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Supply Chain Quality Management Practices and Sustainable Performance of Public Procurement in Lake Region Economic Block, Kenya

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ABSTRACT

Purpose: The objective of the study was to examine the effect of supply chain quality management practices on sustainable performance of public procurement Lake Region Economic Bloc, Kenya. The focus was on the achievement of economic, social and environmental performance metrics across County and National government departments and agencies. **Methodology:** 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%.

Findings: Based on the findings, the study concluded that supply chain quality management practices positively and significantly influence sustainable public procurement in Kenya.

Unique Contribution to Theory, Practice and Policy: This study therefore recommends that public procurement in Kenya should establish robust systems for the continuous monitoring and improvement of supplier quality. This includes setting up regular quality assessments, performance evaluations, and audits of suppliers to ensure they meet sustainability and quality standards. The study contributes to theory, practice, and policy by showing that supply chain quality management significantly improves sustainable public procurement performance. It highlights the importance of integrating quality practices with sustainability goals, encourages procurement practitioners to adopt continuous supplier evaluation and monitoring systems, and supports policymakers in strengthening regulations to enhance sustainable procurement in Kenya.

Key Words: *Supply Chain, Quality Management Practices, Sustainable Performance*

Background of the Study

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 (Owuor, Oginda, & Obura, 2019). 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 (Vaníčková, 2017).

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 (Northouse, 2019).

The World Bank (2016) has described sustainable procurement as a process which incorporates sustainability considerations throughout the procurement process in order to achieve optimal value for money in delivering development objectives. This concept is based on three pillars, namely economic, environment and social. World Bank (2016) links sustainable procurement and sustainable development. Sustainable procurement incorporates social and environmental factors alongside financial factors in making procurement decisions. SPP therefore is a strategic lever that drives innovation and improve the sustainability of performance of both public and private organizations (UNEP, 2017).

The PPADA (2015) enshrined sustainability standards under section 60 (3) which require procuring entities (PEs) to incorporate sustainability aspects in the development of specifications. Oginda & Oteki (2016) noted that the integration of SPP in public procurement operations imperatively require environmental issues to be incorporated in specification design of products and services in addition to ensuring that all tender documents have specified

environmental components in a bid to enhance environmental sustainability of public procurement processes. However, as Ngunjiri (2019) observed, inadequate understanding of sustainability aspects by procurement practitioners negatively affect integration of such policies in procurement processes.

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 SCMPs.

Many studies have been conducted on the concept of supply chain management practices. However, these studies mainly focused on how SCMPs influence organizational performance. For instance, Apopa (2018) conducted a study to establish effect of SCMPs 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 SCMPs 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 SCMPs (Manokaran, 2019, Malaysia; Kumar & Kushwaha, 2018, India). Therefore, there exist a gap that this study intends to fill. This study therefore sought to assess the effect of supply chain quality management practices on sustainable performance of public procurement Lake Region Economic Bloc, Kenya.

General Objective

The general objective of the study was to assess the effect of supply chain quality management practices on sustainable performance of public procurement in Lake Region Economic Bloc, Kenya

Theoretical Framework

Theory of Constraints

The theory of constraints (TOC) was first put forth by Goldratt (1984) in his novel *''the goal''*. The theory is a management philosophy which postulates that for effective management of organizations to be successful, there is need to focus on the weakest ring(s) in the chain in order to improve the performance of entire system (Şimşit, Günay & Vayvay (2014). Pacheco (2014) citing Inman, Sale & Green, (2009); Gupta & Boyd (2008) observed that the contemporary application of the theory adopts a continuous improvement philosophy on dealing with constraints. Earlier Goldratt (1990) had posed three question areas that must be addressed when dealing with constraints; what to change, what to change to and how to cause change. What to change represent the constraints that frustrate success and what to change to and how to cause change represent the framework of change. Mulyono, Manfaat & Achmad (2016) stated that efforts to improve performance should be focused on the factors that become the main constraint of the system, so that identified solution will improve system performance.

