes (2019) noted that whereas, the country has obligated itself to SDG and successful designed and implemented public procurement law as per UNCITRAL model law (2014), development of a procurement plans depends on how public organizations integrates sustainable definition of needs, sustainable commodity categorization and involvement of stakeholders that include the user departments, suppliers and other supply chain partners. These approaches affect the full integration of SPP into supply chain management practices.
The Public Procurement and Asset Disposal Act (2015) while borrowing heavily from the United Nations Commission on International Trade Law (UNCITRAL, 2014), operationalized these standards. Section 41(2-5) of the Act set out the circumstances under which bidders can be debarred to ensure value for money in procurement; Section 53(6)specifically outlines key considerations in procurement planning that take into consideration the need to incorporate Women and Youth under Access to Government Procurement Opportunities (AGPO) policy and Section 60 (3c-g) stipulates key considerations in the design of technical specifications that include life of the item, socio-economic impact of the item, environmental issues, cost of disposal and cost of servicing and maintaining an item. These aspects of technical specifications form the framework for SPP in Kenya. But as Roos, (2013) and Casier et, al (2015) observed, public procurement suffers from a general lack of knowledge on the part of supply chain management officers and the stakeholder groups with regard to policies, requirements and procedures to implement SPP.

Consequently, ineffective monitoring schemes to establish the effectiveness of the Preference and Reservations schemes under AGPO policy largely affect implementation of SSP especially in a developing country like Kenya.

Statement of the Problem

Sustainable Public Procurement (SPP) is about governments using their purchasing power to provide leadership for sustainable development (IISD, 2014). This calls for integration of sustainability aspects in public sector supply chain management practices. In the public sector organizations, supply chain is built around the need for accountability, transparency and value for money (Institute of Economic Affairs, 2020). The need to improve public sector organizational efficiency, reduce waste, empower local communities, overcome supply chain risk, and achieve high level of responsiveness to the ever changing public needs, presupposes that sustainability aspects are integrated in supply chain management practices (Montalbán, Pérez, Amalia, Sanz, & Pellice, 2017).SCM practices provide the framework for integrating best practices and effective coordination of sources of supplies and enabling value enhancing relationships that satisfy end customers and other stakeholders (Manokaran, 2019). SCMPs enable organizations to work with the suppliers to bring about holistic value (Gudda & Deya 2019).Sustainability requirements impose a set of infrastructural and system imperatives that must be contextualized in the supply chain management practices.

In the context of Kenya's public sector procurement, sustainability requirements are embedded in procurement legal framework. This includes frameworks for incorporating diversity, development of SMEs through Access to Government Procurement Opportunities (AGPO) and other affirmative programmes in National and County governments' procurement. However, enforcement of affirmative policies by MDAs has always been a challenge. For instance, PPRA report 2020/2021 indicated that Government agencies reserved an average of 18.8% of tenders for the special groups representing an expenditure of Ksh.27.9 billion out of Ksh.148 billion spent on goods, works and services in the FY 2020/2021. This is contrary to the requirement of 30%. This in addition to AGPO groups having capacity challenges in delivering project assignments thus affecting value of goods and project reserved for them. Further, cost escalation is a major problem in public sector supply chain (Institute of Economic Affairs, 2019). For instance, OAG report of 2016/2017 FY documented that Ksh. 2.5 billion of taxpayers' money was paid out for uncompleted works in state departments and Judiciary. This trend continued in the preceding FYs; 2017/2018, 2018/2019, 2020/2021 and 2021/2022 respectively as indicated by incomplete projects occasioned by cost overruns. These challenges have been attributed to ineffective supply chain management practices which failed to integrate sustainability aspects.

Enforcing environmental standards and regulations is one area the government has had challenges especially the ability to monitor the negative impacts of MDAs activities arising from procurement (Muigua, 2019). Transparency international (2020) observed that the local communities should consistently engage their local administration and NEMA to ensure that their comments inform the environmental review and decision making process in selection and engagement of contractors. Evidence from the ground especially on ongoing public projects indicate suppliers and contractors performing inconsistently from these requirements due to ineffective integration of sustainability aspects in supply chain relationship management practices.

