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ROLE OF SUSTAINABLE PROCUREMENT PRACTICES ON SUPPLY CHAIN PERFORMANCE OF MANUFACTURING SECTOR IN KENYA: A CASE STUDY OF EAST AFRICAN PORTLAND CEMENT COMPANY

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ABSTRACT: *The purpose of this study was to examine the role of sustainable procurement practices on the supply chain performance. The study adopted a case study research design. The target population of interest in this study consisted of staff members at EAPCC headquarters in Machakos County. This research adopted a stratified random sampling technique in selecting the sample. The study used primary data, which was collected through use questionnaires. The study also made use of secondary sources of information. Data was classified, tabulated and summarized using descriptive measures while tables were used for presentation of the findings. Pearson's correlations coefficients was run to examine the relationship between the independent and the dependent study variables that are set out in the objectives of the study.The study findings indicated that 76.3% of change in Supply Chain Performance at EAPCC can be explained by four variables namely Procurement Preferences and Reservations, Green Procurement Practices, Supplier Involvement and Electronic Procurement. According to the research findings, sustainable procurement practices at EAPCC had been fully implemented. Effects of Procurement Preferences and Reservations, Green Procurement Practices, Supplier Involvement and Electronic Procurement were found to be statistically significant with a positive impact on supply chain performance. The study recommends that it is imperative that organizations start to view sustainable procurement as strategic in value. Following the results of the study, it is evident to conclude that there is a positive relationship between Sustainable Procurement Practices and Supply Chain Performance. Through procurement preferences and reservations, adoption of green procurement practices, involvement of suppliers and the use of integrated procurement systems, EAPCC has continued to be at the heart of Kenya's economic success story.*

KEYWORDS: Electronic Procurement, Green Procurement, Preferences and Reservations, Supplier Involvement, Supply Chain Management, Sustainable Procurement.

INTRODUCTION

The sustainability concepts can trace its origin to forestry and was initially used for the first time by the then mining governor Hans Carl von Carlowitz. Brundtland Commission expounded sustainability as the way biological systems remain diverse and productive providing Long-lived and healthy wetlands and forests for sustainable biological systems as examples. Procurement as defined by Public Procurement and Asset Disposal Act (2015) is the

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acquisition by purchase, rental, lease, hire purchase, license, tenancy, franchise, or by any other contractual means of any type of works, assets, services, or goods including livestock or any combination and includes advisory, planning and processing in the supply chain system. According to World Bank (2005), Public Procurement is the acquisition of goods, services as well as works by a procuring entity using funds obtained from public coffers. Sustainable procurement can therefore, be defined as the application of sustainable development principles in the procurement function. Sustainable procurement is not simply about being "green". Sustainable procurement is about socially and ethically responsible purchasing, minimizing the environmental impact through the whole process of supply chain, delivering economically sound solutions as well as always ensuring good business practice (CIPS, 2014). Sustainable procurement is a branch of the broad concept of sustainable development although its focus is far wider than just the development as it also aims at meeting the varied needs of all people in the current as well as future communities, promoting personal wellbeing, social cohesion, and inclusion, and creating equal opportunity (CIPS, 2014).

Sustainability has become a global topic. In the USA for example, most critics of Wal-Mart claimed that the entry of the retailer in their urban areas would lead to increasing social costs and externalities and the negative environmental impact the big stores would have such as an increase in traffic in nearby areas. Wal-Mart was accused by trade unions of paying low wages and forcing its employees to rely on government health programs (Dixon, 2006). Today, sustainable supply chain management has enabled Wal-Mart to reduce its operating costs through waste reduction, streamlining business processes and long-term planning for its employees and the community at large to become the world's largest retailer (Walmart.com, 2012).

Sustainable procurement is about considering social and environmental factors alongside financial factors in making procurement decisions. It entails foreseeing beyond the traditional economic measures and making decisions based on the whole life cost, the associated risks, measures of success as well as implications for society and the impact on the environment. Making decisions in this line demands setting procurement into the broader strategic context including value for money, performance management, corporate and community priorities (CIPS, 2014).

In recent years, academics and practitioners have become increasingly interested in how organizations and their suppliers influences the environment, society in addition to the economy (Walton, Handfield, and Melnyk, 2008). The strategic function of purchasing and supply as a lever for sustainable development is much more manifested now than it was in the days earlier. For the purpose of this research, the definition of sustainable procurement used by the Sustainable Procurement Task Force (SPTF), a task force that was established by the UK Secretary of State for the Environment and the Chief Secretary to the Treasury was adopted. SPTF defined sustainable procurement as a process whereby organizations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organization, but also to society and the economy, whilst minimizing damage to the environment.

Public procurement in Kenya has come a long way and evolved from a system with no regulations governing its operations to an orderly legally regulated procurement system. The commendable steps have been advanced since the enactment of the Public Procurement and Disposal Act of 2005, which became operational on 1st January 2007 with the gazzetement of the Public Procurement and Disposal Regulations, 2006. The Public Procurement and Disposal

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Act, 2005 now the Public Procurement and Asset Disposal Act, 2015 created the Public Procurement Oversight Authority (PPOA) now Public Procurement Regulatory Authority (PPRA), the Public Procurement Oversight Advisory Board (PPOAB) and the continuance of the Public Procurement Complaints, Review and Appeals Board as the Public Procurement Administrative Review Board (PPARB). The public buying in Kenya has been used as a medium to achieve various social objectives, such as, reducing unemployment, providing employment to disabled individuals, youth, and women and to marginalized areas and regions in the country, promoting gender and ethnic equality. In general, the focus has largely been on social aspects of sustainability, other aspects need equally the same emphasis as the latter (PPOA, 2014).

The idea that public institutions procure goods and services in a sustainable manner has spread rapidly since the mid-1990s, mostly through the rise of so-called green procurement or green purchasing (Van Calster 2002), which is considered part of the broader sustainable procurement notion. Sustainable procurement has been institutionalized and adopted by regional and local administrations, national governments and international organizations.

Stuart Williams (2007) argued that the need to buy sustainably is due to the increasing global population and growing consumption rates per capita. Human consumption of resources significantly exceeds what the earth can provide. Essential services such as clean air and water, a stable climate and viable forests and fisheries are in long-term decline. The resources on which we rely are being depleted at accelerating rates. This means 'business as usual' no longer an option for the public sector. Public sector organizations will be instrumental in creating the transition to a more sustainable future through their role in improving local quality of life and through their leadership in tackling global social injustice and environmental degradation.

Statement of the problem

A number of studies have been done in the field of sustainable procurement all over the world. A great number of this research has been undertaken in the developed economies and a few in the developing economies although the research topic has generally attracted great interest in researchers in the contemporary society. Lutz (2009) explored on the different approaches in which public procurement can support sustainable development in the England local governments. This research contributed immensely in identifying areas where procurers have adopted a range of initiatives to address all aspects of sustainability that include encouraging first-tier suppliers to make use of small local businesses as their sub-contractors on economic side, contracting with voluntary organizations on the social side or replacing hazardous materials in products and services on the environmental side.

Stephen and Walker (2007) international comparative study on sustainable procurement practice in the public sector reveals that a wide range of sustainable procurement practices are embedded to some degree in public sector procurement practice around the world and that governments are widely using the power embodied in public procurement activities to further social and environmental policy goals. They however, agree that significant variation across countries in the extent and emphasis of sustainable procurement practices occur.