The theory however has faced criticisms on certain fronts. The dynamism of constraints has been cited a limiting factor to the theory. Lazarski (2010) observed that assets constrained during one time period may be different from assets constrained in another time. Balakrishnan, Cheng & Trietsch, (2008) faulted the theory for lack of focus on non-constraints which may become constraints in a dynamic environment and lack of focus on multiple performance measures and lack of guidance on buffer management. However, the thinking process methodology as postulated by Goldratt (1990) address policy constraints and create break-through solutions to improve organizational performance. Zadry & Yusof (2006) noted that there exists empirical evidence that has shown that theory of constraints can complement Total Quality Management to focus on the parts of a system that need process improvement. Total quality management is a system focused and believes everything must be right all the time to achieve the desired quality. Milanoi (2016) argued that since TOC focuses on system constraints and how they can be changed to achieve desired results, it can be used to operationalize quality management processes. This entails helping an organization discover constraining issues impeding execution of quality management efforts toward achievement of organizational objectives. This study postulates that the theory applies in the management of supply chain quality management practices. Effective management of quality is a system focused approach that needs to continuously identify constraints and find solutions to them.

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.

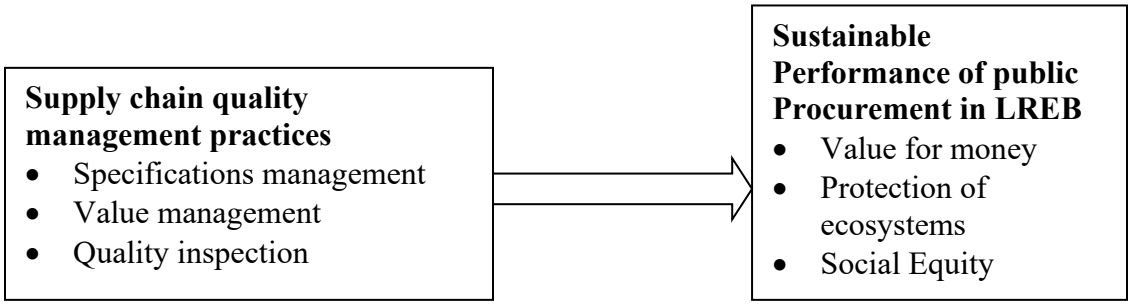

Figure 1: Conceptual framework

Supply Chain Quality Management Practices

Supply Chain Quality Management (SCQM) is the formal coordination and integration of business processes involving all partner organizations in the supply channel to measure, analyze and continually improve products, services, and processes in order to create value and achieve satisfaction of intermediate and final customers in the marketplace (Robinson & Malhotra, 2005). Quality management in supply chain can be defined as conformance to requirements (Sharma, Garg & Agarwal, 2012). Relationship between supply chain quality management practices and organizational performance have been researched and it was found that organizational performance could be enhanced through improved supply chain quality management (Chu, Christian & Lin, 2001).

Quality management means the supervision of the process of manufacture and production of products to ensure that the product conforms to what the designer or customer intended (Mahdiraji, Arabzadeh & Ghaffari, 2012). The process begins with from placing an order for raw materials up to their delivery and after sales service. Kitheka, Mulwa & Muli (2013)

noted that effective quality management right from the supplier organizations lead to reduced lead times, increased responsiveness to customers orders and enquiries, customer loyalty, increased profitability, reduced opportunity cost from lost sales and effective communication between the organization suppliers as well as with customers. The consequence of this is that improving the quality of all supply chain processes leads to cost reductions, improved resource utilization, and improved process efficiency (Wang, Du & Li, 2004).

Hermans, & Liu (2013) quoting Crosby (1988), stated that quality is the fulfillment of the specified requirements which can be measured. This provides a critical nexus between specification development, management processes and product quality. In-building quality assurance procedures into specification development offer many potential benefits which include; direct supplier incentive for achieving quality, reduction in adversarial relationships with suppliers and greater buy-in from the institutional management for effective quality management of good, works and services (Elliott, 1991). Munyimi (2019) observed that application of performance specifications lead to curbing of wrong deliveries of construction materials in the construction sector. Hence, the use of for construction materials with specific purpose, function or application lead to avoidance of unnecessary cost. Further, the performance instructions should be clear, achievable, measurable and enforceable, outlining the functional requirements for the product or service being procured.