Many studies have been conducted on the concept of supply chain relationship management practices. However, these studies mainly focused on how supply chain relationship management

practices influence organizational performance. For instance, Apopa (2018) conducted a study to establish effect of supply chain relationship management practices on performance in Government ministries with product quality, service delivery, and compliance with statutory obligation and cost efficiency as performance metrics. The perspective was narrow, for it excluded sustainability metrics of performance. Gudda & Deya (2019) though focusing on supply chain relationship management practices and how they affect growth in SMEs, focused on private businesses where PPADA, 2015 and regulations 2020 do not apply. Other studies conducted in other countries seem to have follow the same pattern though with different supply chain relationship management practices (Manokaran, 2019, Malaysia; Kumar & Kushwaha, 2018, India). Therefore there exist a gap that this study intends to fill. This study therefore sought to establish the influence of supply chain relationship management practices on sustainability of public procurement.

General Objective

The general objective of the study was to examine how supply chain relationship management practices influence sustainable public procurement performance in LREB, Kenya.

Theoretical Framework

Supply Chain Network Theory

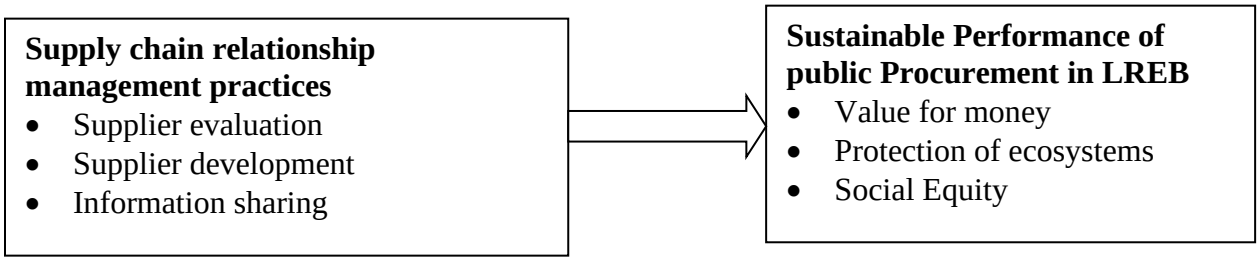
Supply chain network theory base its existence on empirical research undertaken on real world networks; social networks, (Newman, 2001), business networks, (Souma et al., 2003) and communication systems (Albert et al., 1999). However, as noted by (Ramasco et al., 2004; Baraba, 2009) real-world networks cannot describe supply chain inter-connectivity which may span different geographical areas. Hearnshaw & Wilson (2013) described supply chain as a modelled network of nodes representing heterogeneous business units which exist in such configuration to produce products or services. The network configuration represent exchange relationships and commit to mutual contracts if any exist (Hearnshaw & Wilson 2013). Supply chain networks exist primarily to generate value through inter-organizational relations (Mutwiri et al, 2019).

Supply chain network theory is based on certain assumptions which may fundamentally affect its application in contemporary businesses; that companies embedded within a network cannot freely decide how to act towards their own objectives, nor can they operate in isolation from each other (Håkansson & Ford, 2002) and it is also assumed that networks contribute to the information sharing among the entities in the supply chain. These are the hallmarks which are fundamental to competitive advantage. Further as Shook et al. (2009), observe, supply chain network theory does not explicitly provide an explanation for companies of when to make or buy, but gives an explanation where and from whom to buy from within the network, or escalate the strategic alliances.

Supply chain networks theory has been employed in studying both global supply chains and local specific industries supply chains (Peck 2005; Zhao, Anand & Mitchell, 2005). Supply chain networks in supply management are defined in terms of strong relationships and collaboration between various entities, be they organizations, manufacturers, suppliers or customers (Wellenbrock, 2013). This study takes the view that theory is relevant in establishing supply chain relationships that lead to sharing of information, identifying inherent risks in supply chain configurations and establishing the framework for supplier evaluation and supplier development.

Conceptual Framework

Adom, Hussein &Agyem, (2018) quoting Camp, (2001) define a conceptual framework as a structure which the researcher believes can best explain the natural progression of the phenomenon to be studied. It is arranged in a logical structure to provide a picture or visual display of how ideas in a study relate to one another (Grant &Osanloo, 2015). It creates linkages with theories, concepts and empirical research in postulating a researcher's view of what kind of relationships the study needs to pursue. It also demonstrates the various actions the researcher needs to pursue with respect to each variable (Adom, Hussein & Agyem, 2018). Figure 2.1 illustrates the conceptual framework that was pursued by this study.