Muraguri (2013) contributions towards sustainable procurement in Kenya cannot go unmentioned. His study was on the implementation of the preference and reservation regulation of 2011 and the focus was on state owned enterprises in Nairobi. Some of the study's recommendation was anchored in the operationalization of the regulation. Amina (2013)

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researched on green supply chain of personal care manufacturing firms in Nairobi, targeting procurement managers as one of the study's respondents found out that they were well equipped with the knowledge of the threats that organization have to the environment resulting from supply chain waste. The study found out that although most firms were aware, they did not use environmental issues in the criteria for selecting suppliers and that a great percentage of these firms did not have professional personnel to coordinate environmental purchasing efforts.

In the contemporary world, with the advent of global economy and human cultivation, consumers and the society have higher expectations of companies. Businesses that are in the market for pursuing commercial profits exclusively cannot stand long. Therefore, companies should pay enough attention to the social and environmental impacts of their supply chains too. Big brands are no exception. Some of the traditional business concepts can no longer be used to solve problems encountered by the companies today. Most companies are experiencing an increased variety of internal pressures caused by investors and employees and external pressures caused by legislators and customers to improve the social and environmental activities of their supply chains (Seuring and Muller, 2008). While the traditional economic dimension of the Triple Bottom Line (TBL) is widely used in business and measurements are well understood and developed, the new environmental and social dimensions are less prevalent and much more difficult to measure (Marc Winter, A. and Michael Knemeyer, 2013). In the modern society, a business that is exclusively driven by profit maximization motive without due consideration for its environmental impact has meager chances of prosperity in a sustainable future. Corporate leaders continue to be challenged by the issue of running competitive and profitable organizations while meeting broad social and ethical responsibilities (Morimoto et al., 2005). This research narrows down to Kenyan manufacturing organizations in the effort to evaluate the role of sustainable procurement practices and its contribution to the performance of supply chains.

Objectives of the study

The main objective of this study was to examine the role of sustainable procurement practices on supply chain performance of manufacturing firms. The specific objectives of this study were:

1. To find out the role of procurement preferences and reservations on supply chain performance of manufacturing firms.
2. To find out the role of green procurement practices on supply chain performance of manufacturing firms
3. To find out the role of supplier involvement on supply chain performance of manufacturing firms
4. To find out the role of electronic procurement on supply chain performance of manufacturing firms

THEORETICAL BACKGROUND

This research mainly focused on sustainable procurement practices in manufacturing sector in Kenya. The underpinning theories included; Stakeholder theory, Resource Based View, Institutional theory and sustainable development theory.

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Stakeholder theory

Freeman (1984) defines a stakeholder as any individual, organization or institution that is associated with a firm and is affected by the firm in some way or affects the firm's action and goals. Stakeholder theory posits that an organization is not only responsible for its shareholders' interests, but additionally for the interests of customers, employees and the local community (Piacentini et al, 2000). This includes social, economic and moral responsibilities and goes beyond the purely economic and legal responsibilities once believed to be an organization's only responsibilities. As is obvious from these descriptions, stakeholder theory is a theory that follows the same principles as sustainable development concept and indeed covers the same aspects of business responsibilities – economic, social and environmental. Stakeholder theory describes the purpose and strategic direction of the firm through the concept that managers need to simultaneously incorporate the legitimate interests of all appropriate stakeholders when making business decisions.

Institutional Theory

Institutional theory has been applied ever since 1930 (Bansal & Clelland, 2004; Hoffman, 1999; Jennings & Zandbergen, 1995) in understanding the response of the firm to increasing pressures for management of the environment. Due to increased public awareness of organizational failure and environmental demands, institutional theory recommends that companies can only gain legitimacy through reduction of their environmental impact and being socially responsible (Bansal, 2005; Bansal & Clelland, 2004).

Institutional pressure has led firms to adopt sustainable procurement practices. They can be; conformance to environmental strategies that complies with regulations and adopting industry standards, or reducing the environmental impact of operations beyond regulatory requirements (Sharma & Erramilli, 2004). Firms can create good relationships with regulators by participating in government-sponsored voluntary program which develops a voluntary agreement between government agencies and firms hence encourage technological innovation and reduction in pollution (Delmas & Toffel, 2008). Companies can also work with their customers as well as their suppliers to improve their environmental performance through exchange of ideas/information, suggestions and correction (Nelson & Winter, 2002).

Meyer and Rowan (2006) on Institutional Theory argue that the institutional environment strongly influences the development of formal structures in an organization more than market pressures. To improve efficiency in organizations, innovative structures are legitimized. Ultimately these innovations reach a level of legitimization where failure to adopt them is seen as ''irrational and negligent". Here, new and existing organizations will embrace the structural form even if it does not boost efficiency. This means that the "institutional myths" are ceremoniously accepted so that organizations maintain legitimacy in the institutional environment with vocabularies of structure such as job titles, procedures and roles.

Resource-Based View

The resource-based view holds that firms can earn sustainable super normal returns if and only they have superior resources which are protected by some form of isolating mechanism preventing their diffusion through industry (Barney, 1991). Resource-Based View (RBV) provides a good theoretical foundation to discuss the contribution of resources and capabilities to firm's performance. The theory gives an insight on the relations among internal resources, capabilities and performance. The principal idea of the RBV is that for a firm to achieve

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competitive advantage then it all depends on its heterogeneous resources, which are inimitable, valuable and non- substitutable. It is perhaps one of the most influential frameworks for environmental management (Barney, 1991).

Environmental innovations may as well lead to complex, environmentally friendly technologies, products and processes. These, in turn, lower overall company costs, ensure long-term competitive advantage and finally boost financial performance (Christmann, 2000). Researchers should use resource-based view to investigate green issues (Dowell, Hart & Yeung, 2000; Hart, 1995).