The effective management of quality in supply chain and value in design requires new means of engaging stakeholders in the design process and of structuring that process (Thomson, Austin, Wright, & Mills, 2003). A value framework could help stakeholders articulate their values by structuring their discussion and in putting contributions into the service or product designs. Value Management approach in SCQM enables a systematic and structured process of team-

based decision making. Thus it enables the achievement of the best value of a project or process by defining the functions required to achieve the value objectives and delivering those functions at the least cost (whole lifecycle cost or resource use), consistent with the required quality and performance (Berawi et al, 2013). Quality Management System and Value Management have been widely accepted as methods for effective project management (Berawi et al, 2013) .This assertion is based on positive effects that accrue to construction industry upon the integration of both methods in improving current works performance especially in the public sector.

The process of continuous quality improvement in organizations requires the active use of management tools by organizational management in order to improve the quality of service delivery (Prístavka, Kotorová & Savov, 2016). Quality inspection refers to organizational activities which aim to establish quality standards and assess whether those standards are being adhered with a view to taking corrective action where necessary and set improved standards where possible (Nnadi, Akawnonu, & Okafor, 2018). Inspection activity play a crucial role to ensure the products meet the specific requirements and produce good quality of products to fulfill the customer needs and wants (Ngadiman, Hussin, Bon & Hamid, 2017). Various researchers have identified three types of quality inspection which are; incoming inspection, in-process inspection and final inspection. Further, Ngadiman, Hussin, Bon & Hamid (2017) noted that workers, materials, and machines are the most common factors that cause defects on service delivery front or on products that are served to the end customers. Therefore, for any quality improvement, worker's training, maintenance and checking procedure of incoming raw materials must be done at all time through continuous inspection processes..

Empirical Literature Review

Supply Chain Quality Management Practice

Supply chain quality management is about the coordination, integration of business processes, of all organizations that are members of a supply network for measurement, analysis, and continuous improvement of products, services, and processes to create value and achieve the satisfaction of all middle and end users of markets (Benaisa, Benabdelhafid & Akkouri 2010). The concept of quality management has been variously studied by many researchers. This empirical review analyses contemporary studies on the concept to support the themes of the study.

Chibba (2017) carried out an exploratory study on supply chain quality management focusing on manufacturing organizations in Sweden. The study sought to explore and describe the measures and metrics that should be used in the supply chain, both upstream and downstream, from a manufacturing perspective. The study adopted a case study approach in order explore and describe the quality management metrics which should be measured in the supply chain, both upstream and downstream, from a manufacturing perspective. The study noted that for manufacturers to improve quality, they should be performing the following activities: creating

procedures to manage changes from customer instead of creating uncertainty; reducing cost by vertical integration (i.e., performing some of the suppliers' work with recognition of the risks; using SCM performance measures such as quality and delivery but not at the expense of increased cost; selecting suppliers based on low cost, high quality, fast delivery, and flexibility in production and using cross-functional teams in the internal supply chains

In another related study though in Tanzania, Mgwatu (2019) assessed the linkage between quality management practices and performance of manufacturing industries in Tanzania. The study focused on benchmarking, six sigma, quality inspection, quality training and quality circles among others as key SCQM practices. The study targeted 78 industries 59% of which are owned by the private entities and the rest owned by the state. Pilot studies on data collection instruments produced Cronbach's alpha mean value of 0.84 which showed a high degree of reliability of the test items. Descriptive statistics, reliability analysis, factor analysis and correlation analysis were performed using SPSS 20 software package. The findings of the study indicated a high correlation between SCQM practices and the performance of the manufacturing industries.

Rajab (2015) in pursuit of creating a theoretical construct on the relationship between quality management practices and performance, carried out a study that targeted 455 manufacturing firms based in Nairobi. The study adopted a stratified random sampling technique due to heterogeneity of the target population. Structured questionnaire was used to collect qualitative as well as quantitative data. For data analysis, the study applied a five variable regression model to create the relationship between the predictor and independent variables. From the evidence gathered, quality management practices (continuous quality improvement, six sigma practice, lean operations/production, international organization for standardization, benchmarking and supplier partnering) play a critical role in supply chain performance. The study also recommended that organizational best practices to achieve unique performance should a trade-off between quality and cost advantages.