Independent variables **Dependent variable**

Figure 2. 1: Conceptual framework

Supply Chain Relationship Management

Supplier Relationship Management is a comprehensive approach to managing an organization's interactions with the firms that supply the products and services it uses (Mettler and Rohner, 2009). Supplier relationship management (SRM) is the process that defines how an organization interacts with its suppliers in the process of delivering its products. Much academic research has been undertaken in the field of supply chain management, purchasing and marketing with a view to examine how value is created from close buyer supplier relationships (Teller, Kotzab, Grant, & Holweg, 2016).Rucha & Abdallah, (2017) posit it that SRM plays an important role in the reduction of costs and the optimization of performance in organizations.

Panontongan (2017) identify seven areas which are critical in the SRM implementation process; purchasing strategy development, observation of potential suppliers, supplier evaluation, performance assessment and classification of suppliers, disturbance and dissolution management, cooperation and collaboration with suppliers and development of suppliers. These are the hallmarks which define SRM as a value adding process.

As one of the processes that define the operational framework for SRM, supplier selection lays the foundation for strategic sourcing (Ukalkar, 2000). The overall goal of the evaluation process is to reduce the purchasing risk and to maximize the overall value to an organization (Monczkaet al, 2011). The strategic position of organizations is enhanced by careful evaluation of suppliers and essentially should lead to strong relationship between the buyers and the sellers (Prasadet al, 2016). Mukherjee, (2014) in a study on Supplier selection criteria and methods stated that supplier evaluation selection process is influenced by demand side and supply side uncertainties. The density of supplier market affect the bargaining power of buyers as well as suppliers (Lysons and Farringdon, 2016). These affect decision making processes especially with regard to cost or value driven procurement strategies to be adopted. Additionally, Mukherjee, (2014) identified the following aspects as influencing supplier evaluation and selection; type of product, complexity of design and availability of material. Carter, (1995) developed a framework consisting of TEN Cs

of supplier evaluation whose critical goal is to enhance value through a ten dimensional process. This framework while acknowledging the traditional aspects in an evaluation process brings on board such aspects as; statutory compliance and effective communication processes. This comprehensive approach to supplier evaluation attempts to bring about a holistic value to organizations.

Supplier relationship management define suppliers as the linchpin to value creation in any organization (Ukalkar, 2000; Lysons & Farringdon, 2016). Towards this end, supplier development is deemed as an important step towards improving competitiveness. This is a process to bridge the performance gap between the buyer's expectation and supplier's ability to meet required needs and form the basis for effective supplier-buyer relationship. The process reinforces innovative behavior to improve quality, produce cost effective and environmentally acceptable products (Saunders, 1997). Supplier development is therefore a requirement for continuous improvement of all organizational aspects (Bowersox, Close & Cooper, 2008).
Traditionally, supplier development focused on economic goals and sought to develop suppliers' economic performance and capabilities related to quality, cost, and delivery (Busse, Schleper, Niu & Wagner, 2016). Increasingly, however, supplier development is focusing on sustainability dimensions such as environmental goals which include; energy efficiency, waste reduction, environmental conservation and socio-ethical goals such as fairness of wages, abstinence from unethical practices, empowerment of SMEs and inclusion of disadvantage groups in procurement. This paradigm shift is further informed by greater emphasis on green and social practices throughout the supply chain (Blome, Paulraj, & Schuetz 2014). This emphasis on sustainability practices in supplier development programs has permeated to all sectors including public procurement which traditionally has never encouraged any effort to develop suppliers. Effective supplier development leads to sustained supplier relationships based on mutually accepted capacity standards.

SRM require closer linkages driven by information sharing as an effective way of managing supply chains performance through collaborative use of resources and capabilities (Ding, Guo &Liu, 2011). Internal and external linkages that are aligned with system-wide objectives allow organizations to shift from arm's length to an integrated continuum of possible relationships (Barlow & Lee, 2005). The seamlessly coordinated supply chain is a potential source of competitive advantage (Barratt & Barratt, 2011). Information sharing in supply chain networks has given a lot of leverage to participating organizations (Arshinder & Deshmukh, 2008).

