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**Role of Sustainable Supply Chain Management on The Performance
of State Corporations in Kenya**

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Role of Sustainable Supply Chain Management on The Performance of State Corporations in Kenya

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Abstract

Purpose: The purpose of the study was to examine the role of sustainable supply chain management on the performance of state corporations in Kenya.

Methodology: This research study adopted a descriptive research design approach. This method is preferred because it allows an in-depth study of the subject. The sample for this study shall comprise 187 state corporations in Kenya. Primary data was collected using a questionnaire whereas secondary data was collected from existing literature. The study involved three types of sampling techniques. Stratified random sampling was used and also simple random sampling after the researcher identifies homogeneity of the population. Data was analyzed through descriptive statistical methods such as means, standard deviation, frequencies and percentage. Inferential analyses were used in relation to correlation analysis and regression analysis to test the relationship between the four explanatory variables and the explained variable

Results and conclusion: The independent variables reported R value of .846 indicating that there is perfect relationship between dependent variable and independent variables. R square value of 0.716 which means that 71.6% of the corresponding variation in performance of the state corporations can be explained or predicted by (environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 1.240$), $p=0.00 < 0.05$).

Unique contribution to theory, policy and practice: The findings of the study indicated that environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability have a positive relationship with performance of state corporations in Kenya.

Keywords: *Environmental sustainability, economical sustainability, socio-cultural sustainability and ethical sustainability*

1.1 INTRODUCTION

Sustainable purchasing and supply management is a relatively recent, but rapidly emerging field (Johnsen, Miemczyk & Howard, 2016). Despite the numerous definitions of Sustainable Supply Chain Management (SSCM), very little research describes what sustainability actually means, at a detailed level to individual business executives and determines where supply chain management (SCM) fits into those views (Paola, Daniel & Susan, 2015).

In recent years, academics and practitioners have become increasingly interested in how organizations and their suppliers' impact on the environment, society and the economy. There is a prevailing view that there needs to be some constraint in economic and societal development, to minimize negative impacts on the environment. Growing concerns over issues such as the limitation of resources, global warming, greenhouse gases (GHGs), and consumer health have increased the urgency for firms to incorporate sustainability into their strategies (Paulraj, 2011).

Sustainability is not a fixed ideal, but an evolutionary process of improving the management of systems, through improved understanding and knowledge (Bradly, 2015).

Recently, improved understanding demands consideration of sustainability from a supply chain perspective. Sustainable procurement isn't simply about being "green" but it is also about; socially and ethically responsible purchasing, minimizing environmental impact through the supply chain, delivering economically sound solutions and good business practice (Muraguri, Waweru & Musyimi, 2015).

The integration of economic, environmental and social facets has been at the forethought of sustainability in today's operations management due to the successful implementation of green supply chain which eventually has led to overall sustainability of firms. Sustainability calls for proponents of human, economic, as well as environmental concerns to join together to provide an everlasting life for the human species in the global ecosystem (CIPS, 2012).

According to Jonathan and Diane (2014), procurement is a key part of SSCM. Implementing sustainable policies at the procurement stage allows an organization to influence the characteristics of the products and services it will be supplied with (Preuss, 2009). There are five key principles of procurement as described by Raymond (2008) which include: value for money (VFM); ethics; competition; transparency; and accountability. Procurement also involves other issues such as culture, leadership, management, economics, environmental, ethical and political issues (Walker & Brammer, 2012).

Sustainability is driven by an incorporation of 3E's, which include: economic; environmental and equity-driven values and policy claims. The achievement of sustainability in the built environment is by developing a 4E's (Economic, Effectiveness, Efficiency and Ethics) and 4 Poles (Economic, Social, Environmental and Technology) model of sustainability (George, Andrew & Christopher, 2012). Some of the benefits of sustainability include, but not limited to: provision of cost savings; improved corporate image in the marketplace; creating markets for new products and services and firms are able to also secure the supply of goods and services in the light of increasingly environmental legislation, reduce wastes and improve resource efficiency (CIPS, 2012).

1.2 Problem Statement

According to a World Bank Report (2014) sustainable procurement projects consistently use social impact assessments. In Kenya state corporations accounted for 20% of the country's Gross Domestic Product (GDP), provided employment opportunities to about 300,000 people in the formal sector and 3.7 million persons in the informal sectors of the economy (KIPPRA, 2009). However, state corporations in Kenya have been experiencing a myriad of problems including non-sustainability and mismanagement of their projects (USAID, 2014).

According to a report by Deloitte (2014) in Kenya, out of a sample of 52 state corporations, only 14 had adopted sustainability practices. Among many other reasons cited, this resulted to losses amounting to over 100 Million at Kenya Pipeline Corporation (KPC) in the (FY) 2013/2014. In a customer satisfaction survey of 2012 and 2013, carried out by m/s House of Procurement Consultants, it was visibly notable that the percentage index had been decreasing that is, 52% and 43% respectively (Shale & Rahma, 2014). KPC faces a major challenge in controlling the overall operating cost because of the constant increase of sourcing cost due to lack of sustainability strategies; this is evident by KPC posting a decrease in profit prior to tax of Sh2.42 billion compared to Sh1.5 billion noted in the previous year according to a KPC 2011 annual report.

A research carried out on the state of service delivery among state corporations in Kenya by CCG (2014) revealed that the productivity of state corporations is quite low while at the same time they continue to absorb excessive portion of the budget, becoming a principal cause of long term procurement problems (GoK, 2014). This raises questions on the level of sustainability of state corporation procurement procedures.

Several studies have been done, at the global level; Stephen and Helen (2008) point out lack of project sustainability due to low level of awareness, approaches used by developers and lack of proper feasibility study. They surveyed 100 Australian state corporation sponsored projects and reported a link between sustainability strategy and performance. They noted that sustainability strategy ensures strategic alliances are forged and aspects such as green procurement adopted. Locally, Swalehe and Odock (2015) found that Eco-design practices had a direct impact on the performance of manufacturing firms. Abdifatah (2012) concluded that sustainability planning and strategies have a direct positive impact on the performance of humanitarian organizations in delivery of relief and emergency health services.