Sustainable development theory

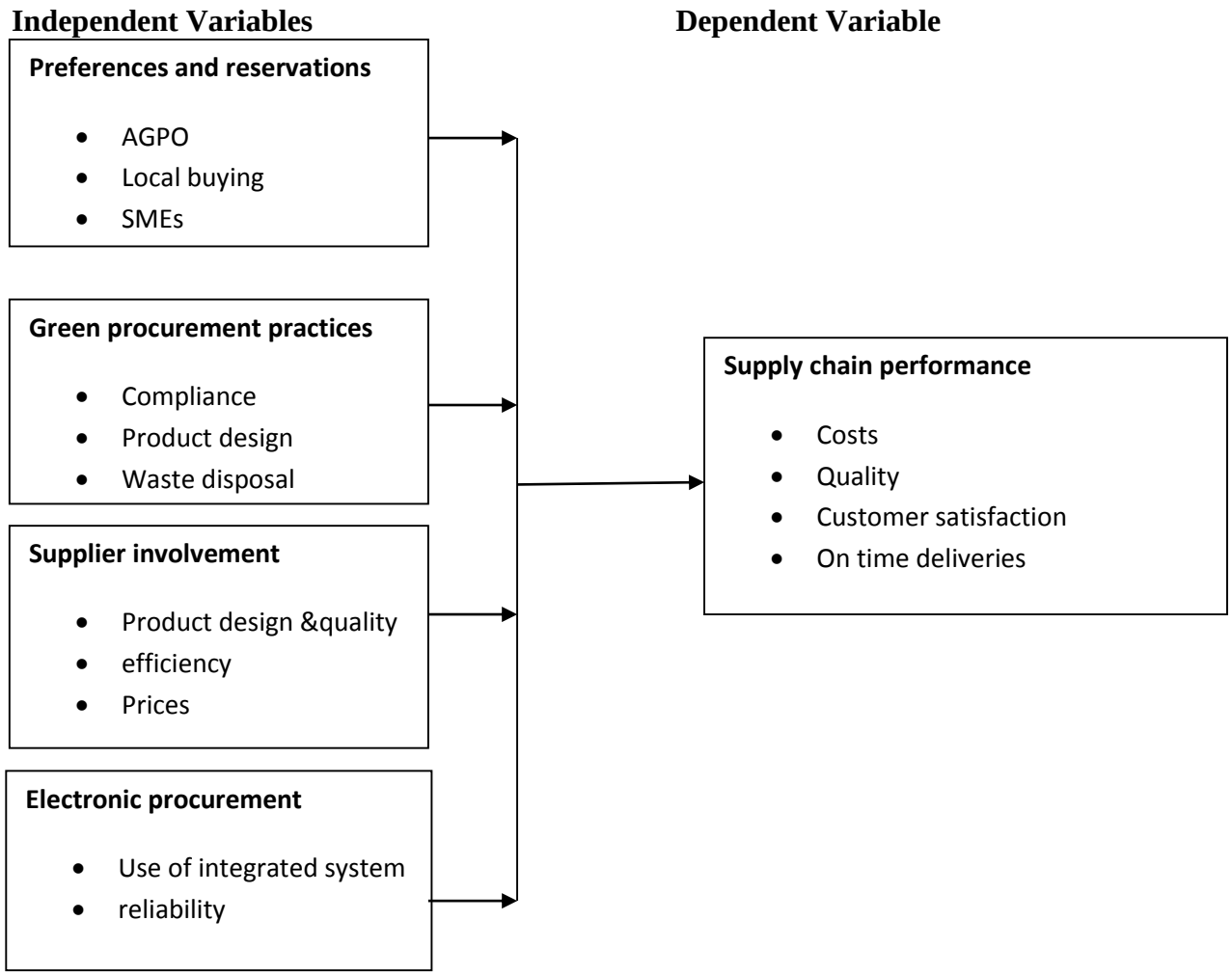
The WCED (1987) defines sustainable development as forms of progress that meet the needs of the present without compromising the ability of future generations to meet their needs. This definition of sustainability stresses the importance of future orientation as a basic requirement. The focus on future impacts suggests prudent undertaking and use of natural resources and the environmental footprint.

Nonetheless, sustainability does not solely focus on the environment or 'green' aspect, for the social consequences should also be considered (Elkington, 2004). This is illustrated in the acronym Triple-P (People, Planet, and Profit) or triple bottom line. It is the balance of economic, social and environmental sustainability that should be considered in harmony (Elkington, 2004).

Conceptual framework

To illustrate the fundamental concepts of procurement sustainability and supply chain performance, there is need to understand the conceptual framework that integrates the independent and dependent variables. According to Mugenda & Mugenda (2003), an independent variable is a property of a phenomenon which influences or affects others while a dependent variable is one which is influenced by the independent variables. The conceptual framework of sustainable procurement practices and supply chain performance is illustrated in the figure that follows.

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Preferences and reservations in procurement

The public procurement system in Kenya has been undergoing reforms consistent with the global trend since the mid 1990s. Most notable reforms in this area took place within the period covering 1997-2001 and 2005. The landmark in the reforms was in 2005 when the Public Procurement and Disposal Act, 2005 (the Act) was enacted by Parliament and operationalized on 1st January, 2007.

There is no doubt that the Government is the single largest buyer in any economy. Consequently, the public procurement is not only a budget implementation strategy/too; but it is also used to achieve targeted social goals. World over, many economies have and continues to design and implement strategies to create opportunities for participation of disadvantaged and marginalized groups in public procurement. In Kenya, one of the objectives of the Act is to facilitate the promotion of local industry and economic development. To this end Sec. 39 of the Act stipulated provisions for Preference and Reservations and minimal provisions were outlined under Regulation 28 of Public Procurement and Disposal Regulations, 2006 for application of the scheme.

In 2009, the Ministry of Finance through Public Procurement Oversight Authority(the Authority), with the support of the African Development Bank commissioned a Study to

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establish the Extent of Participation of Small and Micro Enterprises (SMEs) and Disadvantaged Groups in Public Procurement. The Study Report uncovered several challenges faced by SMEs and proposed measures to address those challenges in well structured manner. Consequently, the Public Procurement and Disposal (Preference and Reservations) Regulations, 2011 (the Preference and Reservation Scheme) were issued on 8th June, 2011 thus opening a window of opportunities for specified target groups including Small enterprises; Micro enterprises; Disadvantaged groups (Physically disabled, youth & women); Citizen contractors; Local contractors; and Citizen contractors in Joint Venture or Sub-Contracting arrangements with foreign suppliers.

The Government of Kenya (2005) has advanced employment and social inclusiveness issues to be considered essential by the public entities who promote these priorities through their procurement processes. The Public Procurement and Disposal Act (Preference and Reservations) Regulations, 2011 reserves a minimum 30% of total value of public spend for the youth, women and people with disabilities to enhance access to public tenders by youth, women and people with disabilities owned business enterprises. Lemmet (2012) researching on social impacts of SP agrees that although the social component of sustainable development has often been considered as the most neglected one, the case studies she carried out indicated that a strong commitment from public purchasers to tackle social issues exist and that employment and social inclusiveness issues are considered essential by the public entities. She further argues that some of the social impacts are directly targeted by tenders such as the participation of companies employing disabled persons.

Green procurement practices

Lemmet (2012) study revealed a diversity of environmental impacts at various stages of a products' life cycle. The purchase of remanufactured ink cartridges by the French Ministry of Education has led to a decrease of waste generated at the manufacturing stage. The construction (Yorkshire and Humber Region, UK, and Oregon, USA) demonstrate significant impacts related to the reduction of CO_2 emissions of waste production and of water consumption. The Ferrara study (Italy) and the recycled paper case (São Paulo, Brazil) show positive environmental impacts distributed throughout the life cycle.

Vincent and Abbie (2011) proposed that sustainable procurement practices necessitates the appropriate order in pursuit of procurement activities to match with policies and best practices as to first conform with and surpass all relevant legislation and regulatory requirements including environmental, social, health and safety policies. Secondly, it's to cut on environmental impact while maximizing economic and social advantage through entrenching appropriate sustainability standards within the procurement practice. Thirdly, come up with sustainable procurement awareness and skills amongst all stakeholders and further, build a stronger base on policy and strategy understanding while stimulating sustainability in the market place, involving current and upcoming suppliers on best practice in sustainability along the supply chain. That is ensuring sustainability is the criteria in all phases of procurement through the integration of environmental, social and economic aspects in procuring supplies and services. In addition, assess the growth of sustainable procurement with a view to positive progress and work together with other organizations and to research best practice.

Consumer knowledge on environmental hazards like global warming influences their considerations on environmental effects of their consumption. Kotler (2004) mentioned that traditional companies were judged by their clients according to quality of their products,

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responsiveness in offering customer solutions and the degree of fairness. Nevertheless, today companies are measured and judged according to environmental ethics.

Supplier involvement

Supplier involvement is an approach in supply management to bring the expertise and collaborative synergy of suppliers into the design process. Supplier involvement seeks to find "win – win" opportunities in developing alternatives and improvements to materials, services, technology, specifications and tolerances, standards, order quantities and lead time, processes, packaging, transportation, redesigns, assembly changes, design cycle time, and inventory reductions. Today, supplier involvement is an important accepted way of life at many proactive firms and a requirement for excellent supply management.