The arrangement leads to significant reduction of supply chain management costs (Ding, Guo & Liu, 2011), improving partner relationships (Barratt & Barratt, 2011) and improving order cycle management and hence enhanced customer satisfaction (Li & Lin, 2006). Information sharing therefore is fundamental to effective and efficient supply chain management that is achieved by faster information flow, reduced customer response time and enhanced coordination and collaboration in sharing the risks and management of supply chain costs (Lotfiet al, 2013). This study views supplier evaluation, supplier development and information sharing as a facilitative framework in supply chain relationship management.

Empirical Literature Review

Supply Chain Relationship Management Practice

Nazifa and Ramachandran (2019) conducted a study on Information Sharing in Supply Chain Management and its influence on supply chain relationship among cooperative Partners in

Manufacturing Industry in Malaysia. The study sought to empirically determine whether information sharing between supply chain partners has significant association or impact on business performance with respect to product quality. To achieve this objective, the study adopted a descriptive design to target 300 companies from the Malaysian manufacturer's directory. 200 responses were received representing 67%. Descriptive and inferential statistics were generated. From the study, it is indicated that information sharing with respect to demand forecasting, production schedules and inventory changes enhance supply chain relationship and hence organizational performance. The research demonstrated that for strategic SCM to be successful, scholars must not focus on one particular inhibitor, but rather consider customer integration, supplier integration and internal functions in combination.

Rockson, Anane & Sey (2017) conducted a study that focused on managing supplier relationship in a typical public procurement entities in Ghana. The study sought to establish outcome and challenges encountered in managing such relationships. The principal objective of the study centered on identifying different supplier relationship strategies generate value for money in public procurement and improvement these relationship offer public sector procurement. The study was conducted in two public institutions in Ghana; Kwame Nkrumah University of Science and Technology (KNUST) and Cape Coast Technical University (CCTU). The study collected data using questionnaires from the staff working in procurement units. The study was descriptive in nature, there was no need to measure validity and reliability of measures. The establish that relationship that exists between the institution and its suppliers is a transactional relationship where goods from suppliers are exchanged for money and each time such products and/or goods are needed, the same procedure is used again. However, the study recommended that strategic items procured by public institutions require long term relationships

Owuor, et al (2015) carried out a study on effect of strategic supplier relationship management on internal operational performance of manufacturing firms. The study sought to establish the effect of buyer supplier communication on operational performance of manufacturing firms, evaluate the influence of buyer supplier joint decisions on operational performance of manufacturing firms and investigate the overall effect of strategic supplier relationship management on internal operational performance of manufacturing firms. To achieve these, the study adopted correlational research design, cross sectional study conducted at one point in time. The study applied questionnaires which were tested for reliability in a pilot study and produced Cronbach's alpha mean value of 0.739. The study targeted 54 employees of EABL. The results of study revealed that buyer-supplier joint decisions and supplier communication management had positive effect on internal operational performance of manufacturing firms in Kenya. The study demonstrated statistically significant evidence that cost reduction, socially accepted products and continuous value management are achieved in effective buyer-supplier relationship.

Kosgei, & Gitau (2016) carried out a study with a view to establishing relationship between supplier relationship and organizational performance. The study analysed two aspects of supplier relationship; trust and mutual goals. These provided the framework for the study. The study adopted a cross-sectional study design where either the entire population or a subset of the population was selected. Because of the heterogeneous nature of the population, stratified random sample from the target population of 272 was selected. Using a multiple-regression model, the study analysed data with the predictor variables being trust and mutual goals. The study found out that mutual sharing of goals and building of trust are essential in ensuring supplier relationships. The study provided evidence that if supplier relationships are managed well, there is bound to be

a positive impact on organizational performance that will enable an organization to stay afloat in this competitive environment.

RESEARCH METHODOLOGY

Research Design

This study adopted descriptive design. Sekaran (2003) observed that descriptive study is undertaken in order to ascertain and be able to describe the characteristics of the variables of interest in a situation. Descriptive studies are conducted in communities to ascertain extent of issues that affect the community (Mugenda, 2011). The goal of descriptive research therefore is to describe characteristics of phenomena that affect particular situation or community (Nassaji, 2016). In such research, the data may be collected qualitatively, but it is often analyzed quantitatively, using descriptive and inferential statistics to determine relationships. This study analyzed the influence of supply chain management practices on SPP.