While much research has focused on the problems facing performance of state financed projects in Kenya, not much research has been done to study sustainability strategies and their influence on performance of state corporations in Kenya. It is against this back drop that this study aims at assessing the influence of sustainable procurement practices on the performance of state corporations in Kenya.

1.3 Objectives of the Study

- i. To establish the role of environmental sustainability on performance of state corporations in Kenya.
- ii. To evaluate the role of economical sustainability on performance of state corporations in Kenya.
- iii. To determine the role of social-cultural sustainability on performance of state corporations in Kenya.
- iv. To evaluate the role of ethical sustainability on performance of state corporations in Kenya.

2.0 LITERATURE REVIEW

2.1 The Stakeholder Theory

Stakeholders are defined as individuals, groups and organizations that have an interest in the processes and outcomes of the firm and upon whom the firm depends on for the achievement of its goals (Abend, 2008). They include employees, managers, shareholders, financiers, customers and suppliers, and may be referred to as primary or legitimate stakeholders (Phillips, 2008). Stakeholder theory is built upon the normative that businesses should serve a variety of interests rather than just those of shareholders and in so doing businesses will achieve superior performance (Bjorklund, 2011). Stakeholder theory suggests that managing stakeholders involves attending to interests and well-being of those stakeholders at a minimum (Bonn & Fisher, 2011).

Sustainable supply chain management was founded on stakeholder theory that argues that the management aims at maximization of the stakeholders' interests and hence will put measures aimed at boosting productivity and improving on operations (Hsueh, 2015). The motivation of stakeholders in a business management setting reflects current interest in managing the issue of sustainability in inter-organizational relationships, where the firm is generally considered an unsatisfactory unit of analysis and it is necessary to take a whole system, sector based or industry view (Kumar & Putnam, 2008). Stakeholder theory is often used to support the elaboration of other theories like RBV and Institutional theories but rarely becomes the focus of development on its own. This theory has initially been centred on defining the stakeholder concept and classifying stakeholders into categories which provide an understanding of stakeholder relationships. Stakeholder theory postulates that the purpose of business is to create value for all stakeholders and postulates that the purpose of business is to create value for all stakeholders (London & Hart, 2010). This theory is in this study has been linked to environmental sustainability because stakeholders have to be involved in environmental issues for them to succeed.

2.2 Sustainable Supply Chain Management

2.2.1 Supply Chain Environmental Sustainability

There have been growing concerns over issues such as the limitation of resources, global warming, green-house gases and consumer health. This has in turn increased the urgency for firms to incorporate sustainability into their strategies (Aguilera-Caracuel & Ortiz-de-Mandojana., 2013). There is great reliance of technology to solve environmental problems around the world today. With the development of the internet and 24-hour news, every company is constantly under the watchful eye of the public. Unsustainable practices hidden in the supply chain has the potential to become public information extremely quickly, leaving a company's brand value damaged and shareholders displeased

2.2.2 Supply Chain Economical Sustainability

Economic sustainability is a critical factor in any business, which has already been studied by many researchers and in relation to operations management (Minglang, Ming, & Wai, 2014). It can simply be interpreted as how companies stay in business, and is integrally linked to the environmental and social outcomes an organization achieves. Good financial and broader economic performance might mean that companies survive in the short-term but does not necessarily secure a long-term economic future, nor does it guarantee positive environmental and social issues which might also be a barrier to long-term survival.

2.1.3 Supply Chain Socio-Cultural Sustainability

Social practices and performance in operations and the supply chain encompass all management practices that affect how a firm contributes to the development of human potential or protects people from harm (Gimenez & Tachizawa, 2012). Supply chain social responsibility differs from the more familiar notion of Corporate Social Responsibility (CSR) and refers to the chain-wide consideration and commitment to achieving social benefits, genuine and legitimate partnership and acknowledgment of different approaches to ethics (Spence & Bourlakis, 2009).

2.1.4 Supply Chain Ethical Sustainability

Organizations' commitment to ethics is one of the steps towards achieving sustainable supply chain practices. Ethics address the relationships between people by providing rules of conduct that are generally agreed to govern good behavior (Kibert, 2008). The newly published ISO 20400 on sustainable procurement explains how organizations would benefit from working with suppliers who have good ethical practices. In essence, ethics governs people's behavior and controls their environmental impact.