The suppliers are carefully prequalified to ensure that they posses both the desired technology and the right management capability. The technological benefits of supplier involvement can be obtained, with due consideration to the commercial aspects of the relationship – i.e. mutual benefits. Supplier involvement helps in developing trust and communication between suppliers and the buying firm. Supplier involvement normally, but not always, results in the selection process of a single source of supply. At most progressive companies, this selection process is the result of intensive competition between two or three carefully prequalified potential suppliers. The company selected becomes the single or primary source of supply for the life of the item using the material. Supplier involvement is critical in reducing the cost of production, improving quality and preventing costly delays.

As knowledge relating to environmental damage increases, the pressure to change the ways in which organizations behave has increased – particularly amongst the manufacturing, mining and resources sectors (Johanna, 2008). Companies need to monitor the environmental impact of suppliers and develop an environmental purchasing policy that aims to reduce the environmental impact of their own and their suppliers activities, goods and services (otherwise known as 'green buying') (Avery, 2005).

Electronic procurement

According to Mambo (2015), in Kenya, the government has recognized the adoption of ICT in service delivery to the public and citizen in general. This has gained momentum with the current government administration. Existing literature reveals that a number of organizations in Kenya have successfully adopted the use of e-procurement technology. It is of great importance to note that the ICT ministry plays a critical role in the success of the ICT implementation in the country. This is because ICT is one of the major drivers for the achievement of vision 2013 and therefore there is need to develop an ICT policy that will integrate the ICT sector to the national development. Therefore, under the government blue print for 2013-2017 notes that the ICT sector is important in the realization of the required improvement in productivity and empowerment of the citizenry.

The Public Procurement and Asset Disposal Act (PPAD, 2015) indeed provides for the use of e-procurement as one of the procurement procedures through Electronic reverse auction. Electronic reverse auction is defined by PPAD (2015) as an online real-time purchasing technique utilized by the procuring entity to select the successful submission, which involves the presentation by tenderers, suppliers or contractors of successively lowered bids during a scheduled period and the automatic evaluation of bids. This is in line with the government objective of streamline public procurement activities through the use of Integrated Financial

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Management Information System (IFMIS) which aims at ensuring that there is transparency and saving of tax payer's money.

PPOA Interim Report (2009) outlined plans to introduce e-procurement in all Kenya's public entities as a way of curbing corruption and reducing tendering delays. With the need to integrate key functions such as procurement and accounting and to streamline and enhance transparency in management of public funds as well as to provide a framework for standardized reporting, the government has adopted the policy requiring all government procuring entities to use the IFMIS (Mambo 2015). According to the report, the programme was set to be rolled out in 2013 after the completion of a pilot study. The system is anchored on IFMIS. The PPOA Interim Report (2009) highlighted the objectives which the Government of Kenya aims to achieve through the implementation of an e-procurement system.

RESEARCH METHODOLOGY

The research design was a case study within EAPCC. The merit of using a case study is that it allows an in-depth understanding of the behavior pattern of the concerned unit. Additionally a case study allows a researcher to use one or more of the several research methods depending on the circumstances. The study was used to identify the sustainable procurement practices in EAPCC and their role on performance of the organizational supply chain. The reason for this choice was based on the knowledge that case studies are the most appropriate for examining the processes by which events unfold, as well as exploring causal relationships and they provide a holistic understanding of the phenomena (Kitay & Callus, 1998).

The target population of interest in this study consisted of staff members at EAPCC headquarters in Machakos County and precisely Procurement Department, Finance Department, ICT Department, Production Department and the Stores Department. The study targeted these functional levels of management because sustainability in supply chain management cuts across all business processes and these departments are directly or indirectly involved in the formulation and implementation of sustainability strategies. There are approximately 150 employees in the five aforementioned departments.

Using Nassiuma (2001) formula with a confidence level of 95%, coefficient of variation of 0.5 and precision level of 5%, the sample size of this study was 60 employees. The sample was drawn from the population that represents the employees of EAPCC. This research adopted a stratified random sampling technique in selecting the sample. The use of sample enables the researcher to save time and costs associated with studying the entire population (Mark Saunders, et al, 2009). The selected respondents were issued with questionnaires.

Both quantitative and qualitative data was collected in this study. Data was collected mainly through questionnaires. The questionnaires used for the study comprised of open and close-ended questions. The advantage of using both structured and unstructured questionnaires is that they are easier to analyze and they permit greater depth of response whereby respondents are given responsibility of giving their own personal response. The study also made use of secondary sources of information such as published reports, articles and journals. The questionnaires were delivered to the respective respondents with the help of research assistants.

Before the actual study, the questionnaire was discussed with supervisors. The feedback from the supervisors and the experts helped in modifying the questionnaires. The researcher

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measured the reliability of the questionnaire to determine its consistency in testing what they are intended to measure. Reliability was calculated with the help of Statistical Package for Social Sciences (SPSS). A correlation coefficient greater or equal to 0.6 is accepted (George and Mallery, 2003).

Data was screened to identify omissions and removal of non – answered questions, checked for completeness, accuracy, errors in responses, omissions and other inconsistencies. The data was then coded using numerals in order to put them in limited numbers of categories. The data was analyzed using SPSS version 21. Data was then classified, tabulated and summarized using descriptive measures: percentages, mean, standard deviation and frequency distribution tables was used for presentation of the findings. Pearson's correlations coefficients was run to examine the relationship among the independent and the dependent study variables that are set out in the objectives of the study. The regression model is as below.

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

Where

Y =Supply chain performance of manufacturing firms
β_0 =Constant
X_1 = Procurement Preferences and Reservations
X_2 = Green Procurement Practices
X_3 = Supplier Involvement
X_4 = Electronic Procurement
$\beta_1, \beta_2, \beta_3, \beta_4$=Are regression coefficients and ε is the error term.

RESEARCH FINDINGS AND DISCUSSIONS

The study sought to investigate the role of sustainable procurement practices on supply chain performance of manufacturing firms. The questionnaires were distributed to EAPCC employees according to their different levels of functions and collected in the same manner and the analysis of the data was based on a general weight of 1 to 5 (1-Not at all, 2-small extent, 3-moderate extent, 4-large extent and 5- very large extent). The researcher sampled 60 respondents from EAPCC. However, only 49 questionnaires were filled correctly and returned. This translates to 81.67% response rate. This response rate was considered adequate as recommended by Babbie (2002).

Table 4. 1: Response Rate

Category	Frequency	Percentage
Response	49	81.67
Non response	11	18.33
Total	60	100.0

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Results of Pilot Study

A pilot study was undertaken to pretest data collection instrument for validity and reliability. The study dealt with different groups of experts in the field of Sustainable Procurement and Supply Chains and issued them with the questionnaires. The experts were required to assess if the questionnaires helps in determining the role of sustainable procurement practices on supply chain performance of manufacturing firms. Cronbach's alpha values of 0.7 and above is considered adequate. The average Cronbach's Alpha value was 0.729 as shown in Table 4.2 below meaning the items under each variable were consistent.

Table 4.2: Reliability Test

Variable	Cronbach's Alpha	No of Items
Procurement preferences and reservations	.743	10
Green procurement practices	.843	12
Supplier involvement	.599	6
Electronic procurement	.778	14
Supply chain performance	.683	8
Average Cronbach's Alpha	.729	50

Respondents' Distribution by Department

The respondents profile comprised of 22.45% respondents from procurement department, 26.53% from finance department, 20.41% from production department, 14.29% from the stores department and 16.33% from the ICT department. This implies that majority of the respondents who participated in the study were from finance department. Again it is evident that there is a fair distribution of the respondent's participation from various functional levels of management that directly or indirectly have roles in the sustainability of supply chains.

