SUSTAINABLE SUPPLY CHAIN MANAGEMENT PRACTICES AND PERFORMANCE OF PUBLIC UNIVERSITIES IN KENYA

BY

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DECLARATION

This research project is my original work and has not been presented for any award in any other university.

Signed:  Date: _22/11/2021__

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This research project has been presented for examination with my approval as the University supervisor

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DEDICATION

I dedicate this project to my husband Ramadhan Juma who has been there for me both financially and for moral support, my mum for being my source of strength and for the words of encouragement when I felt like giving up. I dedicate to my daughter, Asia Ramadhan who has been affected by this quest due to my constant absence.

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ABREVIATIONS AND ACRONYMS

CRM	Customer Relationship Management
CUE	Commission for university Education
GoK	Government of Kenya
NGOs	Non-Governmental Organizations
PPDA	Public Procurement and Disposal Act
PPDGM	Public Procurement and Disposal General manual
RBVT	Resource Based View Theory
RDT	Resource Dependency Theory
SCM	Supply Chain Management
SCOR	Supply Chain Operations Reference Model
SPSS	Statistical Package for Social Sciences
SRM	Supplier Relationship Management
SSCF	Sustainable Supply Chain Foundation
SSCM	Sustainable Supply Chain Management

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Globally, countries have experienced the rise in issues that include energy crisis, global warming, corruption, wastage of resources among others that have triggered awareness to the subject of sustainable management across the research world. The sustainability ideas widely regarded based on business outlook. There have been colossal contributions that have been documented as a result of industrial activities. According to Seuring and Muller (2008), the SCM subject was established in themid-1990s.

Sustainability subject emanates from the contemporary corporate setting necessitating entities to incorporate sustainable practices into their goals as well as policies. Various definitions of sustainability have been presented (Craig & Easton, 2011). WCED (1987) defines sustainability as the process of utilizing resources with the aim of meeting current generational needs while at the same time guarding on endangering future generation. Most of the practitioners have widely accepted this definition but it does not really address pertinent areas in this contemporary industrial and educational environment hence resulting to it being quite open as well as unclear as presented by Ahi and Searcy (2013). Consequently, it is cumbersome to involve this idea in the field of supply chain.

Sustainability of organizations is based on sustainable development goals. Businesses of all sizes and across all sectors have been called on to prioritize their actions around the SDGs, which means focusing on the targets that are most material to their operations. Researchers, policymakers, and other stakeholders have been debating how to measure sustainability for a long time. The ratification of the 2030 vision, which includes the Sustainability Goals, aims, and indices, significantly deepened this discussion (Allen et al., 2018; Liu et al., 2018).

There are key sustainable development goals set by the United Nations. Goal-oriented collaboration, sustainable consumerism and manufacturing, and industrial innovations and infrastructures are the key SDGs that relate to supply chain management. Global Compact of the United Nations, 2016 gives an outline of how sustainable supply chain methods help to achieve the Sustainable Development Goals (SDGs).Companies were advised to engage with suppliers through sustainable supply chain management, integration of value systems and actions.

The expeditious increase of sustainable issues has provoked mediation of global partners, concerned bodies and various stakeholders to encourage organizations to determine how to assimilate environmental matters as well as societal friendship into their respective goals, objectives and programs that can result in environmental impacts that are not severe. According to Gao and Bansal (2013), this has forced enterprises to rethink their operations processes with the aim of eliminating hazardous processes and consequently developing resilient organizations that can conduct their operations in a pleasant working atmosphere.

Gao and Bansal (2013) further present that business sustainability relates to the capability of enterprises to integrate economic, social and environmental systems. The decisions by an organization to contemplate sustainability into their day-to-day core operations has an influence on every aspect that involves supply chain and consequently have adverse effects on performance. This necessitates the need to examine the influence that sustainability has on universities precisely SCM practices and performance of public universities in Kenya.

1.1.1 Sustainable Supply Chain Management

According to Seuring and Muller (2008), SSCM is the coordination of resource allocation, dissemination of information and flow of capital, all this working in harmony with organization`s supply chain. This is done by incorporating the objectives from the three facets of sustainability that include economic, environmental and social into the consumers and other partner's needs. Sustainable Supply Chain Foundation (SSCF) defines SSCM as the process of integrating financial and environmental operations, such as waste management, reuse procedures, and facility refurbishment, into the entire supply chain, which begins with product creation and development and continues through raw material selection, industrial production and delivery.

Sustainable Supply Chain, according to Grzybowska and Kovács (2014), examines supply chain procedures and innovations that extend past deliveries, as well as stock levels and other conventional costing assessment methods. This philosophy's premise is based on the idea that socially responsible commodities and activities offer benefits which aren't just for the ecosystem, but for protracted profits. In conclusion, sustainable development is a corporate idea which promotes a company's longterm growth and profitability by requiring the incorporation of ecological and societal concerns into commercial strategy.

1.1.2 Organizational Performance

Organizational performance is considered to be steps taken by organizations to appraise the progress towards the achievement of the predetermined goals, including the relevant information that is acted upon for the efficient transformation of resources into products (how thorough client delivery is, as well as customer contentment and end-results measures) (Terrel, 2003). Organizational performance is the process of assessing what the organization has achieved for a predetermined period. The essence of evaluating the previous performance is to generate crucial information that relates to the use of organizational resources in an effective and efficient way (Almajali et al., 2012). A study of organizational performance has become perpetual research among scholars more so on the management research discipline. The ability of the entire supply chain's ability to meet end-customer demands is referred to as organizational performance. The efficiency of supply chains should be enhanced on a regular basis. As a result, not only should techniques to assist the enhancement of supply chain performance be implemented, but also measures relating to specific firms and specific functions (Hausman 2004).

Public entities measure organizational performance majorly by taking into consideration key performance indicators such as the quality of consumer contentment that constitutes consumer reactions to the use of procedures, the flexibility of the supply chain and operational systems, the cost repercussions, as well as the cost ramifications that form customer reactions to the implementation of practices (Amollo,2016). Performance measurement emphasizes on in-house processes of measuring the functionality and efficient action plans taking into account numerous vital performance pointers as conventional rules (Gathungu& Mwangi, 2012). Furthermore, Poister (2010) stressed application of profitability index being the return on assets and equity as a measure of organizational performances. In order to quantify effectiveness as well as efficiency of actions that are viewed as continuous practices that can breed discussion on public sector supply chain impact on organizational performance, there is need for integration of performance measurement needs with management systems (Shi & Yu, 2013).