2.2 Conceptual Framework

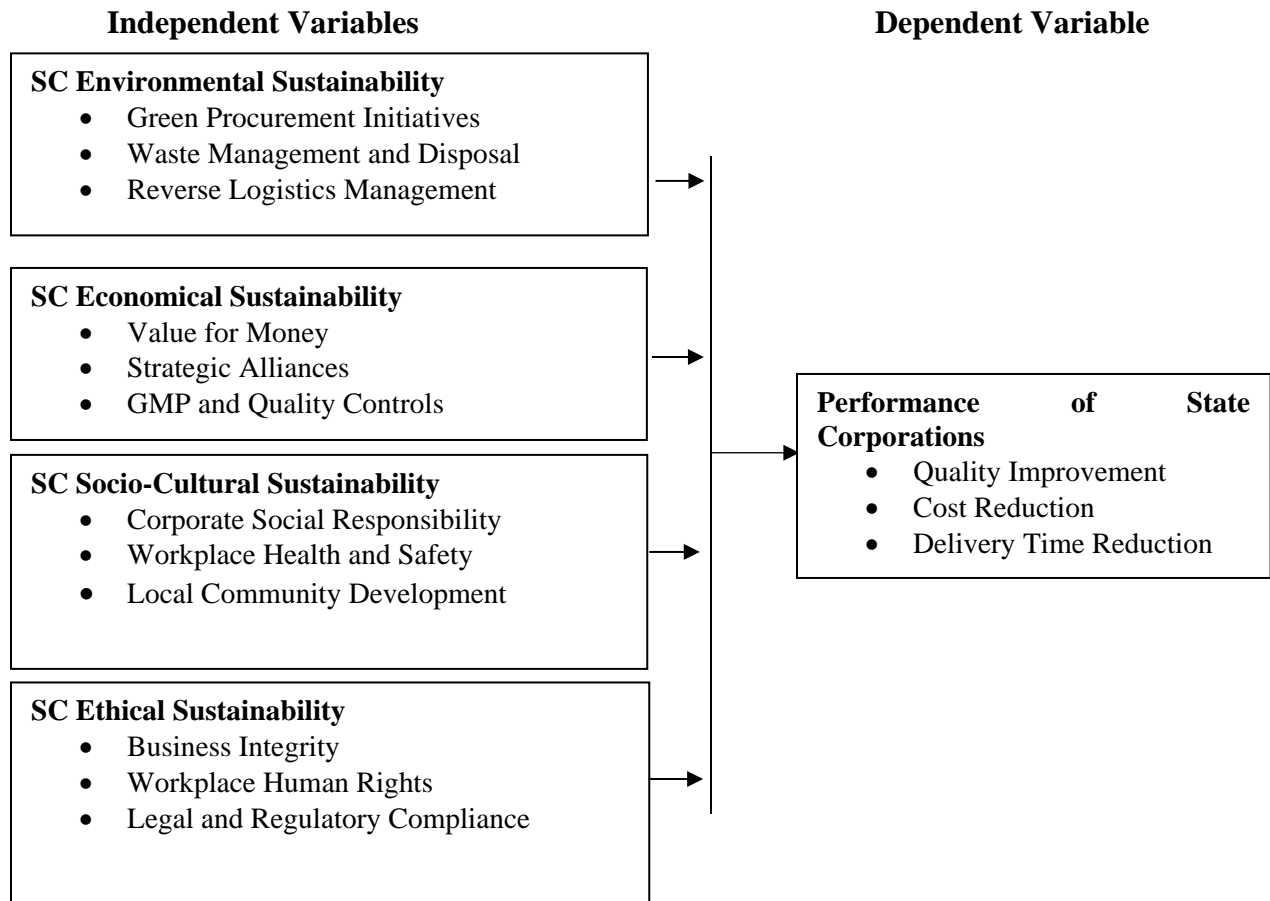


Figure 1: Conceptual Framework

3.0 METHODOLOGY

This research study adopted a descriptive research design approach. This method is preferred because it allows an in-depth study of the subject. The sample for this study shall comprise 187 state corporations in Kenya. Primary data was collected using a questionnaire whereas secondary data was collected from existing literature. The study involved three types of sampling techniques. Stratified random sampling was used and also simple random sampling after the researcher identifies homogeneity of the population. Data was analyzed through descriptive statistical methods such as means, standard deviation, frequencies and percentage. Inferential analyses were used in relation to correlation analysis and regression analysis to test the relationship between the four explanatory variables and the explained variable

4.0 RESULTS FINDINGS

4.1 Introduction

This chapter presents results arising from the analysis of data collected using questionnaires.

4.2 Response Rate

A sample of 127 respondents were interviewed using questionnaires that allowed the researcher to drop the questionnaire to the respondents and then collect them at a later date when they had filled the questionnaires. A total of 127 questionnaires were distributed to heads of procurement as shown by table 1. Out of the population covered, 120 were responsive, representing a response rate of 94%. This was above the 50% which is considered adequate in descriptive statistics according to Kothari (2014).

Table 1: Response Rate of Respondents

Response	Frequency	Percentage
Actual Response	120	94
Non-Response	7	6
Total	127	100%

4.3 Pilot Study

The cronbach's alpha was computed in terms of the average inter-correlations among the items measuring the concepts. The rule of thumb for cronbach's alpha is that the closer the alpha is to 1 the higher the reliability (Kombo & Tromp, 2015). A value of at least 0.7 is recommended. Cronbach's alpha is the most commonly used coefficient of internal consistency and stability. Consistency indicated how well the items measuring the concepts hang together as a set. Cronbach's alpha was used to measure reliability. This was done on the four objectives of the study as shown by table 2. The higher the coefficient, the more reliable is the test.

Table 2 Reliability Results

Variable	No of Items	Respondents	α =Alpha	Comment
Environmental Sustainability	9	13	0.893	Reliable
Economical Sustainability	9	13	0.987	Reliable
Social-Cultural Sustainability	9	13	0.974	Reliable
Ethical Sustainability	9	13	0.976	Reliable

4.4 Demographic Information

4.4.1 Distribution of Respondents by Gender

The study also determined the gender of the respondents. The results are submitted in figure 1 where 52% were male and 48% female. This indicates that majority of heads of procurement in the state corporations were male. This ration raises the issue of gender equity in state corporations

in this country, but that is outside the scope of this study. A study in Hungary's government reforms among state corporations recommended more inclusion of women in state corporations because they were perceived to bring on board opinions that men did not consider important but had significant influence performance (Knight *et al.*, 2013).