Descriptive Analysis

Descriptive statistics are a set of brief descriptive coefficients that summarizes a given data set, which can either be a representation of the entire population or a sample. The measures used to describe the data set are measures of central tendency and measures of variability or dispersion.

Procurement Preferences and Reservations

The study sought to establish the role of procurement preferences and reservations on supply chain performance of manufacturing firms. Preferences and reservations in procurement open a window of opportunities for specified target groups including Small enterprises; Micro enterprises; Disadvantaged groups (Physically disabled, youth & women); Citizen contractors; Local contractors; and Citizen contractors in Joint Venture or Sub-Contracting arrangements with foreign suppliers.

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Table 4.3: Frequency and percentages distribution of respondents' perception on Procurement Preferences and Reservations

Preferences and Reservations	Not at all	Small extent	Moderate extent	Large extent	Very large extent
Compliance to AGPO	0(0%)	10(20.4%)	19(38.8%)	20(40.8%)	0(0%)
Prompt delivery	4(8.2%)	5(10.2%)	23(46.9%)	11(22.4%)	6(12.2%)
Quality delivery	6(12.2%)	3(6.1%)	18(36.7%)	12(24.5%)	10(20.4%)
Open dialogue on sensitive issues with local community	3(6.1%)	2(4.1%)	9(18.4%)	23(46.9%)	12(24.5%)
Financial support to local community projects	0(0%)	10(20.4%)	21(42.9%)	6(12.2%)	12(24.5%)
Reserved contracts for local supplier	13(26.5%)	10(20.4%)	7(14.3%)	19(38.8%)	0(0%)
Feedback from local community	4(8.2%)	10(20.4%)	20(40.8%)	9(18.4%)	6(12.2%)
Local suppliers and SMES training	9(18.4%)	11(22.4%)	23(46.9%)	6(12.2%)	0(0%)
Youth, Women and disabled encouragement to tender	2(4.1%)	2(4.1%)	17(34.7%)	12(24.5%)	16(32.7%)
Fair competition between Youth, Women and disabled owned companies	2(4.1%)	4(8.2%)	3(6.1%)	18(36.7%)	22(44.9%)

From the Table 4.3 above, majority of the respondents agreed to the fact that EAPCC complies with the Preferences and Reservations Regulation, 2011 that calls for concern of earlier on disadvantaged groups. This is evident from the table where 20.4% to a small extent agreed that the company complies with the regulations followed by 38.8% who agreed to a moderate extent and 40.8% agreeing to a large extent. When the opinion of the respondents was sought on whether the companies owned by youth, women and the disabled are prompt in their supplies and deliver quality prices at fair prices , a majority of respondents agreed.

When asked whether the company had an open dialogue with local community on adverse, controversial or sensitive issues that involve the company, 6.1% said Not at all, 4.1% agreed to a small extent, 18.4% agreed to a moderate extent, 46.9% agreed to a large extent while 24.5% agreed to a large extent. Generally, the company involves the local community in open dialoging concerning sensitive issues pertaining environment and waste. The company also gives regular financial support to local community projects and activities as indicated by the table where 0% declined that the company does not support or finance local projects. Majority of the respondents agreed that the company has effective communication channels to get feedback from the community concerning the interaction of the company activities and its

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location. 8.2% disagreed that the company has communication channels while 20.4% agreed to a small extent, 40.8% agreed to a moderate extent, 18.4% agreed to a large extent and 12.2% agreed to a very large extent.

When the respondents were asked their opinion of whether the local suppliers and the SMEs are trained on how to expand their businesses and whether the contract advertisements done by EAPCC encourage youth, women and disabled owned companies to submit their proposals, majority of the respondents agreed to the fact. Lastly, majority of the respondents, 44.9% admitted to very large extent that the youths, women and disabled owned companied contracted by the company compete fairly. 8.2% agreed to a small extent, 6.1% agreed to a moderate extent while 36.7% agreed to a large extent. The findings infer with PPOA report (2014) that public buying in Kenya has been used as a medium to achieve various social objectives, such as reducing unemployment, providing employment to disabled individuals, youth, and women and to marginalized areas and regions in the country, promoting gender and ethnic equality.

Green Procurement Practices

The study sought to establish the role of green procurement practices on supply chain performance of manufacturing firms. From the table 4.4 majority of the respondents agreed that EAPCC has an efficient environmental policy that is reviewed regularly. This is whereby 34.7 % agreed to a large extent that the policy was formulated and 42.9% agreed to a large extent that the policy is reviewed regularly to factor in environmental dynamics. When asked their opinions on whether EAPCC procures eco-friendly products, 44.9% to a very large extent agreed, 24.5% agreed to a large extent, 26.5% agreed to a moderate extent while 4.1% agreed to a small extent. This implies that EAPCC considers the environment while making procurement decisions as 51% and 40.8% to a large extent and to a very large extent agreed. From the findings, the company adheres to environmental concern by reducing environmental impact in terms of energy conservation, proper packaging of products and via eco-design products procurement. Majority of the respondents agreed to the fact that EAPCC has gone green in procurement of recyclable, reusable, non-toxic, biodegradable and 100% post-consumer recycled materials, products and supplies. 51% to a moderate extent agreed, 28.6% to a large extent agreed while 16.3% to a very large extent agreed that the company purchases green. EAPCC too has adopted sustainable transport options to reduce environmental pollution. This is an effort to on-time avail the requirements for manufacturing with minimal environmental degradation. This is by combination of loads and through vehicle routing. Majority of the respondents agree that going green is expensive and attracts costs of acquisition. 26.5% to a very large extent agreed that eco-designed products are expensive, 38.8% to a large extent too agreed that the eco-designed products are expensive while 24.5% and 6.1% to a moderate and small extent respectively agreed that the eco-friendly products attract an extra coin in their acquisition. Lastly, from the findings, EAPCC involves stakeholders in making environmental decisions as 38.8% to a large and a very large extent agreed to the fact.

The findings agree with Swalehe (2015) that eco-design practices has positive influence on organization performance with greatest impact being on environmental impact reduction and financial performance and less on operational performance. Hence supporting the finding by Lopez-Gamero, Molina-Azorın and Claver-Cortes (2009) study on the relationship between environmental variables and firm performance. The study established that there is improvement of environmental performance and firm performance through reducing pollution, decreasing costs and improving credibility and reputation while also contributing to the development of valuable capabilities that increase the competitive advantage of the firm. Hence, support the

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argument that environmental pro-activeness has a positive impact on supply chain performance.