Research Philosophy

This study is based on positivistic philosophy. Positivistic approaches are founded on a belief that the study of human behaviour should be conducted in the same way as studies conducted in the natural sciences (Collis & Hussey, 2003). Positivistic approaches seek to identify, measure and evaluate any phenomena and to provide rational explanation for it (Neville, 2007).Positivists believe in establishing linkages and relationships between the different variables of the subject and relate them to a particular theory or practice. This philosophy is appropriate in studying the influence of supply chain management practices on SPP.

Target Population

The population that was of concern for the study was drawn from the Fourteen Counties that constitute the Lake Region Economic Bloc (LREB) in Kenya. This was both County and National Government agencies. The target population which constitute a section of the population as stipulated by Mugenda and Mugenda (2003) were officers who are responsible for procurement initiation, specification development, procurement processing, and evaluation of bids, disposal and contract administration. These are officers who were deemed to be knowledgeable in public supply chain management processes. The table below illustrates the target population in the fourteen counties;

Table 3. 1: Target Population

County	County and National Government and Agencies	Target Population	Percentage
Kisumu	National Government and Agencies	51	4.5
	County Executive and Assembly	46	4.1
Bomet	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Kericho	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Bungoma	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Kakamega	National Government and Agencies	51	4.5
	County Executive and Assembly	46	4.1
Nyamira	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Homa Bay	National Government and Agencies	31	2.8
	County Executive and assembly	46	4.1
Kisii	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Siaya	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Trans Nzoia	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Migori	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Vihiga	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Nandi	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Busia	National Government and Agencies	31	2.8
	County Executive and Assembly	46	4.1
Total		**1,118**	**100**

SOURCE: County National Government, Agencies, County Executive and Assemblies Human resource departments

Sample Size and Sampling Technique

Sample Size

A sample is a set of observations drawn from a population by a defined procedure (Namusonge, 2018). According to Kasomo (2007, a sample size depends on the purpose of inquiry, number of variable in the study, type of research design, the method of data analysis and size of accessible population. Sample size is governed by the extent of precision and confidence desired (Sekaran, 2003). The confidence level chosen for this study was 95% and hence 5% margin of error. The population for this study is finite and hence the study adopted the formulae by Kothari (2004).

$$n = \frac{z^2 \,.\, N \,.\, \sigma_p^2}{(N-1)e^2 \;+\; z^2\,\sigma_p^2}$$

Where; n = Size of the sample,

N = Size of the population and given as 1118
e = Acceptable error and given as 0.05,
∂p = The standard deviation of the population and given as 0.5 where not known,
Z = Standard variation at a confidence level given as 1.96 at 95% confidence level.
Substituting;

Therefore; $n = \frac{1.96^2 \,.\, 1{,}118 \,.\, 0.5*0.5}{(1{,}118-1)0.05^2 + 1.96^2\ 0.5*0.5}$

$$n = \frac{1073.7272}{2.7925 + 0.9604} \quad , \quad n = \frac{1073.7272}{3.7529}$$

Therefore; n = 290

Sampling Technique

The study used stratified random sampling to select 290 staff from the target population of 1,118. Kothari & Gaurav (2014) stated that this technique is appropriate if the target population does not constitute a homogenous group. Proportionate allocation was applied to identify the number of elements allocated to the various strata.

Data Collection Instruments

This study used both primary and secondary data. Primary data was from first-hand occurrence which has not been exposed to processing or any other handling. The primary data was collected by means of questionnaire and an interview schedule. A questionnaire was the main means of collecting quantitative primary data. However, the open ended question items generated qualitative data for the study. Martins, da Cunha & Serra (2018) observed that secondary data includes data that has been gathered before and can be reused for new research to generate new knowledge. Analysis based on secondary therefore provides many opportunities for further research through replication, re-analysis and re-interpretation of existing research (Johnson, 2014. For the purpose of this study, secondary data was collected from published journals and theses.