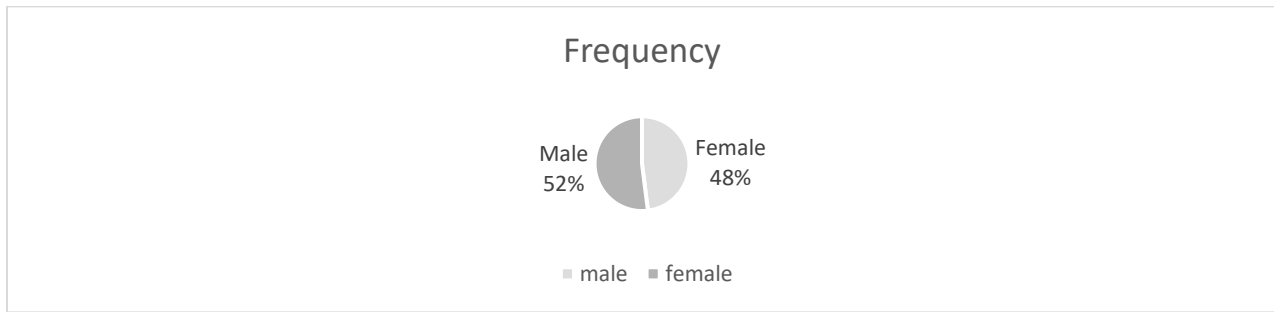


Figure 2: Distributions of Respondents by Gender

4.4.2 Distribution of Respondents by Age

The study determined the age distribution of the respondents. The results summarized in table 3 below. The findings indicate the respondents aged between 41-50 were 38%. 32% of the respondents indicated that they were aged 31-40 years. Above fifty years was shown at 30%. Again, this shows that those interviewed are adults capable of making independent judgments and the results of a research process involving them is deemed to be valid. The findings concur with those of Kioko (2014) who established that majority of state corporations age group is between 30s and 40s which is considered as the most productive age in an employee's performance.

Table 3: Distribution of Respondents by Age

Category	Frequency	Percent
31-40 years	38	32
41-50 years	46	38
50 and above	36	30
Total	120	100

4.4.3 Distribution of Respondents by Level of Education

The respondents were asked to state their highest level of education and the results were as captured in table 4. The results indicated that majority of the respondents 48% had a degree, 27% percent had acquired a master's degree, while finally 25% were diploma holders. These findings concur with those of Gheorghe (2014) who established that majority of workers in state corporations are highly educated and that there is evidence linking education and state corporations performance.

Table 4: Distribution of Respondents by Level of Education

Category	Frequency	Percent
Diploma Level	30	25
Degree Level	58	48
Master Level	32	27
Total	120	100

4.4.4 Distribution of Respondents by Length of Service

The study determined the number of years the respondents had worked in the state corporations in Kenya. From the findings in table 5, 22% had been in active service for 3-5 years. 45% had worked for 6-8 years and finally 33% and above had worked for 9 and above years. The findings of the study are in agreement with Dela (2009) who indicated that the years worked and experience of an employee helps to have better knowledge and skills which contribute to better State Corporation's performance.

Table 5: Distribution of Respondents by Length of Service

Category	Frequency	Percent
3-5 years	26	22
6-8 years	54	45
9 and above	40	33
Total	120	100

4.5 Descriptive Statistics

4.5.1 Environmental Sustainability

The first objective of the study was to investigate the influence of environmental sustainability on performance of state corporations in Kenya. The respondents were asked to indicate to what extent did environmental sustainability influence performance of state corporations in Kenya. Results indicated that majority of the respondents 37% agreed that it was to a very great extent, 33% said that it was to a great extent, 19% said it was moderate, while little extent and not all were at 4 and 7% respectively.

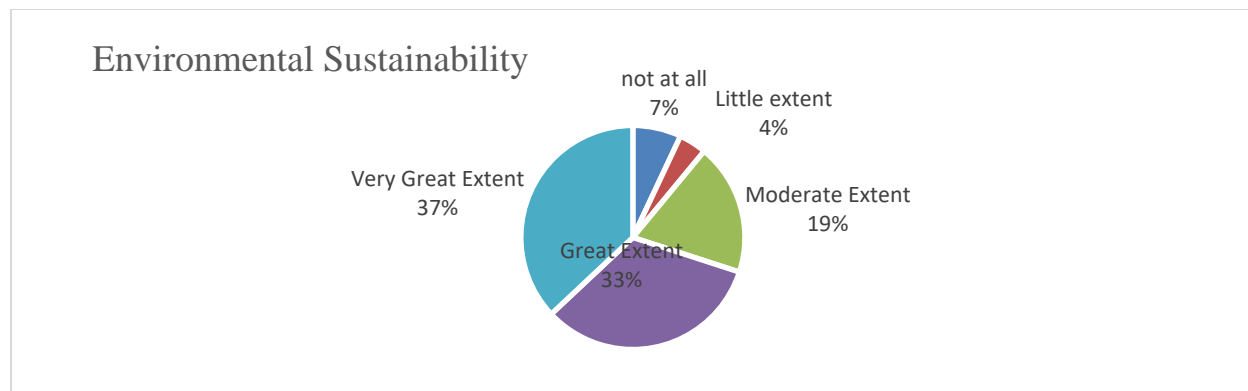


Figure 3: Environmental Sustainability

The responses were rated on a likert scale and the results presented in Table 6 below and was rated on a 5-point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The scores of ‘strongly disagree’ and ‘disagree’ have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of ‘neutral’ has been taken to represent a statement agreed upon, equivalent to a mean score of 2.6 to 3.4. The score of ‘agree’ and ‘strongly agree’ have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.

Results indicated that majority of the respondents 77% agreed on statement that green procurement initiatives play a significant role in improving quality. Results indicated that majority of the respondents 60% agreed on statement that waste management and disposal play a significant role in in improving quality. Further results indicated that 63% of the respondents were in agreement that reverse logistics management plays a significant role in improving quality.

Results also indicated that 60% of the respondents agreed that green procurement initiatives play a significant role in cost reduction. Results also indicated that 54% of the respondents agreed that waste management and disposal play a significant role in cost reduction. Further results indicated that 49% of the respondents were in agreement that reverse logistics management plays a significant role in cost reduction.

Results also indicated that 61% of the respondents agreed that green procurement initiatives play a significant role in delivery time reduction. Results also indicated that 76% of the respondents agreed that waste management and disposal play a significant role in delivery time reduction. Results also indicated that 58% of the respondents agreed that reverse logistics management plays a significant role in delivery time reduction.

The average mean of the respondents was 3.68 indicating that majority of the respondents agreed with influence of environmental sustainability on performance of state corporations in Kenya. However, the responses were varied as shown by a standard deviation of 0.88. These findings indicate that through environmental sustainability, the management of state corporations could improve their performance. This agrees with a study done by Christopher (2008) that organizations must look toward their continuous environmental sustainability improvements. The opportunities for cost savings and processes improvements can be enormous as the impact on margins is considerable.