1.1.3 Public Universities in Kenya

There are 31 public universities according to the Commission for University Education. In Kenya, public universities are incorporated via established Act of Parliament enshrined in the Universities Act (2012) that ensures and monitors the development of public university education, governance and accreditation of the universities. The public universities generate broader economic growth through formation of employment opportunities and innovation, as well as diversification of the income generating paradigms through research. Public universities get funds from government grants, donations, bursaries, and students' fees payments. Therefore, without an effective supply chain practice it would result in poor financial management and operational performance. Supply chain activities in the public universities continue to evolve conceptually in order to enhance their performance (Otieno et al, 2015).

Essential SCM issues in public sector range from attaining timeliness, cost reduction, waste management to maintaining acceptable standards in acquiring worth for money as well as ensuring conformity with Public Procurement and Disposal Act (2015) and the Regulations (2006). SCM's has entirely decentralized the process of procurement and so giving complete responsibility to committees that are in charge of handling bids and governance of procurement units especially during procurement material stages and prequalification of suppliers that provide diverse functions (PPDA,2015).

1.2 Research Problem

Sustainability has attracted interest from different institutions because of the need to design supply chain. Environmental as well as social factors that bring about economic benefits are the drivers of sustainable supply chain (Taticchi, et al.2013). Organization that has aligned their supply chain experience competitive edge. Performance of supply chain of the organization is affected by diverse factors; enabling factors and hindrance factors to sustainable performance being cognizant of the fact that there is a wide variance among firms on the supply chain sustainability hence necessitating the need for further research in this scope on different factors.

In East Africa, Kenya has performed well economically and this is seen to have been a result of taking intentional steps to enhance research among institutions in diverse disciplines so that the growing population can be achieved (Mohamed, 2020). The ever-increasing population that is conversant with different aspects, public institutions and other agencies are experiencing high demands on the superiority of services offered and

accountability issues. Public universities in Kenya are experiencing challenges in supply chain management that are leading to delay in supply of resources, excessive wastages and poor financial performance.

Several studies have been conducted regarding SCM and the process of sustainability in diverse sectors of the organizations. Globally, Walker and Jones (2012) carried out a study on SSCM covering the United Kingdom's organizations and realized that majority of private sector companies in the UK were guided by SSCM policy with reviews done every year. Grzybowska and Kovács (2014) researched on the establishment of humanitarian perspectives of supply chain. The study argued that there exist four perspectives as far as sustainability is concerned, which are: beneficiary perspective, societal perspective, program perspective and supply chain perspective. The study further argued that donors find themselves setting goals on sustainability to guide in their operations. From the above studies, there is clear evidence of the limited focus on matters sustainability mostly in the public universities in Kenya.

Locally, Mukanga (2011) examined the sustainability strategies that are embraced by international NGOs that are situated in Nairobi; Abdifatah (2012) conducted research to ascertain the impact of SCMP on performance of humanitarian establishments; while Mwilu (2013) focused on the SCMP and their respective performances among public research institutions. Based on the reviewed studies a research gap exists.

Therefore, this study is aimed at bridging this gap and as a result seeks to establish to what extent are sustainable supply chain management practices implemented during operations of public universities in Kenya? What is the impact of SSCM practices on the performance of public universities in Kenya? To what extent does sustainable SCM serve as a strategic management tool for public universities in Kenya? To find out the challenges that are encountered in implementing sustainable supply chain management practices by public universities in Kenya.

1.3 Research Objectives

To determine the effect of sustainable supply chain management practices on performance of public universities in Kenya and specifically;

i. To determine the extent to which sustainable supply chain management practices are being applied by public universities in Kenya.

ii. To analyze the impact sustainable supply chain management practices, have on the performance of public universities in Kenya.
iii. To analyze how sustainable management of supply chain serves as a strategic management tool for public universities in Kenya.
iv. To find out the challenges that are encountered in implementing sustainable supply chain management practices by public universities in Kenya.

1.4 Value of the Study

This investigation is beneficial to public universities in Kenya. It is expected to create knowledge on SSCM practices, some of the challenges encountered and how the understanding of such is impacting public university performance. The research will greatly contribute insights to the government as well as the relevant policy-making agencies by giving guidance to the policy makers on the available SSCM practices entrenched in research institutions and identify setbacks experienced in implementing SSCM practices.

The other beneficiaries of this study will be the academic community since they will be availed with a reference point on factual data regarding the SSCM practices subsequently being able to pinpoint scope for further examination. Furthermore, for other institutions that desire to implement SSCM practices, this study will be of much help in identifying some of the challenges present at the implementation stage of the best practices and how the institutions can mitigate those challenges.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This part summarizes a few of the scholarly material that is relevant to survey's investigation challenge. Further, this section discusses conceptions of SSCM, as well as performances improving the SSCM, research investigations, and a conceptual framework.

2.2 Theoretical Literature Review

The paper looks at various theoretical foundations that create a foundation for research. The theories will include resource based, stakeholder and institutional theory.

2.2.1 Resource-Based Theory

Birger Wernerfelt came up with the resource-based theory. The theory postulates that a firm can position itself to achieve competitive edge by enhancing the ability to generate economic value that is higher than the marginal (breakeven) costing of same products. This hypothesis has been broadly embraced because of it attempt to demystifying the sustainable supply chain practices. The theory outlines some key concepts which include reliable resources, the firm's capabilities and the combination of strategic assets. Furthermore, RBV asserts that the difference in the performance of the firm is as a result of strategic resources which include core competences, the flexibility of the supply chain network and absorptive capacity of the firm. To achieve more that the competitors, firms are expected to develop strategies that blend resource is a distinctive way.

RBV advocates for the need of integration of the firm in particular asset investments will enable partnering firms to improve competitive advantage as a result of the scarce, precious, no-substitutable and very hard to copy practices. Supply chain collaboration is necessitated by the need for a particular resource. A firm's supply chain network can develop unique products if the firm invests in unique assets; enhance substantial exchange of knowledge and the blend of complimentary capabilities. Per Hunt and Davis (2012), supply chain practices enable companies to concentrate on existing key capabilities, resulting in increased particular capabilities and economies of scalability. The broad literature on SCM exploring resources and performance is premised on this hypothesis. RBV centers on sustained competitive advantages that emanates from core possessions regarded as unique, valuable and non-substitutable. The resource ranges from tangible (the logistical network

of the firm) to intangible assets (the shared knowledge and information). Supply chain practices if well adopted by the firm, can result to sustained competitive advantages because of their ability to reveal resources that increase competitive advantage thereby supporting strategic resource purchase in volatile economies (Carter et al, 2017).