RESEARCH METHODOLOGY

Research Design

The research design is a chosen approach that integrates the strategies of development of data collection instruments, data collection procedure, analysis of data and presentation of findings. Apopa (2018) citing Bryman & Cramer, describes research design as a blueprint for the collection, measurement, and analysis of data. 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.

Research Philosophy

The term research philosophy refers to a system of beliefs and assumptions about the development of knowledge (Saunders, Lewis, & Thornhill, 2009). Knowledge acquisition process is based on assumptions which constitute a credible 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).

Target Population

Kothari, (2004) stated that a study population represents the entire set of units in a sampling frame and have common study characteristics as predetermined by the sampling criteria established for the study (Ngechu,2004)). 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 constitutes 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 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. This creates equity and fair representation (Maina, 2012). Thus proportional samples were drawn using a constant ratio from County government executives, County assemblies, Departments of central Government and agencies; KeRRA, KeNHA and KURA. The study targeted officers who are responsible for procurement initiation, project designs, specification development, works inspections, procurement processing, evaluation of bids and contract administration. The sampling method gives chances of selecting each unit within particular strata in a population and hence a representative sample.

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. A questionnaire enabled the study to collect data in a standardized way so that the data are internally consistent and coherent for analysis.

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. Reliability is defined as the extent to which questionnaire items are free from measurement error and it is a measure of stability or internal consistency of the instrument in measuring intended objectives (Ghazali, 2016). Reliability refers to the consistency, stability and repeatability of results (Mohajan, 2017). Reliability test was intended to reveal the weaknesses inherent in the questionnaire with regard to ambiguity of questions and the general questionnaire structure. With regard to validity, the study was concerned with whether the questionnaire items adequately represented the questions that should be asked to cover the subject matter. 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 and multivariate regression models will be 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 management quality management practices;

$Y = \beta_0+\beta_1X_1+ Ɛ$…….. (1)

Where,

Y = Sustainable performance of public procurement

β_0= constant

β_1= Regression Coefficient for supply chain quality management practices

X_1 = Supply chain quality management practice

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 effect of supply chain quality management practices on sustainable public procurement. 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. In other words, there was a lot of variability in the responses, which may suggest that participants had different interpretations or perceptions of the questions being asked.

Supply Chain Quality Management Practices

The first objective of the study was to assess the effect of supply chain quality management practices on sustainable performance of public procurement in LREB, Kenya. The respondents were requested to indicate their level of agreement on various statements relating to supply chain quality management practices and sustainable public procurement performance in LREB, Kenya. The results were as shown in Table 2.

In relation to specification management, the respondents agreed that performance specifications are encouraged to promote competition (M= 3.961, SD= 0.345). In addition, the respondents agreed that experts are involved in development of environmentally compliant specifications (M= 3.955, SD= 0.319). Further, the respondents agreed that technical specifications are monitored against cost and quality performance of procured goods and works (M= 3.942, SD= 0.367). The findings further show that citizen contractor centred specifications form the basis for engaging with local contractors (M= 3.936, SD= 0.325). In addition, the respondents agreed that technical specifications conform to AGPO and other disadvantage groups' requirements (M= 3.866, SD= 0.333). From the results, the respondents agreed that financial specifications consider cost structures adopted by other organizations (M= 3.836, SD= 0.356).

In relation to value management, the respondents agreed that officers are appointed to evaluation committees based on their skills (M= 3.831, SD= 0.352). In addition, the respondents agreed that officers are continually trained on technical designs and all aspects of procurement (M= 3.803, SD= 0.337). Further, the respondents agreed that product/project cost structures are continually reviewed against market trends (M= 3.786, SD= 0.348). The findings also show that suppliers

are assessed and monitored against their capacities to adopt cost effective innovations in products/services (M= 3.745, SD= 0.432). The respondents agreed that suppliers are assessed and monitored against their capacities to adopt environmentally effective innovations in work project delivery (M= 3.675, SD= 0.441).