Table 6: Environmental Sustainability Influence on Performance of State Corporations

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
Green procurement initiatives play a significant role in quality improvement	5.0%	5.0%	13.0%	36.0%	41.0%	3.47	0.96
Waste management and disposal plays a significant role in quality improvement	6.0%	5.0%	29.0%	44.0%	16.0%	3.59	1.02
Reverse logistics management plays a significant role in quality improvement	0.0%	7.0%	30.0%	43.0%	20.0%	3.76	0.85
Green procurement initiatives play a significant role in cost reduction	1.0%	0.0%	39.0%	51.0%	9.0%	3.67	0.68
Waste management and disposal plays a significant role cost reduction	9.0%	7.0%	30.0%	35.0%	19.0%	3.48	1.15
Reverse logistics management plays a significant role cost reduction	5.0%	5.0%	41.0%	36.0%	13.0%	3.47	0.96
Green procurement initiatives play a significant role in attaining timely deliveries	0.0%	0.0%	39.0%	53.0%	8.0%	3.69	0.62
Waste management and disposal play a significant role in attaining timely deliveries	0.0%	0.0%	24.0%	34.0%	42.0%	4.18	0.80
Reverse logistics management plays a significant role in attaining timely deliveries	3.0%	0.0%	39.0%	45.0%	13.0%	3.65	0.82
Average						3.68	0.88

4.5.2 Economical Sustainability

There was also need to establish how economical sustainability influenced performance of state corporations in Kenya as the second objective. The respondents were asked to comment on extent of economical sustainability influence on performance of state corporations in Kenya. Results also showed that majority of the respondents indicated 49% was very great extent, 44% great extent, not at all was 2% while little extent and moderate extent was 3% while little extent was at 2%.

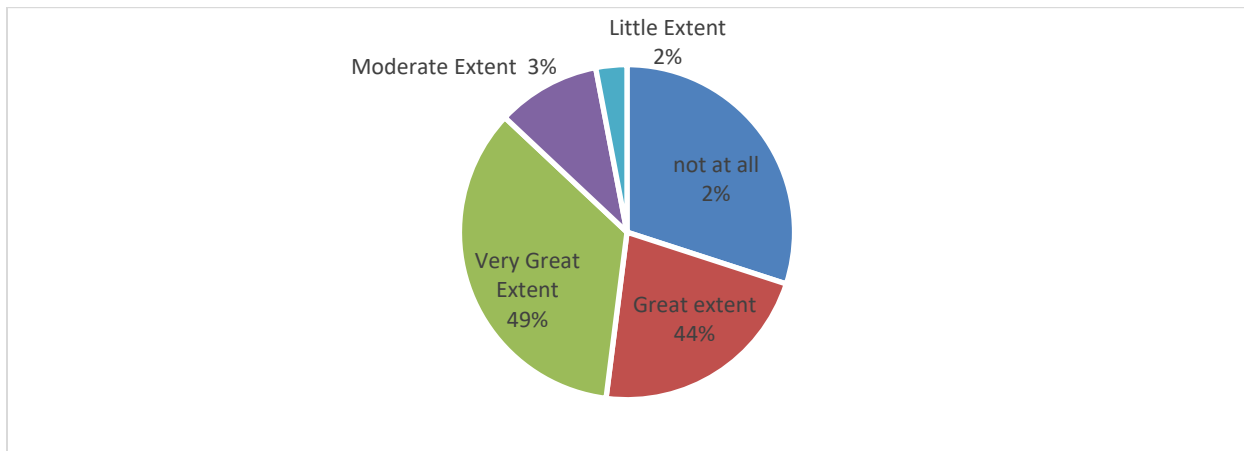


Figure 4: Economical Sustainability

Results indicated that majority of the respondents 100% agreed on the statement that value for money plays a significant role in in improving quality. Results indicated that majority of the respondents 64% agreed on the statement that strategic alliances play a significant role in in improving quality. Results indicated that majority of the respondents 47% agreed on the statement GMP and quality controls plays a significant role in in improving quality.

Results indicated that majority of the respondents 100% agreed on the statement that value for money plays a significant role in cost reduction. Results indicated that majority of the respondents 97% agreed on the statement that strategic alliances play a significant role in cost reduction. Results indicated that majority of the respondents 93% agreed on the statement that GMP and quality controls plays a significant role in cost reduction.

Results indicated that majority of the respondents 91% agreed on the statement that value for money plays a significant role in delivery time reduction. Results indicated that majority of the respondents 90% agreed on the statement that strategic alliances play a significant role in delivery time reduction. Results indicated that majority of the respondents 89% agreed on the statement that GMP and quality controls plays a significant role in delivery time reduction.

The average mean of the respondents was 4.16 indicating that majority of the respondents agreed with influence of economical sustainability on performance of state corporations in Kenya. However, the responses were varied as shown by a standard deviation of 0.83. The results imply that state corporations greatly benefit when economical sustainability is embraced to reduce costs, introduce durability indices and performance ratings (Ackali, 2009).

Table 7: Economical Sustainability Influence on Performance of State Corporations

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
Value for money plays a significant role in quality improvement	0.0%	0.0%	0.0%	48.0%	52.0%	4.52	0.50
Strategic alliances play a significant role in quality improvement	0.0%	0.0%	36%	40.0%	24.0%	3.88	0.77
GMP and quality controls play a significant role in quality improvement	15.0%	19.0%	19%	20.0%	27.0%	3.25	1.42
Value for money plays a significant role in cost reduction	0.0%	0.0%	0.0%	51.0%	49.0%	4.49	0.50
Strategic alliances play a significant role cost reduction	0.0%	3.0%	0.0%	54.0%	43.0%	4.37	0.65
GMP and quality controls play a significant role cost reduction	4.0%	0.0%	3.0%	48.0%	45.0%	4.30	0.87
Value for money plays a significant role in attaining timely deliveries	0.0%	3.0%	6.0%	51.0%	40.0%	4.28	0.71
Strategic alliances play a significant role in attaining timely deliveries	6.0%	0.0%	4.0%	54.0%	36.0%	4.14	0.96
GMP and quality controls play a significant role in attaining timely deliveries	6.0%	4.0%	1.0%	40.0%	49.0%	4.22	1.08
Average						4.16	0.83

4.5.3 Social-Cultural Sustainability

There was also need to establish how social-cultural sustainability influenced performance of state corporations in Kenya as the third objective. The respondents were asked to comment on extent of social-cultural sustainability influence performance of state corporations in Kenya. Results indicated that majority of the respondents 48% agreed that it was to a very great extent, 45% said that it was to a great extent, 2% said it was moderate; little extent was 2% and not all at 3%.