A firm can be perceived to have achieved sustainable organizational performance by continuously developing profits that are higher than those of marginal firms operating in the same industry and also how hard duplication of the advantages of the strategy by other similar firms is possible (Barney & Clark 2007). Supply chain relationship management as well as supply chain integration of different players that allow for the occurrence of inter-organizational activities, are very crucial resources that the firm exponentially acquires and consequently enhances performance.

Finest supply chain practices are considered to be salient resources that can promote improved performance. Consequently, this theory will be essential in presenting the basis that demystifies the connection between supply chain practices and sustainable organizational performance that this study will focus on.

2.2.2 Stakeholder Theory

The rise of the stakeholder concept began with a global declaration in 1963, and following the release of Freeman's radical views it received renewed attention (Freeman, 1984). Stakeholder theory is an important, if not the utmost important, concepts in societal, ecological, and sustainability studies (Frynas&Yamahaki, 2016). The assessment of participants as well as the consequent stakeholder management provides a foundation for its use in supply chain sustainability management (Perez-Batres et al, 2012).

This hypothesis assumes that businesses are essential element of community instead of a distinct, simply commercial enterprise (Freeman & Liedtka, 1997). The theory also posits that management activities have the ability to touch a large number of persons, and those corporate goals can be readily disturbed by the activities of unanticipated groups (Parmar et al., 2010).

Stakeholder theory emphasizes the necessity of companies taking into account the concerns of persons or groups with whom they have a close relationship (Gibson, 2012). As a result, enterprises as a whole, not just the shareholder, are required to be liable and accountable regarding the social as well as environmental impacts (Reuter, Goebel &Foerstl, 2012). In

summary, there are two primary techniques to applying stakeholder concept in the perspective of sustainability: one is to take into account nature as well as its environment like a stakeholder (Starik& Kanashiro, 2013; Waddock, 2011), and the other is to recognize humans, groups, and institutions who assess and construe environmental development (Fischer, 2011).

2.2.3 Institutional Theory

DiMaggio and Powell established in 1983 this hypothetical argument. The organizational structure, as per organizational ideology, may have a bigger influence on the establishment of formal systems in an organization than competitive forces. Whenever the institutional system is functioning properly, it can lower transaction fees, uncertainties, and risk for businesses and investors, according to the notion (Suddaby, 2010). According to the idea, the three organizational pressures (forced, derivative and regulating) combine to create the force that causes organizational isomorphism (DiMaggio & Powell, 1983). Institutional forces, according to DiMaggio and Powell (1983), boost the uniformity of organization structure in an institutional context.

The theory states that an organization has three key elements in their supply chain sustainability including social responsibility, environmental responsibility, and financial responsibility (Fligstein, 1997). The institutional constraints function as driving forces behind firms' attempts to enhance overall social and environmental sustainability programs, hence enhancing their legitimacy and brand value. As a result, we believe that institutional theory should be chosen as a core theory as is best suited in describing environmental as well as societal components relating supply chain sustainability performance and management (Seles et al., 2016).

2.3 Sustainable Supply Chain Management Practices

Research in SSCM practices for diverse purposes is much evident and the practices emphasized on include sustainable purchasing, supplier partnerships, information sharing, sustainable packaging, sustainable distribution, reverse logistics among others (Svensson et al, 2018; Pagell& Wu, 2017). The study conducted by Beske et al. (2019), asserts that SSCM practices encompasses strategic orientation process, continuity aspect in supply chain, and collaboration of all the functions. Esfahbodi et al. (2017), was also of the opinion that SSCM practices involves the aspects of sustainable creation practices, sustainable

strategy process, sustainable supply perspective and venture retrieval focus. Hence it is noticeable that different scholars focused on diverse SSCM practices as far as their purpose of study were concerned. As a result of this, the nature of SSCM practices has evolved overtime.

The emphasis of this research is on SSCM practices and the three major components of SCM as defined by Stock and Boyer (2009). Stock and Boyer (2009) identified the major components as material movement, supplier collaboration and coordination, and knowledge transfer in their research. This research incorporates sustainability by looking at the element of material flow from a sustainable procurement perspective (Gil et al., 2001), evaluating supplier relationships as well as collaboration from a sustainable supply chain partnerships perspective (Green et al., 2012), and finally looking at data exchanging from a green information sharing perspective (Weeratunge& Herath, 2017).Because of how they convey a characteristic of SSCM, its underscored facets were included in the above research (Stock & Boyer, 2009).Green et al. (2012) points out the need to scrutinize the independent SSCM practices and its effect on performance while at the same time examining the combined effect of the SSCM practices on organizational performance. This study will examine the following key components:

2.3.1 Sustainable Purchasing

Sustainable purchasing, also recognized as "green procurement," is the procedure of formally incorporating environmental concerns and issues into buying process, with the goal of acquiring goods and services with low environmental impact, such as products that are eco-friendly in character and produced with sustainable methods. As per the "green procurement" strategy, initiatives to reduce environmental impact in the incoming supply chain include purchasing eco-labeled products, incorporating environmental considerations into supplier evaluation framework, and collaborating with suppliers (Colicchia et al, 2011).

The subject of sustainable purchasing has been distinctively described by a number of researchers; however, it basically refers to the process of examining the sources of suppliers and conducting the selection of environmental conscious suppliers and consequently acquiring products which are in compliance with ecological and regulatory standards (Carter, 2005). Green purchasing techniques arguably revolve upon two important aspects: assessing suppliers' environmental performance and providing coaching to help them grow.

A study by Gil et al. (2001) describes sustainable purchasing by asserting that it takes into consideration input purchasing strategies as opposed to the earlier standard which laid basis only on cost, quality and delivery. By considering this aspect of SSCM practice, an organization can establish functions that require suppliers to share relevant environmental information and consequently leads suppliers to focus more on sustainable practices. Adoption of this practice incorporates green policies of buying indirectly and not just direct buying only.