Concerning quality Inspection, the respondents agreed that goods, works and services are usually inspected against predetermined cost structures (M= 3.876, SD= 0.412). The respondents also agreed that inspection team is always aware of technical specifications (M= 3.852, SD= 0.357). The respondents agreed that goods, works and services are usually inspected against predetermined environmental requirements (M= 3.798, SD= 0.386). In addition, the respondents agreed that defective goods are returned while a redo is ordered for defective works (M= 3.756, SD= 0.354). Further, the respondents agreed that inspection reports/information are shared with suppliers (M= 3.597, SD= 0.398).

From the findings above, it was clear that supply chain quality management practices influence sustainable performance of public procurement in LREB, Kenya and this was supported by an aggregate mean score of 3.882 (SD= 0.341). The findings agree with those of Chibba (2017) who established that quality management practices (continuous quality improvement, six sigma practice, lean operations/production, international organization for standardization, benchmarking and supplier partnering) play a critical role in supply chain performance. In another related study though in Tanzania, Mgwatu (2019) indicated a high correlation between supply chain quality management practices and the performance of the manufacturing industries. This study therefore concludes that supply chain quality management practices influence cost containment measures, adherence to environmental requirements through development of compliant specifications.

Table 2: Descriptive Statistics on Supply Chain Quality Management Practices

Statements	1 %	2 %	3 %	4 %	5 %	Mean	Std. Dev.
Specification Management							
Performance specifications are encouraged to promote competition	1.2	6.6	19.2	49.1	24.0	3.961	0.345
Experts are involved in development of environmentally compliant specifications	1.6	12	15.3	51.4	19.7	3.955	0.319
Technical specifications are monitored against cost and quality performance of procured goods and works	4.4	6.6	17.7	51.9	19.3	3.942	0.367
Citizen contractor centered specifications form the basis for engaging with local contractors	3	12.3	11.8	55.7	17.2	3.936	0.325
Technical specifications conform to AGPO and other disadvantage groups' requirements	3.6	10.2	13.8	56.1	16.3	3.866	0.333
Financial specifications consider cost structures adopted by other organizations	2.3	11.9	24.9	42.9	18.1	3.836	0.356
Value Management							
Officers are appointed to evaluation committees based on their skills	4.6	13.8	15.9	51.3	14.4	3.831	0.352
Officers are continually trained on technical designs and all aspects of procurement	3.6	7.7	12.8	57.9	17.9	3.803	0.337
Product/project cost structures are continually reviewed against market trends	4.5	6.4	20.5	51.3	17.3	3.786	0.348
Suppliers are assessed and monitored against their capacities to adopt cost effective innovations in products/services	1.5	15.3	19.9	42.9	20.4	3.745	0.432
Suppliers are assessed and monitored against their capacities to adopt environmentally effective innovations in work project delivery	1.5	9.2	25	52	12.2	3.675	0.441
Quality Inspection							
Goods, works and services are usually inspected against predetermined cost structures	4.6	14.3	24	37.2	19.9	3.897	0.373
Inspection team is always aware of technical specifications	1.2	15.1	26.2	46.5	11	3.852	0.357
Goods, works and services are usually inspected against predetermined environmental requirements	1.8	9.4	12.4	67.6	8.8	3.798	0.386
Defective goods are returned while a redo is ordered for defective works	0.9	11.2	19.5	54.4	14	3.756	0.354
Inspection reports/information are shared with suppliers	2.8	9.9	10.6	58.2	18.4	3.597	0.398
Aggregate Score						**3.882**	**0.341**

Test for Hypothesis One

The first objective of the study was to assess the effect of supply chain quality management practices on sustainable performance of public procurement in LREB, Kenya. The corresponding hypothesis was:

Ho_1: Supply chain management quality management practices have no significant influence on sustainable performance of public procurement in LREB, Kenya.