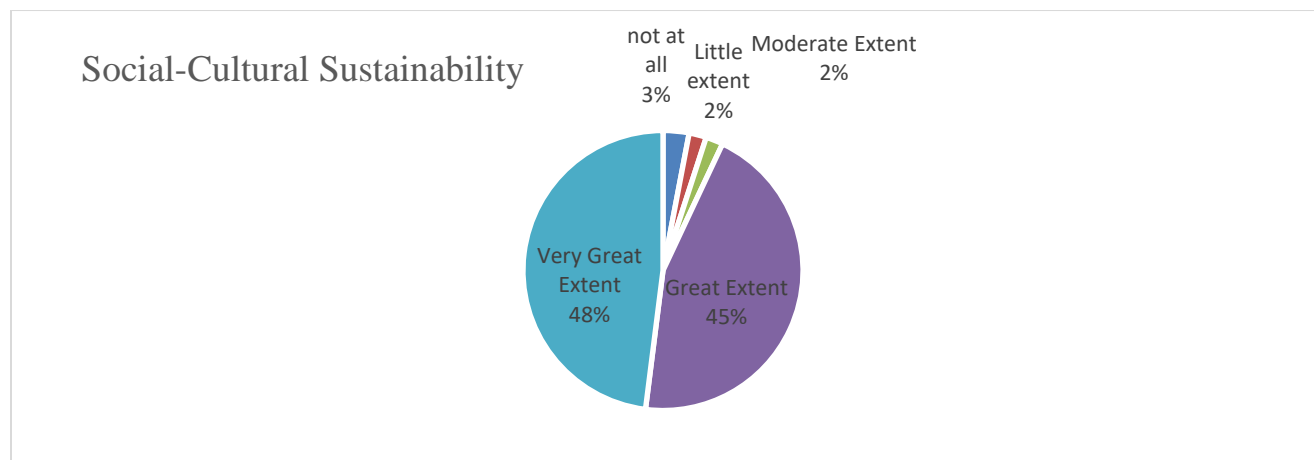


Figure 5: Social-Cultural Sustainability

Results indicated that majority of the respondents 70% agreed on the statement that corporate social responsibility plays a significant role in in improving quality. Results also indicated that majority of the respondents 94% agreed on the statement that workplace health and safety play a significant role in in improving quality. Results also indicated that majority of the respondents 53% agreed on the statement that local community development plays a significant role in in improving quality.

Results also indicated that majority of the respondents 50% agreed on the statement that corporate social responsibility plays a significant role in cost reduction. Results also indicated that majority of the respondents 80% agreed on the statement that workplace health and safety play a significant role in cost reduction. Results also indicated that majority of the respondents 61% agreed on the statement that local community development plays a significant role in cost reduction.

Results also indicated that majority of the respondents 67% agreed on the statement that corporate social responsibility plays a significant role in delivery time reduction. Results also indicated that majority of the respondents 59% agreed on the statement that workplace health and safety play a significant role in delivery time reduction. Results also indicated that majority of the respondents 66% agreed on the statement that local community development plays a significant role in delivery time reduction.

The average mean of the respondents was 3.93 indicating that majority of the respondents agreed with influence of social-cultural sustainability on performance of state corporations in Kenya. However, the responses were varied as shown by a standard deviation of 0.93. These findings imply that through social-cultural sustainability, state corporations can improve the value gained from social-cultural sustainability (Arthur, 2009).

Table 8: Social-Cultural Sustainability Influence on Performance of State Corporations

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
Corporate social responsibility plays a significant role in quality improvement	2.0%	2.0%	26.0%	35.0%	35.0%	3.99	0.94
Workplace health and safety plays a significant role in quality improvement	0.0%	3.0%	3.0%	34.0%	60.0%	4.51	0.70
Local community development plays a significant role in quality improvement	5.0%	20.0%	22.0%	27.0%	26.0%	3.49	1.22
Corporate social responsibility plays a significant role in cost reduction	0.0%	27.0%	23.0%	26.0%	24.0%	3.47	1.13
Workplace health and safety plays a significant role cost reduction	0.0%	1.0%	19.0%	51.0%	29.0%	4.08	0.72
Local community development plays a significant role cost reduction	1.0%	0.0%	38.0%	28.0%	33.0%	3.92	0.90
Corporate social responsibility plays a significant role in attaining timely deliveries	2.0%	1.0%	30.0%	25.0%	42.0%	4.04	0.97
Workplace health and safety play a significant role in attaining timely deliveries	0.0%	0.0%	41.0%	30.0%	29.0%	3.88	0.83
Local community development plays a significant role in attaining timely deliveries	1.0%	2.0%	31.0%	28.0%	38.0%	4.00	0.93
Average						3.93	0.93

4.5.4 Ethical Sustainability

The last objective of the study was to assess the influence of ethical sustainability on performance of state corporations in Kenya. The respondents were asked to indicate to what extent ethical sustainability influenced performance of state corporations in Kenya. Results indicated that majority of the respondents 19% agreed that it was to a very great extent, 33% said that it was to a great extent, 30% said it was moderate, while little extent was 11% and not all was at 7% respectively.