Pilot Study

Piloting of the questionnaire was carried out to establish the reliability and validity of the instrument. The pilot study was therefore intended to establish the feasibility of the study in terms of the adopted research design, adequacy of the questions and the sample frame. The questionnaire was pre-tested on selected heads of department and sections before commencement of the study. Saunders et al (2016) and Fink (2013) observed that the minimum number of respondents for pilot study is at least 10. This study identified 20 respondents for the pilot as per the recommendations.

Data Analysis and Presentation

The collected data was processed and analyzed as per the study objectives. Both descriptive and inferential statistics were applied. Descriptive statistics such as mean, median, mode and standard deviation were generated. This was to facilitate other analysis in the development of inferential statistics. The hypotheses were tested using F- tests; based on analysis of variance (ANOVA) and t-test was carried to assess the significance of the relationships between variables. Statistical Package for Social Sciences (SPSS) version 24.0 was the tool of analysis. The collected data was assumed to be normally distributed.

Univariate regression model was used to test the relationship between variables. A univariate model has one dependent and one predictor, whereas a multivariate linear regression model has

one outcome and multiple predictors (Apopa, 2018). The regression analysis generated other test statistics like Student t-Tests, adjusted $R^2$and F-test.

Regression model for objective one;

Supply chain relationship management practices

$Y = \beta_0 + \beta_1 X_1 + \mathcal{E}$ …….. (1)

Where;

Y = Sustainable performance of public procurement

β_0= constant

β_1= Regression coefficient

X_1 = Supply chain relationship management practices

ε = Random or Stochastic error term

RESEARCH FINDINGS AND DISCUSSION

Descriptive Analysis

This section presents findings on Likert scale questions where respondents were asked to indicate their level of agreement on various statements that relate with the influence of supply chain management practices on sustainable public procurement and the moderating effect of legal requirements. They used a 5-point Likert scale where 1-strongly disagree, 2-disagree, 3-moderate, 4-agree, 5-strongly agree. The means and standard deviations were used to interpret the findings where a mean value of 1-1.4 was strongly disagree, 1.5-2.4 disagree, 2.5-3.4 neutral, 3.5-4.4 agree and 4.5-5 strongly agree. Standard deviation greater than 2 was considered large meaning responses were widely spread out and not tightly clustered around the mean.

Supply Chain Relationship Management Practices

The first objective of the study was to determine the influence of supply chain relationship management practices on sustainable performance of public procurement in LREB, Kenya. In this study, supply chain relationship management practices was measured through supplier evaluation, supplier development and information sharing. The respondents were requested to indicate their level of agreement with various statements on supply chain relationship management practices. The study results were as shown in Table 4.1

In relation to supplier evaluation, the respondents agreed that supplier evaluation consider life cycle cost of the procurement (M= 3.982, SD= 0.375). In addition, the respondents agreed that supplier evaluation undertakes price comparison analysis with a view to engaging the most economical bidder (M= 3.948, SD= 0.34). Further, the respondents agreed that supplier evaluation forms the basis for engaging and empowering citizen contractors (M= 3.889, SD= 0.377). The findings also show that supplier evaluation framework gives preference to AGPO groups and other disadvantage groups in the community (M= 3.863, SD= 0.36). The respondents agreed that Technical expertise is engaged during evaluation to identify capable and cost effective contractors (M= 3.836, SD= 0.33). In addition, technical expertise is engaged during evaluation to identify environmentally compliant suppliers (M= 3.777, SD= 0.345). The respondents also agreed that supplier evaluation framework forms the basis for capacitating citizen contractors and other disadvantaged groups on long term basis (M= 3.738, SD= 0.361).

Concerning supplier development practices, the respondents agreed that supplier training helps supplier manage costs and promote value for money (M= 3.898, SD= 0.358). The respondents also agreed that supplier development activities target citizen contractors, AGPO groups and other

disadvantage groups (M= 3.876, SD= 0.345). The respondents agreed that environmental compliance is part supplier development program (M= 3.798, SD= 0.387). In addition, the respondents agreed that supplier training and development helps contractors/suppliers develop cost effective relationships with their department/section (M= 3.787, SD= 0.432). Further, the respondents agreed that development of suppliers through incentives contributed to good relationship with local community and promote social equity (M= 3.727, SD= 0.308).