A univariate analysis was therefore conducted to test the null hypothesis. From the model summary findings in Table 3, the r-squared for the relationship between supply chain quality management practices and sustainable public procurement performance was 0.222; this is an indication that at 95% confidence interval, 22.2% variation in sustainable public procurement performance can be attributed to changes in supply chain quality management practices. Therefore, supply chain quality management practices can be used to explain 22.2% change in sustainable public procurement performance. However, the remaining 77.8% variation in sustainable public procurement performance suggests that there are other factors other than supply chain quality management practices that explain sustainable performance of public procurement in LREB, Kenya

Table 3: Model Summary for Supply Chain Quality Management Practices

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.471[a]	.222	.219	.70542

a. Predictors: (Constant), Supply Chain Quality Management Practices

The analysis of variance was used to determine whether the regression model is a good fit for the data. From the analysis of variance (ANOVA) findings in Table 4, the study found out that that Prob>$F_{1,131}$= 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 (258.767) was greater than the F-critical, from f-distribution tables (3.913) supporting the findings that supply chain quality management practices can be used to predict to predict sustainable public procurement in Kenya.

Table 4: ANOVA for Supply Chain Quality Management Practices

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.179	1	42.179	547.78	.000[b]
	Residual	21.311	276	.077		
	Total	63.49	277			

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

b. Predictors: (Constant), supply chain quality management practices

From the results in table 5, the following regression model was fitted.

$$Y = 0.142 + 0.411 X_4$$

(X_4 is supply chain quality management practices)

The coefficient results showed that the constant had a coefficient of 0.142 suggesting that if supply chain quality management was held constant at zero, sustainable public procurement performance would be at 0.142 units. In addition, results showed that supply chain quality management coefficient was 0.411 indicating that a unit increase in supply chain quality management would result in a 0.411 unit improvement in sustainable public procurement in Kenya. It was also noted that the P-value for past strategy was 0.000 which is less than the set 0.05 significance level indicating that supply chain quality management was significant. Based on these results, the study rejected the null hypothesis and accepted the alternative that supply chain quality management has positive significant influence on sustainable performance public procurement in LREB, Kenya.

Table 5: Beta Coefficients for Supply Chain Quality Management

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.142	.035		4.0571	.000
	supply chain quality management	.411	.094	.412	4.372	.000

a. Dependent Variable: Sustainable Performance of Public Procurement in LREB, Kenya

CONCLUSION AND RECOMMENDATIONS

Conclusions

Supply Chain Quality Management Practices

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

Recommendations

Supply Chain Quality Management Practices

Public procurement authorities in Kenya should establish robust systems for the continuous monitoring and improvement of supplier quality. This includes setting up regular quality assessments, performance evaluations, and audits of suppliers to ensure they meet sustainability and quality standards. Procurement agencies can also encourage suppliers to adopt quality management systems such as ISO 9001, which can help them enhance the quality of their products and services. Additionally, procurement officials should work closely with suppliers to provide feedback and support for quality improvements, fostering a culture of continuous improvement within the supply chain.

REERENCES

Abdallah, A. B., Obeidat, B. Y. & Aqqad, N. O. (2014). The Impact of Supply Chain Management Practices on Supply Chain Performance in Jordan: The Moderating Effect of Competitive Intensity. *International Business Research*; *7*(3), 2014

Bridoux, F. (2015). *A Resource-Based Approach to Performance and Competition: An Overview of the Connections between Resources and Competition*. Catholic University of Louvain-la-Neuve, Belgium.

Chartered Institute of Purchasing and Supply, (2016). *Public procurement practice; specification*. CIPS, Easton house, UK.

Felea, M. & Albăstroiu, I. (2013). Defining the Concept of Supply Chain Management and Its relevance to Romanian Academics and Practitioners. *Academy of Economic Studies, Bucharest, Romania*. Vol. XV. No. 33.

Ghazali, N. H. Md. (2016). A Reliability and Validity of an Instrument to Evaluate the School-Based Assessment System: A Pilot Study. *International Journal of Evaluation and Research in Education* (IJERE) Vol.5, No.2, pp. 148~157.

Johnston, M. (2014). *Secondary Data Analysis: A Method of Which the Time has Come*. Qualitative and Quantitative Methods in Libraries. 3. 619-626.