Min and Galle (1997) performed research of US buying managers on green purchasing and discovered that, instead of environmental monitoring or collaborations, the key motivating force for green purchase is a desire to comply with legislation. Green purchasing efficacy is also determined by whether the company uses consolidated or dispersed decisions (Birett, 2017), which impacts the versatility of a sustainable procurement processes. Impact of environmental rules on purchasing operations was ranked as the second most important emerging issue by procurement managers (Monczka& Trent, 1995).

2.3.2 Sustainable Supplier Partnerships

In business, partnerships are considered to be relations among organizations that are expected to go on for a predetermined period of time (Stuart, 1993). Long term connection of an entity with its separate suppliers is defined as a supplier partnership. In view of these precisions, it can be rightly considered that sustainable supplier partnerships are envisaged to be executed beyond the common organization-supplier relationship to consider the pre-approved suppliers' ecological and social responsibilities.

Eltayeb and Zailani (2014) and Hammer (2006) assert that organizations will go beyond the functions of considering the contents of the products, environmental conservation structures, accreditation and conformance audit of primary and secondary suppliers before the commencement of partnerships so that due diligence is done in ensuring the suppliers are conscious of sustainability. Supplier relationships, as per Geffen and Rothenberg (2000), facilitate the uptake and advancement of novel ecological technologies. Moreover, relationships involving buyer and seller personnel, cooperative agreements, and coordinated research and development are all used to improve ecological performance.

2.3.3 Green Information Sharing

Concept of green information sharing is very crucial in the current use of information

technology. The concept of information sharing refers to dissemination of crucial information for the stakeholders of the organization. In order to incorporate sustainability into information sharing, the organizations should endeavor to establish channels that pass and disseminate information to supply chain stakeholders as ecological and societal initiatives and policies are concerned (Cooper et al., 1997).

A number of researches done in these areas looked at the outcomes of green information sharing as far as plans of sales and procurement division are concerned (Huang & Wang, 2017). The results stress the importance of green information sharing hence the need for organizations to disseminate reliable information that aims at mitigating adverse environmental impacts incorporating all functional levels in supply chain (Huang & Wang, 2017).

Green, Morton, and New (1998) looked at the link between green information exchange and organizational performance, though their findings were inconclusive. There are two opposing viewpoints on the connection of environmental information sharing strategies as well as organizational performance. According to the first viewpoint, numerous managers assume that environmental management is just a matter of complying with legislation that promote exchange of information, and that there is a cost-benefit trade-off between increasing environmental information sharing and increasing expense (Walley & Whitehead, 1994).

There is additional evidence of a link between ecological information sharing techniques and organizational performance. The suggested framework and research evidences of Klassen and McLaughlin (1996) demonstrate that green information exchange has a positive influence on both markets and cost paths. Recent research has revealed a possible trend of information sharing techniques for enhancing ecological performance (Handfield et al, 2002; Florida & Davison, 2001; Florida, 1996).

2.3.4 Green Marketing

Green marketing consists of measures geared towards all companies and customers. Planned, produced, and executed marketing actions (such as pricing and promotions) aimed to demonstrate the organization's goal of mitigating the detrimental consequences caused by its products (Groening, Sarkis & Zhu, 2018). Using green marketing techniques, you can advertise products that are eco-friendly (Luthra, Garg & Haleem, 2016).

When it comes to green marketing, we are talking about actions that serve human needs while having the least amount of detrimental impact on the environment. As the word is known today, green marketing methods include promoting eco-friendly and safe items, as well as manufacturing, product promotion, and goods packaging that are environmentally friendly and minimize environmental hazards (Sing & Pandey, 2012).

Green Marketing practices entail a serial of organization functions, including environmentally friendly products and logistics, sustainable promotion and pricing and green consumption. To make the connection between environmental innovation and competitive benefit, green marketing is essential (Menon & Menon, 2017). Green marketing practices also entail constructing a bridge to link the business and customer (Ko, Hwang, & Kim, 2013). Companies' competitiveness, financial and environmental performance, as well as their corporate brand and image are enhanced by green marketing (Ko, Hwang & Kim, 2013).

2.3.5 Reverse Logistics

Natural resources, in-process inventories, completed goods, and other associated data must be moved efficiently and cost-effectively from consumption to origin points for recouping or creating value or correct disposal. This is referred to as reverse logistics. Consumers should be enabled to find and return inappropriate goods to sellers in a speedy and cost-effective manner, and organizations should be able to revert typical supply chain movements from seller to buyer (Xie & Breen, 2012).

Customers' unhappiness is avoided if companies developed the flow possibilities and reverse logistics systems. It's a sort of reverse logistics to encourage suppliers to take back packaging, which can be a major factor in greening the outbound function. A study conducted by Wu and Dunn (2015) found that the use of standard containers and merchandising layouts as well as quick access to information lower the time it takes to save and retrieve data, resulting in cost savings while being ecologically useful. Pushpamali, Agdas, Rose and Yigitcanlar (2021) found that reverse logistics negatively influence Organization performance.

2.4 Performance Measurement

The practice of measuring the efficiency as well as effectiveness of activities conducted is known as performance measurement. Performance is defined as the degree to which

customer expectations are met, whereas efficiency is defined as the amount toward which corporate assets are employed to meet a certain level of customer satisfaction (Neely et al. 1995). However, the performance assessment systems (Shepherd & Günter, 2012) must be considered as a collection of metrics that is utilized to evaluate the efficacy and success of operations. Steccolini, Saliterer andGuthrie(2020), measured performance in terms of the economic and market value added. Wysokińska-Senkus (2020), on the other hand, used various measures of performance. They included the costs experienced in the supply chain, the efficiency in management of assets and the delivery performance.

As per Leonczuk (2016), there are five KPIs, which include: potential of a supply chain to react to market demand changes for gaining or maintaining its competitive advantage; responsiveness which relates to the tempo at which a supply chain delivers goods to consumers; flexibility that relates to capability of supply chains in reacting to market demand variations in attempt to acquire or sustain its competitive advantage; cost which relates to all costs associated with running a supply chain; asset management efficiency where an institution is able to handle its assets to support demand.