Table 4.4: Frequency and percentages distribution of respondents' perception on green procurement practices

Green Procurement practices	Not at all	Small extent	Moderate extent	Large extent	Very large extent
Efficient Environmental policy	0(0%)	2(4.1%)	14(28.6%)	17(34.7%)	16(32.7%)
Regular review of environmental policy	2(4.1%)	7(14.3%)	12(24.5%)	7(14.3%)	21(42.9%)
Procurement of eco-friendly products	0(0%)	2(4.1%)	13(26.5%)	12(24.5%)	22(44.9%)
Environmental consideration in purchase decisions	0(0%)	0(0%)	4(8.2%)	25(51.0%)	20(40.8%)
Preference of environmental compliant suppliers	0(0%)	2(4.1%)	0(0%)	33(67.3%)	14(28.6%)
Energy conservation	0(0%)	2(4.1%)	17(34.7%)	10(20.4%)	20(40.8%)
Eco-designed products	0(0%)	6(12.2%)	11(22.4%)	23(46.9%)	9(18.4%)
Product packaging consideration in procurement	0(0%)	13(26.5%)	11(22.4%)	14(28.6%)	11(22.4%)
Purchasing of green supplies, products and materials	0(0%)	2(4.1%)	25(51.0%)	14(28.6%)	8(16.3%)
Reduction of environmental impact in terms of sustainable transport options	0(0%)	3(6.1%)	14(28.6%)	17(34.7%)	15(30.6%)
Increased eco-designed product cost	2(4.1%)	3(6.1%)	12(24.5%)	19(38.8%)	13(26.5%)
Stakeholder involvement in environmental decision making	4(8.2%)	0(0%)	7(14.3%)	19(38.8%)	19(38.8%)

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Supplier Involvement

Respondents were asked to indicate the extent supplier involvement statements affect supply chain performance in EAPCC. From the Table 4.5, majority of the respondents agreed that EAPCC has effective processes of getting feedback, consultations and dialogue with suppliers. This is indicated by 26.5% agreeing to a very large extent that the company has effective channels, 49% to a large extent too agreed while 20.4% and 4.1% agreed to a moderate and small extent. This implies that the company is in constant exchange with its suppliers in various issues.

On whether the company has established contracts with certified suppliers who embrace sustainability in their supply chains, majority 46.9 % agreed to the fact moderately. This implies that sustainability is not a one-man activity and involvement of stakeholders albeit suppliers is important. From the findings, it is evident that product design and quality is an effort of both suppliers and buying organization. This is where 40.8% to a moderate extent agreed that suppliers are engaged via capacity buildings and collaborations in design of eco-friendly products. 38.8% to a large extent and 8.2% to a very large extent agreed to the same.

When respondents were asked their opinion on the effectiveness of communication strategies concerning the dimensions of sustainability, majority agreed to the fact that EAPCC keeps the suppliers informed of their efforts of sustainability. 46.9% to a moderate extent agreed as 28.6% agree at a large extent. From the findings, also we can deduce that suppliers are kept aware of company sustainability efforts through trainings on the importance of values and regulations with regard to social, environmental and economic goals. This is where 44.9% agreed to a moderate extent while 38.8% to a large extent agreed that such trainings are done at EAPCC.

Johanna (2008) that as knowledge relating to environmental damage increases, the pressure to change the ways in which organizations behave increase – particularly amongst the manufacturing, mining and resources sectors, supports the findings of this study. Hence supporting the findings by Avery (2005) that companies need to involve suppliers in their activities, monitor the environmental impact of suppliers and develop an environmental purchasing policy that aims to reduce the environmental impact of their own and their supplier's activities, goods and services.

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Table 4.5: Frequency and percentages distribution of respondents' perception on Supplier Involvement

Supplier involvement	Not at all	Small extent	Moderate extent	Large extent	Very large extent
Effective feedback, consultation and dialogue with suppliers	0(0%)	2(4.1%)	10(20.4%)	24(49.0%)	13(26.5%)
Established contracts with certified sustainable suppliers	0(0%)	2(4.1%)	23(46.9%)	20(40.8%)	4(8.2%)
Supplier engagement through capacity building and collaborations	2(4.1%)	4(8.2%)	20(40.8%)	19(38.8%)	4(8.2%)
Supplier involvement in eco-design products	2(4.1%)	9(18.4%)	17(34.7%)	19(38.8%)	2(4.1%)
On target communication strategies	2(4.1%)	10(20.4%)	23(46.9%)	14(28.6%)	0(0%)
Supplier training on company values and rules of conduct with regard to sustainability dimensions	4(8.2%)	0(0%)	22(44.9%)	19(38.8%)	4(8.2%)

Electronic procurement

The study asked the respondents to indicate the extent to which Electronic Procurement affect supply chain performance in EAPCC. A Likert scale of 1 to 5 (1 =Not at all, 2= small extent, 3=moderate extent, 4=large extent, 5= very large extent) was used. First, the study sought to know whether EAPCC uses integrated systems in their procurement whereabouts and from the findings, it is clear that 30.6% of the respondents to a very large extent agreed that the company uses appropriate e-procurement software to improve the procurement process. 28.6% to a large extent too agreed to this fact, 18.4% moderately agreed while 18.4% of the respondents to a small extent agreed that the e-procurement software used was appropriate. The study also sought to know the extent of use of the integrated systems in requisitions, issues and receipts of materials in the stores for inventory management. From the findings, it is evident that requisitions and issues of materials is necessitated by use of integrated systems while receipts of materials is not done online. 44.9% disagreed that items are received online. Logically the receipt of items in procurement is mostly manual though this is dependent on the nature and type of the receipts in question.

When respondents were asked of their opinion of the impact of the use of e-procurement systems on inventory management, it is evident that majority of the respondents agreed that use of electronic systems in procurement reduces incidences of stock outs. With 49% of the respondents agreeing moderately that use of electronic systems in procurement reduces stock out in the stores. 22.4% similarly to a large and very large extent agreed to the fact. Again, on the use of electronic systems, it is evident that there is reduced lead-time. Lead-time is defined as the duration from the time of ordering to the time of receiving by the buying organization. 36.7% of the respondents agreed to a large extent that use of integrated electronic systems

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reduced the time of waiting. 26.5% and 28.6% also agreed largely and moderately respectively to the same concern. Normally the use of electronic systems in procurement increases efficiency and effectiveness hence reduced stock outs and reduced lead-time due to reduced time wastage.

From the findings, it is evident that electronic systems aid in procurement planning and disposal of items. The disposable items are availed in the company website for interested parties to show interest. Annual procurement plans is prepared and submitted online among various functional departments concerned with procurement whereabouts. These departments are the user department as mentioned in the Public Procurement and Assets Disposal Act, 2015. Majority of the respondents agreed to the fact that the company had enough resources to necessitate the use of electronic procurement. Thus, the ration of personal computers to the number of personnel was recommendable. The server was also operational throughout unless spontaneous faults. The procurement systems was integrated with other organizational systems for amicable communication and liaison with other departments. This implies that EAPCC has the capacity to conduct its procurement activities using electronic means for increased overall efficiency.

When respondents were asked on whether the use of e-procurement systems has enabled prompt payment of suppliers, majority 34.7% to a large extent agreed as 26.5% to a very large extent agreed that the use of e-procurement has enabled prompt payment. This implies that there is a good rapport between suppliers and EAPCC since one of the elements that cause difference between an organization and suppliers is eliminated. The use of e-procurement systems also is termed to reduce ordering costs. 20.4% of the respondents to a very large extent agreed to the fact as 32.7% and 34.7% to a large extent and moderate extent respectively agreed on the same. This is because use of electronic systems in procurement reduces the costs of stationery and all other secretarial expenses like phone calls and supplier visits costs.

Shale (2014) supports the findings of this study that there is a significant positive relationship between the components of e-procurement strategy with the procurement performance of state corporations. Hence, support from Mambo (2015) that in Kenya, the government has recognized the adoption of ICT in service delivery to the public and citizen in general. This has gained momentum with the current government administration.

The Public Procurement and Asset Disposal Act (PPAD, 2015) indeed provides for the use of e-procurement as one of the procurement procedures through Electronic Reverse Auction. This is in line with the government objective of streamline public procurement activities using Integrated Financial Management Information System (IFMIS) that aims at ensuring that there is transparency and saving of taxpayer's money.