Concerning information sharing practices, the respondents agreed that their organization usually share price information with suppliers to promote cost effectiveness (M= 3.876, SD= 0.376). The respondents also agreed that environmental compliance requirements are shared with suppliers to improve their performance (M= 3.832, SD= 0.365). In addition, information on procurement opportunities is shared with the local communities to improve relationship (M= 3.812, SD= 0.387). The respondents also agreed that constant sharing of sharing of information with big spend suppliers/contractors enhance long term mutually beneficial relationships (M= 3.764, SD= 0.367). The respondents agreed that sharing of information with AGPO, disadvantage groups and citizen contractors: improve the contract performance (M= 3.745, SD= 0.387).

The findings show that the respondents were of the pinion that supply chain relationship management practices influences sustainable performance of public procurement in LREB, Kenya as supported by an aggregate mean score of 3.805 (SD=0.353). The findings agree with those of Nazifa & Ramachandran (2019) who established that relationship that exists between the institution and its suppliers is a transactional relationship where goods from suppliers are exchanged for money and each time such products and/or goods are needed, the same procedure is used again. In addition, Rockson, Anane and Sey (2017) indicated that information sharing with respect to demand forecasting, production schedules and inventory changes enhance supply chain relationship and hence organizational performance. Further, Magut (2019), Parmeteu & Ismail, (2018) established that supplier relationship metrics such as supplier development and information sharing are critical in enhancing the performance responsiveness of public sector organizations. Hence from these findings, this study concludes that supply chain relationship management practices are critical in enhancing sustainability in public sector organizations.

Table 4.1: Descriptive Statistics for supply chain relationship management Practices

Statements	1 %	2 %	3 %	4 %	5 %	Mean	Std. Dev.
Supplier Evaluation Practices							
Supplier evaluation consider life cycle cost of the procurement	3.6	7.7	12.8	57.9	17.9	3.982	0.375
Supplier evaluation undertakes price comparison analysis with a view to engaging the most economical bidder	4.5	6.4	20.5	51.3	17.3	3.948	0.34
Supplier evaluation forms the basis for engaging and empowering citizen contractors	4	8.1	18.5	55.5	13.9	3.889	0.377
Supplier evaluation framework gives preference to AGPO groups and other disadvantage groups in the community	1.5	15.3	19.9	42.9	20.4	3.863	0.36
Technical expertise is engaged during evaluation to identify capable and cost effective contractors	1.5	9.2	25	52	12.2	3.836	0.33
Technical expertise is engaged during evaluation to identify environmentally compliant suppliers	4.6	14.3	24	37.2	19.9	3.777	0.345
Supplier evaluation framework forms the basis for capacitating citizen contractors and other disadvantaged groups on long term basis	1.2	15.1	26.2	46.5	11	3.738	0.361
Supplier Development Practices							
Supplier training helps supplier manage costs and promote value for money	1	6.4	18.7	55.7	18.2	3.898	0.358
Supplier development activities target citizen contractors, AGPO groups and other disadvantage groups	1.5	9.2	14.4	54.9	20	3.876	0.345
Environmental compliance is part supplier development program	2.8	9.9	10.6	58.2	18.4	3.798	0.387
Supplier training and development helps contractors/suppliers develop cost effective relationships with your department/section	4.7	6.7	17.3	52.7	18.7	3.787	0.432
Development of suppliers through incentives contributed to good relationship with local community and promote social equity	1.5	6	23.9	55.2	13.4	3.727	0.308
Information Sharing Practices							
our organization usually share price information with suppliers to promote cost effectiveness	1.8	9.4	12.4	67.6	8.8	3.876	0.376
Environmental compliance requirements are shared with suppliers to improve their performance	0.9	11.2	19.5	54.4	14	3.832	0.365
Information on procurement opportunities is shared with the local communities to improve relationship	0.6	16.8	12.3	54.2	16.2	3.812	0.387
Constant sharing of sharing of information with big spend suppliers/contractors enhance long term mutually beneficial relationships	1	6.4	18.7	55.7	18.2	3.764	0.367
Sharing of information with AGPO, disadvantage groups and citizen contractors: improve the contract performance	1.5	9.2	14.4	54.9	20	3.745	0.387
Aggregate Score						**3.805**	**0.353**

Test for Hypothesis One

The first specific objective of the study was to determine the influence of supply chain relationship management practices on sustainable public procurement in Kenya. The associated null hypothesis was that supply chain relationship management practices have no significant influence on sustainable public procurement performance. A univariate analysis was conducted in which sustainable public procurement in Kenya was regressed on supply chain relationship management practices.