2.5 Empirical Studies and Knowledge Gaps

Several studies have been conducted regarding SCM and the process of sustainability in diverse sectors of the organizations. Walker and Jones (2012) carried out a study on SSCM of United Kingdom organizations and realized that majority of the UK's private sector companies already operate SSCM policies with annual reviews. The study realized that there exist some barriers to SSCM which include strategic matters character risk, SSCM practices that are not vigorous that organization had to address in the day-to-day conduct of business. The study also pointed out some of the drivers of SSM which include, supportive leadership, enhance integration of internal process, knowledge growth and better performance of the industry among others.

Grzybowska and Kovács (2014), researched humanitarian perceptions relating to supply chain of which the study argued that there exist four perspectives as far as sustainability is concerned, which are: beneficiary perspective, societal perspective, program perspective and supply chain perspective. The study further argued that patrons set goals of sustainability to guide in their operations.

Mukanga (2011) examined the sustainability strategies that are embraced by the international NGOs that are situated in Nairobi. The researcher discovered that some of the

adopted strategies include, participating on consultancy services, embracing a strategic plan, enhancing innovation, being involved in some income generating activities, joining partnerships and collaborations, performing capacity building and building the communities socially and economically, promoting transparency and principles of good management, training of staff and remuneration of staff.

Abdifatah (2012) conducted research to ascertain the impact of SCMP on performances relating to NGOs operating in Kenya. Outcomes of this examination revealed that the most common practice in the operations of humanitarian organizations range from the practice of enhancing supplier relations, establishing effective and efficient internal processes, commitment to progressive improvement, production processes that are flexible, embracing technology, integration of organizational departments to simplifying internal processes.

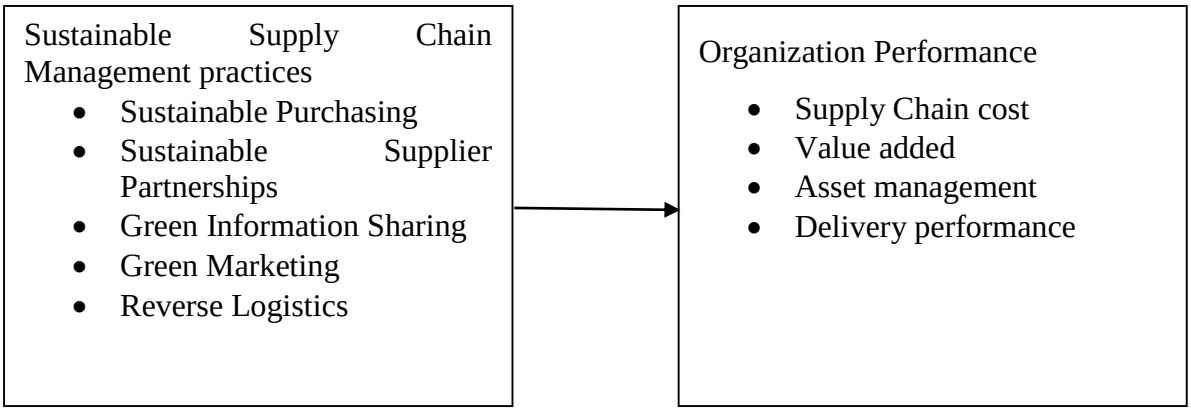
Mwilu (2013) focused on the practices of supply chain and their respective performances among public research institutions and realized that whereas several best SCM practices have been entrenched and applied broadly in the public research institutions, there was still a large gap that had been left hence concluding the presence of direct connection of SSCM practices and the performance of the organizations in areas of logistics, information technology and lean supply chain management. From the above studies, there is clear evidence of the limited focus on matters sustainability mostly in the public universities in Kenya.

2.6 Conceptual Framework

Independent or predictor variables are linked to the dependent variable using the conceptual framework (Karanja, 2016). A variable is a term that refers to a concept that can have a variety of qualitative qualities. Kothari (2008) defines a variable as a notion that can accommodate diverse qualitative estimates. Furthermore, Kothari (2008) describes a dependent variable as an outcome of other variables and on the other hand predictor variable is considered to be a predecessor of the dependent variable. Scholars consider predictor variable as assumed cause while the dependent variable is considered to be assumed effect. Such relationships between these constructs are illustrated in the conceptual framework as below:

Figure 2.1: Conceptual Model

Independent Variable Dependent Variable



Source: Author (2021)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

A general method to studying a research topic is referred to as research methodology. This chapter gives a framework through which the research was performed. This involved presentation of the data collection, the measurement and subsequent analysis. The subsections that were specifically included were research design, research population, population design, the study's data collection process as well as data analysis of this study.

3.2 Research Design

Descriptive research design was used. It involves giving a description of the particular individual or group characteristics or group characteristics hence the research problem was to explore the influence of SSCM practices on the performance of public universities in Kenya. Cooper and Schindler (2006) revealed that this kind of research design majorly describes an issue, mostly by forming a profile of a group of issues, persons, or occurrences and this is done via information gathering and associated computation of statistics on study variables or team relations.

3.3 Population of Study

Population is described as a collection or entirety of all the elements that relate to a predetermined characteristic, Pout and Hungler (1999). The target population of this research was 31 public universities in Kenya as listed in Appendix II (UCK, 2020). The employees of the public universities in Kenya were involved as the respondents for the research.

3.4 Sample Design

As per Saunders et al. (2009), sampling relates to selecting of a sub-group from overall populace for the investigation. Convenience sampling was used to select 13 public universities with headquarters in Nairobi (Appendix III). This is due to accessibility of the population since am based in Nairobi. 9 employees from the university based on the level of management and departments (finance, human resources and procurement) were sampled purposively. It results in a sampling of 117 participants that took part in my research.

3.5 Data Collection

The study applied quantitative data. Leedy Ormrod, (2001) describes quantitative data as a process of data collection from the target population or from one large sample that represents the population of study in a method that can allow for easier conversion to numerical indicators. Structured questionnaire was applied. The author distributed questionnaires with help of researching assistant.

This survey consisted of following segments; Section I focused on demographics while section II contained questions relating to sustainable supply chain management practices and organization performance. Section III focused on challenges of SSCM practices while section IV contained questions relating to organization performance.