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Table 4. 6: Frequency and percentages distribution of respondents' perception on Electronic Procurement

Electronic procurement	Not at all	Small extent	Moderate extent	Large extent	Very large extent
Appropriate use of e-procurement software	2(4.1%)	9(18.4%)	9(18.4%)	14(28.6%)	15(30.6%)
Online purchase requisitions	4(8.2%)	14(28.6%)	7(14.3%)	16(32.7%)	8(16.3%)
Online store issues	4(8.2%)	12(24.5%)	24(49.0%)	3(6.1%)	6(12.2%)
Online receipts of all items	22(44.9%)	8(16.3%)	8(16.3%)	7(14.3%)	4(8.2%)
No stock outs when e-procurement is used	0(0%)	3(6.1%)	24(49.0%)	11(22.4%)	11(22.4%)
Reduced lead time when e-procurement is used	0(0%)	4(8.2%)	14(28.6%)	13(26.5%)	18(36.7%)
Availability of disposable items in the website	2(4.1%)	8(16.3%)	14(28.6%)	18(36.7%)	7(14.3%)
Online preparation and submission of procurement plans	4(8.2%)	13(26.5%)	15(30.6%)	12(24.5%)	5(10.2%)
Recommendable ratio of personal computers	2(4.1%)	10(20.4%)	4(8.2%)	28(57.1%)	5(10.2%)
Server is operational through out	0(0%)	4(8.2%)	17(34.7%)	15(30.6%)	13(26.5%)
Integration of e-procurement system with other systems	4(8.2%)	0(0%)	20(40.8%)	17(34.7%)	8(16.3%)
Established communication channels	0(0%)	6(12.2%)	8(16.3%)	22(44.9%)	13(26.5%)
Prompt payment of suppliers through e-procurement system	2(4.1%)	7(14.3%)	10(20.4%)	17(34.7%)	13(26.5%)
Reduction of ordering cost through the use of e-procurement	2(4.1%)	4(8.2%)	17(34.7%)	16(32.7%)	10(20.4%)

Supply Chain Performance

As the adage goes, it is no longer firm competing against firm rather; it is supply chain vs. supply chain. As the competitive focus shift from the firm to the supply chain, it must be recognized that, like physical chains, no supply chain is stronger than its weakest link. Respondents were asked the extent to which the company has realized business values on their

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supply chains as a result of sustainability. From the findings in the Table 4.7 below its evident that the company has realized a wide range of benefits resultant from the sustainability efforts of EAPCC. Among the listed include; increased brand loyalty, reduced procurement costs, increased profitability, increased employee satisfaction, quality products, improved customer satisfaction, reliable supply base and finally on time delivery of materials without delay.

Table 4. 7: Frequency and percentages distribution of respondents' perception on Supply Chain Performance

Supply chain performance	Not at all	Small extent	Moderate extent	Large extent	Very large extent
Increased brand loyalty	2(4.1%)	13(26.5%)	13(26.5%)	7(14.3%)	14(28.6%)
Reduced procurement cost	0(0%)	6(12.2%)	14(28.6%)	20(40.8%)	9(18.4%)
Increased profitability	4(8.2%)	2(4.1%)	14(28.6%)	24(49.0%)	5(10.2%)
Increased employee satisfaction	2(4.1%)	8(16.3%)	14(28.6%)	15(30.6%)	10(20.4%)
Quality products	0(0%)	2(4.1%)	14(28.6%)	23(46.9%)	10(20.4%)
Improved customer satisfaction	2(4.1%)	0(0%)	13(26.5%)	14(28.6%)	20(40.8%)
Reliable supply base	2(4.1%)	6(12.2%)	15(30.6%)	19(38.8%)	7(14.3%)
On time delivery	0(0%)	0(0%)	20(40.8%)	20(40.8%)	9(18.4%)

Correlations of the Study Variables

Table 4.8 illustrates the correlation matrix among the independent variables. Correlation is often used to explore the relationship among a group of variables (Pallant, 2010), in turn helping in testing for Multicollinearity. If the correlation values are not close to 1 or -1, this is an indication that the factors are sufficiently different measures of separate variables (Farndale, Hope-Hailey &Kelliher, 2010). It is also an indication that the variables are not multicollinear. Absence of Multicollinearity allows the study to utilize all the independent variables.

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Table 4. 8: Pearson Correlation

		Preferences and reservation	Green procurement practices	Supplier involvement	Electronic procurement
Preferences and reservations	Pearson Correlation	1			
	Sig. (2-tailed)				
Green procurement practices	Pearson Correlation	.213	1		
	Sig. (2-tailed)	.142			
Supplier involvement	Pearson Correlation	.714**	.357**	1	
	Sig. (2-tailed)	.000	.045		
Electronic procurement	Pearson Correlation	.626**	.111	.432**	1
	Sig. (2-tailed)	.000	.449	.002	
Supply chain performance	Pearson Correlation	.224*	.357*	.414**	.238*
	Sig. (2-tailed)	.022	.012	.003	.049

Table 4.8 indicated that Green Procurement Practices and Preferences and Reservation have insignificant positive relationship as attributed by the correlation coefficient of 0.213 and p-value of 0.142. Logically it is expected that the two are independent consideration in acquisition of materials and amount to dimensions of sustainable procurement practices. The results shows presence of a positive and significant weak relationship between green procurement and supplier involvement as proved by the p-value and the correlation coefficient (r=0.357, p=0.045). Normally suppliers are engaged in green procurement practices through design of eco-friendly products, their packaging, transportation and development of environmental policies concerning the products from cradle to grave life cycle of the products hence the relationship. There is a weak but insignificant relationship between green procurement and electronic procurement since the p value of 0.449 is greater than 0.05 level of significance and the correlation coefficient is 0.111.

The correlation matrix table shows presence of strong and significant positive relationship between supplier involvement and preferences and reservation (r=0.714, p=0.000). This is because the suppliers are engaged in the compliance to the preservation and reservation regulations. Preference is usually given to SMEs and companies owned by the youth, women and disabled. There is an evidence of significant moderate relationship between supplier involvement and the electronic procurement as attributed by the p value and correlation coefficient (r=0.432, p=0.002). This is because the use of integrated procurement system is a two-way activity that requires both the buying organization and the suppliers to be sophisticated. Furthermore, the results of the table show presence of a significant strong positive relationship between electronic procurement and preferences and reservations as proved by the Pearson correlation coefficient of 0.626 and a p-value of 0.000.

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From the table, all the independent variables are positively related to supply chain performance as attested by the respective correlation coefficients: preference and reservation (r=0.224), Green procurement practices (r=0.357), supplier involvement (r=0.414) and electronic procurement (r=0.238). All the relationships are rendered significant since their p values are less than 0.05. Accordingly, the ranking of the independent variables with their contribution to supply chain performance was: Supplier involvement contributed more to supply chain performance of EAPCC (41.4%), followed by green procurement practices (35.7%), followed by electronic procurement (23.8%) and finally preferences and reservation (22.4%).

Regression Analysis Results

A multiple linear regression analysis was done to examine the relationship of the independent variables with the dependent variable. The adjusted R^2 is the coefficient of determination. This value explains how supply chain performance varied with Preferences and Reservation, Green Procurement Practices, Supplier Involvement and Electronic Procurement. The model summary table shows that four predictors can explain 76.3% of change in Supply chain performance namely Preferences and reservation, green procurement practices, supplier involvement and electronic procurement an implication that the remaining 23.7% of the variation in supply chain performance could be accounted for by other factors not involved in this study.