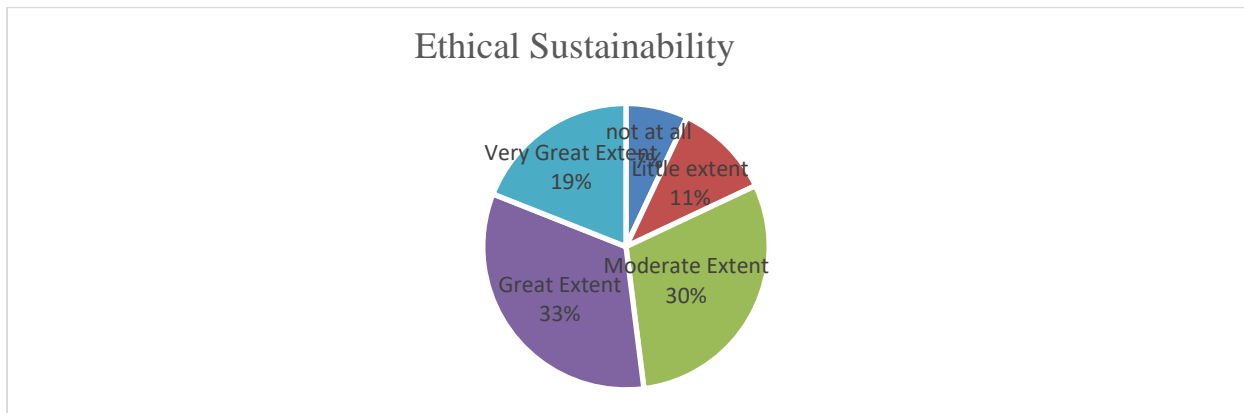


Figure 6: Ethical Sustainability

The respondents were also asked to comment on statements regarding ethical sustainability influence on performance of state corporations in Kenya. Results indicated that majority of the respondents 86% agreed on the statement that business integrity plays a significant role in in improving quality. Results also indicated that 90% of the respondents were in agreement that workplace human rights play a significant role in in improving quality. Results indicated that majority of the respondents 100% agreed on the statement that legal and regulatory compliance plays a significant role in in improving quality.

Results indicated that majority of the respondents 90% agreed on the statement that business integrity plays a significant role in cost reduction. Results indicated that majority of the respondents 96% agreed on the statement that workplace human rights play a significant role in cost reduction. Results indicated that majority of the respondents 95% agreed on the statement that legal and regulatory compliance plays a significant role in cost reduction.

Results indicated that majority of the respondents 92% agreed on the statement that business integrity plays a significant role in delivery time reduction. Results indicated that majority of the respondents 91% agreed on the statement that workplace human rights play a significant role in delivery time reduction. Results indicated that majority of the respondents 85% agreed on the statement that legal and regulatory compliance plays a significant role in delivery time reduction.

The average mean of the respondents was 4.27 indicating that majority of the respondents agreed with statements regarding ethical sustainability influence on performance of state corporations in Kenya. However, the responses were varied as shown by a standard deviation of 0.86. These findings imply that ethical sustainability was an important aspect in the state corporations. The findings agree with David (2014) that using ethical sustainability when managing supply chains can save an organization a lot of unnecessary costs.

Table 9: Ethical Sustainability Influence on Performance of State Corporations

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation
Business integrity plays a significant role in quality improvement	3.0%	6.0%	5.0%	57.0%	29.0%	4.0	0.9
Workplace human rights play a significant role in quality improvement	4.0%	4.0%	2.0%	43.0%	47.0%	4.3	1.0
Legal and regulatory compliance plays a significant role in quality improvement	0.0%	0.0%	0.0%	56.0%	44.0%	4.4	0.5
Business integrity plays a significant role in cost reduction	4.0%	4.0%	2.0%	44.0%	46.0%	4.2	1.0
Workplace human rights play a significant role cost reduction	1.0%	2.0%	1.0%	48.0%	48.0%	4.4	0.7
Legal and regulatory compliance plays a significant role cost reduction	2.0%	2.0%	1.0%	48.0%	47.0%	4.4	0.8
Business integrity plays a significant role in attaining timely deliveries	2.0%	2.0%	1.0%	39.0%	56.0%	4.5	0.8
Workplace human rights play a significant role in attaining timely deliveries	4.0%	4.0%	1.0%	48.0%	43.0%	4.2	1.0
Legal and regulatory compliance plays a significant role in attaining timely deliveries	6.0%	6.0%	3.0%	45.0%	40.0%	4.1	1.1
Average						4.27	0.86

4.6 Correlation Analysis

Correlation analysis was used to determine both the significance and degree of association of the variables and also predict the level of variation in the dependent variable caused by the independent variables. The correlation technique is used to analyze the degree of association between two variables. The results of the correlation analysis are summarized in Table 10.

Table 10: Summary of Pearson's Correlations

Variables		Environmenta l Sustainability	Economical Sustainabilit y	Social- Cultural Sustainability	Ethical Sustainabi lity	Performance of State Corporations
Environmental sustainability	Pearson Correlati on	1	.550**	.580**	.483**	.761**
	Sig. (2- tailed)	0	0	0	0	0
Economical Sustainability	Pearson Correlati on	.550**	1	.434**	.659**	.609**
	Sig. (2- tailed)	0	0	0	0	0
Social-Cultural Sustainability	Pearson Correlati on	.580**	.434**	1	.550**	.663**
	Sig. (2- tailed)	0	0	0	0	0
Ethical Sustainability	Pearson Correlati on	.483**	.659**	.550**	1	.652**
	Sig. (2- tailed)	0	0	0	0	0
Performance of State Corporations	Pearson Correlati on	.761**	.609**	.663**	.652**	1
	Sig. (2- tailed)	0	0	0	0	0

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

The correlation summary shown in Table 10 indicates that the associations between each of the independent variables and the dependent variable were all significant at the 95% confidence level. The correlation analysis to determine the relationship of sustainable supply chain management on performance of state corporations in Kenya, Pearson Correlation coefficient computed and tested at 5% significance level.