3.6 Data Analysis

Data gathered by the questionnaire was indicated in terms of codes, cleaned as well as used for data analysis for the descriptive statistics and presented in table format, charts and graphical format. For efficient summary of responses, descriptive statistics were applied through mainly frequencies, percentages, and mean estimates. Regression analysis was done to establish the relationship between the variables. SPSS was applied to analyze data. The regression model used in analyzing the data was;

$$Y= \alpha+ \beta_1X_1 + \beta_2X_2+ \beta_3X_3+ \beta_4X_4+ \beta_5X_5 + \varepsilon$$

Where:

Y = Organization performance

β_0 = Regression

β_1 to β_5 = The regression coefficients

X_1 = Sustainable Purchasing

X_2 = Sustainable Supplier Partnerships

X_3 = Green Information Sharing

X_4 = Green Marketing

X_5 = Reverse Logistics

ε = Error term

3.7 Summary of Data Collection and Data Analysis

Table 3.1: Summary of Data Collection and Data Analysis

Objective	Data Collection method	Data analysis method
Organization performance		Descriptive Statistics
i) To determine the extent to which SSCMP are being implemented by public universities in Kenya.	Questionnaire	• Descriptive Statistics
ii) To find out the impact SSCMP have on the performance of public universities in Kenya	Questionnaire	• Descriptive Statistics • Multiple regression
iii) To determine how sustainable management of SC serves as a strategic management tool for public universities in Kenya.	Questionnaire	• Descriptive Statistics
iv) To find out the challenges faced by public universities in implementing sustainable SCM practices.	Questionnaire	• Descriptive Statistics

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This part explains how to understand and present the results of the field research. The demographics of the respondents is covered in this section, as well as the outcomes of the analysis on the topic under investigation. The results of the research were discussed.

4.1.1 Response Rate

In order to collect data, the research used 117 participants, of whom 104 completed and submitted their questionnaire, resulting in an 88.9% return rate. As per Mugenda and Mugenda (2012), return rate was thought to be excellent.

Table 4.2: Response Rate

Response	Frequency	Percentage
Filled and returned	104	88.9
Not responded	13	11.1
Total	117	100

4.2 Background Information

These findings are based on the background information of the respondents and are presented in the following subsections. General characteristics that are examined in this study.

Table 4.3: Distribution of Respondents by Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	66	63.5	63.5	63.5
	female	38	36.5	36.5	100.0
	Total	104	100.0	100.0	

Results show that majority (63.5%) of the respondents were males whereas 36.5% were female. However, the results reveal low participation of the female gender. This may be accrued by the low number of female employees employed in public universities.

Table 4.4: Distribution of Respondents by Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30 years	21	20.2	20.2	20.2
	31-40 years	42	40.4	40.4	60.6
	41-50 years	33	31.7	31.7	92.3
	More than 50 years	8	7.7	7.7	100.0
	Total	104	100.0	100.0	

Most of the participants (42, or 40.4%) were between the ages of 31 and 40, according to the results in table 4.4. Other participants ranged in age from 41 to 50, while 20.2 percent were between 20 and 30 years old, and 7.7 percent were under the age of 50. According to this information, views were fairly sought by all age groups.

Table 4.5: Highest Level of Eduaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Certificate	25	24.0	24.0	24.0
	Diploma	21	20.2	20.2	44.2
	Undergraduate	42	40.4	40.4	84.6
	Post graduate	16	15.4	15.4	100.0
	Total	104	100.0	100.0	

As revealed, 42(40.4%) had bachelor's degree. On the other hand, 25(24.0%) had college certificate, while 21(20.2%) had college diploma while 16 (15.4%) were post graduates. Based on their educational status majority of the participants were in a position to respond to the research question with ease as they had at least a diploma.

Table 4.6: Period of Service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	8	7.7	7.7	7.7

	5-10 years	29	27.9	27.9	35.6
	10-15 years	33	31.7	31.7	67.3
	More than 5 years	34	32.7	32.7	100.0
	Total	104	100.0	100.0	

Outcomes showed that 34(32.7%)>5years, 33(31.7%) 10-15 years, and 29(27.9%) indicates5-10 years with 8(7.7%)<5 years. They were therefore in a strong position to provide trustworthy information on the subject matter because they had been working for an extended period of time.

4.3 Adoption of sustainable supply chain management practices

In the first objective, the researcher sought to determine the extent to which public universities in Kenya adopted sustainable supply chain management practices. In order to meet the objective, the participants were asked to indicate whether the organization had adopted sustainable supply chain practices.

Table 4.7: Whether adopted Sustainable Supply Chain Practices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	82	78.8	78.8	78.8
	no	22	21.2	21.2	100.0
	Total	104	100.0	100.0	

Table 4.7, 82(78.8%) noted universities had adopted sustainable supply chain practices. Hence public universities had adopted sustainable supply chain practices. The study inquired on how often the university reviewed its SSCMP.

Table 4.8: Review of Sustainable Supply Chain Practices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Often	50	48.1	48.1	48.1
	Often	54	51.9	51.9	100.0

	Total	104	100.0	100.0	

Table 4.8 shows 54(51.9%) participants indicated that the university reviewed its sustainable supply chain practices on often basis while 48.1% of the participants indicated very often. this implies that most of the public universities reviewed their sustainable supply chain practices on often basis.

Table 4.9: Sustainable Supply Chain Practices Adopted

	N	Minimum	Maximum	Mean	Std. Deviation
Sustainable purchasing	104	1.00	5.00	3.6250	.84976
Sustainable supplier partnerships	104	1.00	5.00	3.6923	.75140
Green information sharing	104	1.00	5.00	3.8365	.88252
Green marketing	104	2.00	5.00	3.7885	.85529
Reverse logistics	104	1.00	5.00	3.0385	.92351
Valid N (list wise)	104				

Participants adopted sustainable purchasing as a sustainable supply chain management practice greatly [Mean: 3.6250]. This is similar to universities adopting sustainable supplier partnerships [mean: 3.6923], green information sharing as shown by mean of 3.8365; green marketing [mean: 3.7885]. However, reverse logistics was adopted moderately [mean: 3.0385]. The practices showed a standard deviation of less than 2, hence the opinions of the respondents didn't differ significantly. This indicated that public universities have adopted various supply chain management practices.

4.4 Sustainable Supply Chain Practices as a strategic tool

Second objective the researcher sought to determine how sustainable management of SC serves as a strategic management tool for public universities in Kenya.

4.4.1 Sustainable Purchasing

The first supply chain management practice considered by this study was sustainable

purchasing. The researcher established the agreements on statements relating to sustainable purchasing and organizational performance.