The R-Squared depicted the variation in the dependent variable that can be explained by the independent variables. The greater the value of R-squared the greater the effect of independent variable. The R Squared can range from 0.000 to 1.000, with 1.000 showing a perfect fit that indicates that each point is on the line. As indicated in Table 4.16, the R-squared for the relationship between Supply chain relationship management practices and sustainable public procurement performance was 0.245; this is an indication that at 95% confidence interval, 24.5% of variation in sustainable public procurement performance can be attributed to changes in supply chain relationship management practices. Therefore, supply chain relationship management practices can be used to explain 24.5% of changes in sustainable public procurement performance but there are other factors that can be attributed to 75.5% change in sustainable public procurement performance in LREB, Kenya.

Table 4.2: Model Summary for Supply Chain Relationship Management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.498[a]	.245	.241	.67231

a. Predictors: (Constant), supply chain relationship management

The analysis of variance was used to determine whether the regression model is a good fit for the data. It also gave the F-test statistic; the linear regression's F-test has the null hypothesis that there is no linear relationship between the two variables. From the analysis of variance (ANOVA) findings in Table 4.3, the study found out that that Prob>$F_{1,}$= 0.000 was less than the selected 0.05 level of significance. This suggests that the model as constituted was fit to predict sustainable public procurement performance. Further, the F-calculated, from the table (515.39) was greater than the F-critical, from f-distribution tables (3.875) supporting the findings that supply chain relationship management can be used to predict sustainable public procurement performance in LREB, Kenya.

Table 4.3: ANOVA for Supply Chain Relationship Management

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45.87	1	45.87	515.39	.000[b]
	Residual	24.735	276	0.089		
	Total	70.605	277			

a. Dependent Variable: sustainable performance of public procurement in LREB, Kenya
b. Predictors: (Constant), supply chain relationship management

From the results in Table 4.4, the following regression model was fitted.

$$Y = 0.251 + 0.431\ X_1$$

(X_1 is supply chain relationship management)

The coefficient results showed that the constant had a coefficient of 0.251 suggesting that if supply chain relationship management was held constant at zero, sustainable performance of public procurement would be 0.251 units. In addition, results showed that supply chain relationship management coefficient was 0.431 indicating that a unit increase in supply chain relationship management would result in a 0.431 improvement in sustainable performance of public procurement. It was also noted that the P-value for supply chain relationship management coefficient was 0.000 which is less than the set 0.05 significance level indicating that supply chain relationship management was significant. Based on these results, the study rejected the null hypothesis and accepted the alternative that supply chain relationship management has positive significant influence on sustainable performance of public procurement in LREB, Kenya.

Table 4.4: Beta Coefficients for Supply Chain Relationship Management

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.251	.074		3.347	.000
	supply chain relationship management	.431	.092	.429	4.685	.000

a. Dependent Variable: sustainable performance of public procurement in LREB, Kenya

Conclusions

The first null hypothesis test was ‘Supply chain relationship management practices have no significant influence on sustainable performance of public procurement in LREB, Kenya”. The study found that supply chain relationship management is statistically significant in explaining sustainable public procurement in Kenya. The influence was found to be positive. This means that unit improvement in supply chain relationship management would lead to an increase in sustainable performance of public procurement in LREB, Kenya. Based on the findings, the study concluded that supply chain relationship management positively and significantly influences sustainable performance of public procurement in LREB, Kenya.

Recommendations

To improve supply chain relationship management in the context of sustainable public procurement, it is crucial to promote collaboration and communication among various stakeholders. Government agencies, suppliers, and other relevant parties should establish clear channels of communication and collaboration mechanisms. This can include regular meetings, workshops, or the use of technology platforms to share information, track progress, and address any issues promptly. Enhanced collaboration can foster trust and transparency, which are essential for the success of sustainable public procurement initiatives.

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