The results indicate that there is a positive relationship ($r=0.761$) between environmental sustainability and performance of state corporations. In addition, the researcher found the relationship to be statistically significant at 5% level ($p=0.000, <0.05$). The correlation analysis to determine the relationship between environmental sustainability and performance of state corporations, Pearson Correlation coefficient computed and tested at 5% significance level.

The correlation analysis to determine the relationship between economical sustainability and performance of state corporations, Pearson Correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship ($r=0.609$) between economical sustainability and performance of state corporations. In addition, the researcher found the relationship to be statistically significant at 5% level ($p=0.000, <0.05$).

The correlation analysis to determine the relationship between social-cultural sustainability and performance of state corporations, Pearson Correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship ($r=0.663$) social-cultural sustainability and performance of state corporations. In addition, the researcher found the relationship to be statistically significant at 5% level ($p=0.000, <0.05$).

The correlation analysis to determine the relationship between ethical sustainability and performance of state corporations, Pearson Correlation coefficient computed and tested at 5% significance level. The results indicate that there is a positive relationship ($r=0.652$) between ethical sustainability and performance of state corporations. In addition, the researcher found the relationship to be statistically significant at 5% level ($p=0.000, <0.05$). Hence, it is evident that all the independent variables could explain the changes in the performance of state corporations on the basis of the correlation analysis.

4.7 Regression Analysis

In this study multivariate regression analysis was used to determine the significance of the relationship between the dependent variable and all the independent variables pooled together. Table 11 presents the regression coefficient of independent variables against dependent variable. The results of regression analysis revealed there is a significant positive relationship between dependent variable (performance of state corporations and the independent variables (environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability).

The independent variables reported R value of .846 indicating that there is perfect relationship between dependent variable and independent variables. R square value of 0.716 which means that 71.6% of the corresponding variation in performance of the state corporations can be explained or predicted by (environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability) which indicated that the model fitted the study data. The results of regression analysis revealed that there was a significant positive relationship between dependent variable and independent variable at ($\beta = 1.240$), $p=0.00 <0.05$).

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.846 ^a	.716	.704	.149

a. Predictors: (Constant), Environmental Sustainability, Economical Sustainability, Social-Cultural Sustainability and Ethical Sustainability

b. Dependent Variable: Performance of State Corporations

Table 12: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.369	4	1.342	74.555	.000 ^b
	Residual	2.131	115	0.018		
	Total	7.5	119			

a. Predictors: (Constant), Environmental Sustainability, Economical Sustainability, Social-Cultural Sustainability and Ethical Sustainability

b. Dependent Variable: Performance of State Corporations

The significance value is 0.000 which is less than 0.05 thus the model is statistically significant in predicting how environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability influence performance of state corporations. The study therefore establishes that; environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability influence performance of state corporations. These results agree with Paul (2011) results which indicated a positive and significant influence of sustainable supply chain management on performance of state corporations.

Table 13: Coefficients of Determination

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		β	Std. Error			
1	(Constant)	1.240	0.260		4.771	0.000
	Environmental sustainability	0.462	0.073	0.463	6.299	0.000
	Economical sustainability	0.108	0.035	0.243	3.075	0.000
	Social-cultural sustainability	0.071	0.023	0.218	3.008	0.000
	Ethical sustainability	0.064	0.047	0.099	1.361	0.021

a) Predictors: (Constant), Environmental Sustainability, Economical Sustainability, Social-Cultural Sustainability and Ethical Sustainability

b) Dependent Variable: Performance of State Corporations

The research used a multiple regression model

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

Where Y = Performance of State Corporations

β_0 = Constant

X_1 = Environmental Sustainability

X_2 = Economical Sustainability

X_3 = Social-Cultural Sustainability

X_4 = Ethical Sustainability

ϵ = Error Term at 95% confidence level.

The regression equation will be;

$$Y = 1.240 + 0.462X_1 + 0.108X_2 + 0.071X_3 + 0.064X_4$$

The regression equation above has established that taking all factors into account (environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability) constant at zero, performance of state corporations will be an index of 1.240. The findings presented also shows that taking all other independent variables at zero, a unit increase in environmental sustainability will lead to a 0.462 increase in performance of state corporations. The P-value was 0.000 which is less than 0.05 and thus the relationship was significant.

The study also found that a unit increase in economical sustainability will lead to a 0.108 increase in in performance of state corporations. The P-value was 0.000 and thus the relationship was significant. In addition, the study found that a unit increase in social-cultural sustainability will lead to a 0.071 increase in the performance of state corporations. The P-value was 0.000 and thus the relationship was significant.

Lastly, the study found that a unit increase in ethical sustainability will lead to a 0.064 increase in the performance of state corporations. The P-value was 0.021 and hence the relationship was significant since the p-value was lower than 0.05. The findings of the study show that, environmental sustainability contributed most to performance of state corporations.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the Findings

The regression equation above has established that taking all factors into account (environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability) constant at zero, performance of state corporations will be an index of 1.240. The findings presented also shows that taking all other independent variables at zero, a unit increase in environmental sustainability will lead to a 0.462 increase in performance of state corporations. The P-value was 0.000 which is less than 0.05 and thus the relationship was significant.

The study also found that a unit increase in economical sustainability will lead to a 0.108 increase in in performance of state corporations. The P-value was 0.000 and thus the relationship was significant. In addition, the study found that a unit increase in social-cultural sustainability will

lead to a 0.071 increase in the performance of state corporations. The P-value was 0.000 and thus the relationship was significant.

Lastly, the study found that a unit increase in ethical sustainability will lead to a 0.064 increase in the performance of state corporations. The P-value was 0.021 and hence the relationship was significant since the p-value was lower than 0.05. The findings of the study show that, environmental sustainability contributed most to performance of state corporations.

5.2 Conclusion

The findings of the study indicated that environmental sustainability, economical sustainability, social-cultural sustainability and ethical sustainability have a positive relationship with performance of state corporations in Kenya.

5.3 Recommendations

Finally, the study recommended that state corporations should embrace sustainable supply chain management so as to improve performance and further researches should to be carried out in other institutions to find out if the same results can be obtained.

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