Table 4.10: Sustainable Purchasing

	N	Minimum	Maximum	Mean	Std. Deviation
In my university the sources of suppliers are examined for selection	104	3.00	5.00	4.0385	.60617
My firm deals with environmental conscious suppliers	104	3.00	5.00	4.2500	.64987
My university purchases materials that are in line with environmental requirements as well as regulations	104	3.00	5.00	4.4135	.53264
there are environmental requirements and regulations for purchasing in my university	104	3.00	5.00	4.3173	.56197
sustainable purchasing services enable the university to reduce supply chain costs	104	3.00	5.00	4.0096	.71727
suppliers share relevant environmental information for sustainable purchasing practices	104	3.00	5.00	3.9423	.60462
Suppliers in my university focus more on sustainable purchasing practices	104	3.00	5.00	4.1154	.72818
Valid N (list wise)	104				

There was agreement that their universities purchased materials that were in line with environmental requirements as well as regulations as shown by mean of 4.4135. They also agreed that there were environmental requirements and regulations for purchasing in my university as shown by mean of 4.3173, their firms dealt with environmental conscious suppliers as shown by mean of 4.2500, and that suppliers in their universities focused more on sustainable purchasing practices as shown by mean of 4.1154. They also agreed that in their universities the sources of suppliers were examined for selection as shown by mean of 4.0385, sustainable purchasing services enable the university to reduce supply chain costs as shown by mean of 4.0096, suppliers shared relevant environmental information for sustainable purchasing practices as shown by mean of 3.9423. The mean was supported by standard deviation which was below 2.

4.4.2 Sustainable Supplier Partnerships

Table 4.11: Sustainable Supplier Partnerships

	N	Minimum	Maximum	Mean	Std. Deviation
My university has adopted sustainable supplier partnerships	104	3.00	5.00	4.2596	.68259
In my university, partnerships with the suppliers are long-term	104	3.00	5.00	4.2308	.65701
My university has a large number of loyal suppliers	104	3.00	5.00	4.0577	.63593
Suppliers in the university are conscious of sustainability	104	3.00	5.00	4.3077	.68375
Sustainable partnerships with suppliers have led to effective delivery by the suppliers	104	3.00	5.00	4.2404	.78202
University partnerships with suppliers are environment conscious	104	3.00	5.00	4.0000	.55739
Sustainable supplier relationships improve performance metrics of a	104	3.00	5.00	4.1058	.66709

university					
Valid N (list wise)	104				

From the findings on the statements relating to sustainable supplier partnerships, the respondents agreed that suppliers in the universities were conscious of sustainability as shown by mean of 4.3077. They further agreed that their universities had adopted sustainable supplier partnerships as shown by mean of 4.2596, sustainable partnerships with suppliers had led to effective delivery by the suppliers as shown by mean of 4.2404 and that in their universities, partnerships with the suppliers were long-term as shown by mean of 4.2308 and that sustainable supplier relationships improved performance metrics of a university as shown by mean of 4.1058. They also agreed that their universities had large number of loyal suppliers as shown by mean of 4.0577 and that university partnerships with suppliers were environment conscious [Mean: 4.0000]. The Std Dev. was low; hence the opinion of the respondents didn't differ much.

4.4.3 Green Information Sharing

Table 4.12: Statements relating to Green Information Sharing

	N	Minimum	Maximum	Mean	Std. Deviation
Environmentally friendly information sharing with stakeholders is common in my university	104	3.00	5.00	4.1923	.69780
My university share information with its stakeholders regularly	104	3.00	5.00	4.0136	.60916
My university adopts green information sharing strategies in managing its supply chain	104	3.00	5.00	3.8077	.69780
Green information sharing makes the supply chain effective and efficient	104	3.00	5.00	4.1635	.73881
Organizations that adopt green information sharing practices	104	3.00	5.00	3.7885	.63358

Valid N (list wise)	104				

There was an agreement that environmentally friendly information sharing with stakeholders was common among their universities as shown by mean of 4.1923. The respondents further agreed that green information sharing made the supply chain effective and efficient as shown by mean of 4.1635 and that their universities shared information with their stakeholders regularly as shown by a mean of 4.0136. They also agreed that their universities adopted green information sharing strategies in managing their supply chain as shown by mean of 3.8077 and that organizations that adopted green information sharing practices [mean: 3.7885]. The Standard Deviation was below 2 hence supports the mean as the opinions did not differ significantly.

4.4.4 Green Marketing

Table 4.13: Statements Relating to Green Marketing

	N	Minimum	Maximum	Mean	Std. Deviation
Product development and process are environment-friendly	104	2.00	4.00	3.6346	.69754
Marketing communications convey green products to increase the awareness of customers	104	2.00	4.00	4.0315	.66260
Customers are willingly to pay higher prices for university services due to environmental concerns	104	2.00	4.00	3.5769	.84408
Price of our services and products is lowered partially due to green practices	104	3.0	4.0	3.9130	.2825
Corporate social responsibility of my university is involved in environmental protection	104	2.00	4.00	3.9904	.91900
Contractors in our university adopt green	104	2.00	4.00	3.6635	.71883

marketing practices					
Valid N (list wise)	104				

Participants showed agreement on marketing communications conveyed green products to increase the awareness of customers as shown by mean of 4.035. They also agreed that corporate social responsibility of their university was involved in environmental protection as shown by 3.9904, prices of their services and products was lowered partially due to green practices as shown by mean of 3.9130, contractors in their universities adopted green marketing practices [Mean: 3.6635]. There was further agreement on product development and process were environment-friendly as shown by mean of 3.6346 and that customers were willingly to pay higher prices for university services due to environmental concerns [mean:3.5769]. The standard deviation was below 2 showing that the opinions did not differ significantly, hence, supports the mean.

4.4.5 Reverse logistics

Table 4.14: Statements Relating to Reverse Logistics

	N	Minimum	Maximum	Mean	Std. Deviation
My university facilitates product returns to their suppliers	104	1.00	4.00	2.3326	.77969
Reverse logistics reduced storage and retrieval delays in their universities	104	1.00	44.00	1.9038	.45139
University collaborated with their suppliers for ensuring recycle relating to materials	104	2.00	4.00	2.3846	.75437
Valid N (list wise)	104				

Participants disagreed that their universities collaborated with their suppliers for recycling as shown by mean of 2.3846. They further disagreed that their universities facilitated product returns to their suppliers as shown by mean of 2.3326 and that reverse logistics reduced storage and retrieval delays in their universities shown by mean of 1.9038. The standard deviation was less than 2 hence the opinions did not differ among the respondents.