Table 4. 9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.885[a]	.783	.763	.939

Predictors: (Constant), Procurement Preferences and Reservations, Green Procurement Practices, Supplier Involvement and Electronic Procurement.

Analysis of variance (ANOVA) was done to establish the fitness of the model used. The ANOVA table shows that the F-ratio (F=10.937, *p*=.000) was statistically significant. This means that the model used was appropriate and the relationship of the variables shown could not have occurred by chance.

Table 4.10: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	38.583	4	9.646	10.937	.000[b]
	Residual	38.804	44	.882		
	Total	77.388	48			

a. Dependent Variable: Supply Chain Performance
b. Predictors: (Constant Procurement Preferences and Reservations, Green Procurement Practices, Supplier Involvement and Electronic Procurement)

The estimated coefficients (βs) show the contribution of each independent variable to the change in the dependent variable. The coefficients table results show that Procurement Preferences and Reservation (β=.826, *p*=.000) positively and significantly affected supply chain performance at EAPCC. The results also show that Green Procurement Practices (β=.989, *p*=.000) positively and significantly affected supply chain performance at EAPCC.

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Supplier Involvement (β= 1.415, p=.000) and Electronic Procurement (β=.286, p=.045) also were found to be positively and significantly affecting supply chain performance at EAPCC.

Table 4. 11: Coefficients of Determination

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.215	.781		2.835	.007
	Procurement Preferences and Reservations	.826	.219	.718	3.767	.000
	Green Procurement Practices	.989	.185	.636	5.353	.000
	Supplier Involvement	1.415	.271	1.012	5.213	.000
	Electronic Procurement	.286	.138	.239	2.068	.045

a. Dependent Variable: Supply chain performance

From the multiple regression results in the table above, the equation $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ becomes:

$Y = 2.215 + 0.826X_1 + 0.989X_2 + 1.415X_3 + 0.286X_4$ Where:

Y =Supply chain performance of manufacturing firms

X_1 = Procurement Preferences and Reservations

X_2 = Green Procurement Practices

X_3 = Supplier Involvement

X_4 = Electronic Procurement

According to the regression equation established, holding all independent factors a constant then Supply Chain Performance will be 2.215. From the regression equation, taking all other independent variables at zero, a unit increase in Procurement Preferences and Reservations will lead to a 0.826 increment in Supply Chain Performance. A unit increase in Green Procurement Practices will lead to a 0.989 increment in Supply Chain Performance. A unit increase in Supplier Involvement will lead to a 1.415 increment in Supply Chain Performance and a unit increase in Electronic Procurement will lead to a 0.286 increment in Supply Chain Performance. This insinuates that Supplier Involvement contribute more to the supply chain performance followed by the Green procurement practices.

At 5% level of significance and 95% level of confidence, Procurement Preferences and Reservation had a 0.000 level of significance; Green Procurement Practices showed a 0.000 level of significant, Supplier Involvement showed a 0.000 level of significant and Electronic

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procurement had a 0.045 level of significant. Hence, the most significant factors are Supplier Involvement, Green Procurement Practices and Procurement Preferences and Reservations.

CONCLUSION AND RECOMMENDATIONS

On the social front, the findings revealed that EAPCC has promoted social equity among its employees and in the society to a great extent. This is because the company has suitable arrangements for financial security, health and safety of its employees. The findings show that EAPCC also gives financial support to local community in the form of charity and sponsorships. In order to ensure peaceful co-existence the study shows that the company constantly engages the local community on controversial issues such as mispricing, vehicles obstructing footpaths and accumulation of waste around its premises. The results revealed that Procurement Preferences and Reservations affected supply chain performance at EAPCC. The results have also shown that Procurement Preferences and Reservations (β=.826, p=.000) positively and significantly affected supply chain performance at EAPCC

The study also showed that EAPCC has adopted green practices in its supply chain management practices to a great extent. The company has put in place appropriate mechanisms for waste minimization, pollution prevention, energy conservation, and has ensured use of sustainable transport options to distribute its products. The company is also going a step further by engaging its customers to participate in environment stewardship. The results have revealed that Green Procurement Practices affect supply chain performance at EAPCC. Green procurement practices (β=.989, p=.000) was also found to positively and significantly affect supply chain performance at EAPCC.

The study establishes that supplier involvement at EAPCC's supply chain has been achieved to a great extent. This is because the company is working closely with its suppliers to develop products of high quality and are environment friendly. The findings indicate that EAPCC's products are certified super brands by an internationally recognized organization and therefore meet international environment, quality, health and safety standards. By closely working with its suppliers the company is able to share and manage risks early, identify cost savings and strive towards ensuring market resilience of its products. The results have also revealed that Supplier Involvement affect supply chain performance at EAPCC. Supplier involvement (β= 1.415, p=.000) was also found to positively and significantly affect supply chain performance at EAPCC.

The results have revealed that Electronic procurement affect supply chain performance at EAPCC. Electronic procurement (β= .286, p=.045) was also found to positively and significantly affect supply chain performance at EAPCC. Lastly, the study found out that simultaneous pursuit of sustainable procurement (social, economic and environmental goals) had led to increased brand loyalty, reduced procurement costs, increased profitability, increased employee satisfaction, quality products, improved customer satisfaction, reliable supply base and on time delivery of materials without delay that have in turn boosted the supply chain performance of EAPCC. Hence supporting the finding by Telewa (2014) that most public organization were considering implementing various sustainable procurement practices which include: giving preference to youth, women and people with disabilities access public procurement, establishing supplier engagement, including sustainability issues in the procurement process, regular review/audit processes of systems internally and developing bias for products that disclose their environmental effect. Sustainable procurement delivers savings and cost reduction objective to public organizations thus public sector institution which are

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considering sustainable procurement have put their sustainable procurement objectives at the core of their operations and incorporate them as at strategic levels of their organization

Conclusions

Following the results of the study, it is worthwhile to conclude that there is a positive relationship between sustainable procurement practices and supply chain performance. Through procurement preferences and reservations, adoption of green procurement practices, involvement of suppliers and the use of integrated procurement systems, EAPCC has continued to be at the heart of Kenya's economic success story. The study also establishes that EAPCC's electronic procurement was rated the lowest amongst the research variables meaning that the company is yet to fully realize the benefits sustainable procurement can give due to use of integrated systems.

Recommendations

Given the role sustainable procurement practices have on supply chain performance, it is imperative that organizations start to view sustainable procurement as strategic in value: that they will not only change the future of their organizations but will also impact positively on the environment and the society at large. Since most respondents agreed that sustainable procurement has led to EAPCC gaining supply chain performance, all cement manufacturing firms should be encouraged to adopt sustainable procurement practices since it will assist them attain some degree of competitiveness apart from achieving their social and environmental obligations..

To address sustainability issues, organizations need a big change in their culture: that by managing and seeking to improve environmental, social and economic performance throughout supply chains, companies act in their own interests, the interests of their stakeholders and the interests of society. The ultimate goal of engaging with suppliers is to develop a shared mindset about sustainability issues, to build supplier ownership of their sustainability vision, strategy and performance and to work more closely with suppliers with shared priorities.

Areas for Further Research

This study was not exhaustive by any means and therefore it is recommended that another study be replicated in other sectors of the economy, such as retailing, service, government, and health sectors. This is because sustainability in procurement management is a rich research field that is still evolving. A similar research in manufacturing sector will also need to be carried out over time to see if they validate, support or contradict the findings of this particular study.

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