Kariuki, E. N. (2010). *Procurement Performance Measurement in Commercial Banks in Kenya*. Unpublished MBA. Thesis, University of Nairobi.

Kuhlman T. & Farrington J. (2010). What is Sustainability? *www.mdpi.com/journal/sustainability,* 2, 3436-3448; doi: 10.3390/su2113436.

Li, S. & Lin B. (2006). Accessing information sharing and information quality in supply chain management. *Decision Support Systems*; 42:1641-56.

Li, Y. (2011). Research on the performance measurement of green supply chain management in China. *Journal of Sustainable Development*; 4(3): 101-107.

Lysons, K. & Farrington, B. (2016). *Purchasing and Supply Chain Management, 9th edition.* London: Prentice Hall.

Mäki, N. & Grinsted, S. (2014). *An Audit for Ethical Supply Chain Management*. Aalto University, Mikkeli Campus.

Mburu, D. K. Ngugi, P. K. & Ogollah K. (2015). An Assessment of Effect of Risk Identification Management Strategy on Supply Chain Performance in Manufacturing Companies in Kenya. *International Journal of Economics, Commerce and Management United Kingdom Vol. III, Issue 4.*

Mulwa, V. M. & Nyamwange O. (2015). *Sustainable Supply Chain Management Practices and the performance 0f United Nations Agencies in Nairobi, Kenya*. A Masters project. University of Nairobi.

Neville, C. (2007). *Introduction to Research and Research methods. Effective Learning Service,* University of Bradford, School of Management.

Northouse, P. G. (2019). Leadership: Theory and practice (8th Ed.). *SAGE Publications*

Okerekehe, O. S. (2014). The Impact of Inspection on the Quality Assurance and Reliability ofProjects, Manufacturing, Operations and Maintenance. *British Journal of Applied Science & Technology*, 4(27):3884-3901.

Owuor, S. J. O., Oginda, M. N., & Obura, J. (2019). The effect of supply chain risk management practices on the supply chain performance of public universities in Kenya. *The Strategic Journal of Business & Change Management,* 6 (2), 18 – 24

Rao, S., Thomas, J. & Goldsby, S. (2009) 'Supply chain risks: a review and typology', *International Journal of Logistics Management*, Vol. 20, No. 2, pp.97–123.

Republic of Kenya (2015). Environmental Management & Coordination (Amendment) Act, 2015, Kenya Gazette Supplement No. 74, Government Printer, Nairobi.

Sekaran, U. (2006).*Research methods for business: A skill building approach*, (4th Edition). UK, John Wiley and Sons.

Singhal, P., Agarwal, G., & Mittal, M. L. (2011). Supply chain risk management: review, classification and future research direction. *International Journal of Business Science and Applied Management,* Volume 6, Issue *3.*

Teller, C., Kotzab, H., Grant, D.B.&Holweg, C. (2016), "The importance of key supplier relationship management in supply chains", *International Journal of Retail & Distribution Management*, Vol. 44 No. 2, pp. 109-123. https://doi.org/10.1108/IJRDM-05-2015-0072

Vaníčková R. (2017). Application of Project in Controlled Environment 2; Project Management Methodology. *Studia Commercialia Bratislavensia: The Journal of University of Economics in Bratislava.* Volume 10; Number 38 (2); pp. 227-238.

Waigwa, M. W. & Njeru, A. (2016). Factors Influencing Management of Procurement Contracts in Public Security Agencies: A Case Of Kenya Police Service. *International Academic Journal of Procurement and Supply Chain Management*, Volume 2, Issue 2, pp. 20-40.

Yusuf, Y., Hawkins, A., Musa, A., El-Berishy, N., Schulze, M. & Abubakar, T. (2014). Ethical supply chains: analysis, practices and performance measures. *International Journal on Logistics Systems and Management,* Vol. 17, No. 4.

Zadry, H. R. & Yusof, S. M. (2006). Total Quality Management and Theory of Constraints Implementation in Malaysian Automotive Suppliers: A Survey Results. *Total Quality Management* Vol. 17, No. 8, 999 –1020.