4.5 Challenges in implementing Practices

The third objective, the researcher sought to find out the challenges encountered by public universities in implementation of SSCMP.

Table 4.15: Challenges Are Faced in Organization in Their Commitment

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
High overall cost increase	104	3.00	5.00	4.4038	.63121
Difficulty in operationalizing	104	4.00	5.00	4.4423	.49907
Sustainable development	104	3.00	5.00	4.2019	.62907
Changing cultures and mindsets	104	3.00	5.00	4.1346	.77657
Strains in control	104	3.00	5.00	3.9519	.82885
Management of demand & supply uncertainties	104	3.00	5.00	4.2019	.70201
Complexity of problems	104	3.00	5.00	4.2115	.63358
Managing tradeoffs	99	3.00	5.00	3.8384	.85365
Staff resistance to adopting the change	104	3.000	5.000	4.29808	.774344
Resistance from the communities	104	3.00	5.00	4.3558	.69559
Funding limitations and delays	104	3.00	5.00	4.0577	.73507
Procurement delays	104	3.00	5.00	4.1538	.66492
Lack of support from partners	104	3.00	5.00	4.0962	.70393
Lack of robust supply chains	104	3.00	5.00	4.0000	.73735
Inability to anticipate disaster	104	3.00	5.00	4.3173	.62728
Lack of commitment among suppliers	104	3.00	5.00	4.0288	.78154
Competitive pressures	104	3.00	5.00	3.9904	.79434
Consumer desire for lower prices	104	3.00	5.00	4.1635	.72555
Lack of supportive corporate structure & processes	104	3.00	5.00	3.8846	.82800
Reliance on traditional accounting methods which do not facilitate recording of triple bottom line measures	104	3.00	5.00	4.3077	.62437
Lack of management support	104	3.00	5.00	4.0962	.76981
Valid N (list wise)	99				

Participants agreed that public universities faced various challenges in their commitment to implementing sustainable operations. They indicated that their universities faced challenges like difficulty in operationalizing (mean =4.44 std dev =0.50), high overall cost

increase (mean=4.40 std dev=0.63), resistance from the communities (mean=4.36 std dev=0.70) and inability to anticipate disaster (mean=4.32 std dev =0.63). They also faced the challenge of reliance on conventional book keeping approaches (mean =4.31 std dev =0.62), and staff resistance to adopting the change (mean=4.30 std dev =0.77).

Other challenges revealed included complexity of problems (mean=4.21std dev =0.63), Sustainable development (mean =4.20 std dev =0.63), management of demand & supply uncertainties (mean =4.20 std dev =0.70), and consumer desire for lower prices (mean =4.16 std dev =0.73). They also indicated challenges like changing cultures and mindsets (mean = 4.13 std dev =0.78) and lack of support from partners and lack of management support (mean = 4.10 std dev =0.70).

The universities also faced the challenge of robust supply chains (mean =4.00 std dev =0.74), funding limitations and delays (mean =4.06 std dev =0.74) and lack of commitment among suppliers (mean =4.03 std dev =0.78). The respondents finally indicated challenges like competitive pressures (mean =3.99 std dev =0.79), lack of robust supply chains (mean =4.00 std dev =0.74), strains in control (mean =3.95 std dev =0.83), lack of supportive corporate structure & processes (mean =3.88 std dev =0.83) and managing tradeoffs (mean =3.84 std dev =0.85).

4.6 Organization Performance

Table 4.16: Performance of Public Universities in Kenya

	N	Minimum	Maximum	Mean	Std. Deviation
Supply Chain costs					
reduction in supply chain costs	104	3.00	5.00	4.1442	.74284
Value added					
Enhanced employee productivity	104	3.00	5.00	4.1923	.63973
Increased supply chain efficiency	104	3.00	5.00	4.1250	.79669
Increased service quality	104	4.00	5.00	4.3942	.49105
Reduced material costs	104	3.00	5.00	4.0865	.60916
Production efficiency	104	3.00	5.00	3.9423	.73507
Lower occupational safety expenses	104	3.00	5.00	3.9519	.74234
Asset management					
Efficient allocation of resources	104	1.00	5.00	3.7596	1.08320
Efficient use and management of university resources	104	1.00	5.00	3.8173	1.13003
Higher returns on investment by the university	104	3.00	5.00	3.9327	.67211
Delivery performance					
Improved delivery performance	104	3.00	5.00	3.9423	.70816
Valid N (list wise)	104				

Adoption of SSCMP led to increased service quality (mean=4.39 std dev =0.49), enhanced employee productivity (mean=4.19std dev =0.64) reduction in supply chain costs (mean =4.14 std dev =0.74), increased supply chain efficiency (mean =4.13 std dev =0.80) and efficient allocation of resources (mean = 3.76 std dev = 0.75).

Further the study established that most of the public universities had registered reduction material costs (mean=4.09 std dev =0.61) lower occupational safety expenses (mean =3.95 std dev =0.74), production efficiency (mean=3.94 std dev=0.74), higher returns on investment by the university (mean =3.93 std dev=0.67), improved delivery performance (mean=3.94 std dev =0.71) and efficient use and management of university resources (mean = 3.82 std dev =0.71).

4.7 Impact of sustainable supply chain management on performance

In the last objective, impact of SSCMPs on organization performance was determined. Regression analysis was utilized to examine sustainable SSCMP (sustainable purchasing practices, SSPs, green information sharing, green marketing) and their impact on

performance.

Table 4.17: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.743[a]	.552	.529	4.07989

a. Predictors: (Constant), Reverse Logistics, Sustainable Purchasing, Sustainable Supplier Partnerships, Green Information Sharing, Green Marketing

From table 4.17, the regression summary shows an R-squared of 0.552. This implies that predictor variables explained 55.2% variation in organizational performance by public universities in Kenya. The remaining 44.8% change in performance was explained by other factors other than supply chain management practices adopted in the study.

Table 4.18: ANOVA[b]

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.087	5	6.817	4.092	.002[a]
	Residual	163.259	98	1.666		
	Total	197.346	103			

a. Predictors: (Constant), Reverse Logistics, Sustainable Purchasing, Sustainable Supplier Partnerships, Green Information Sharing, Green Marketing

b. Dependent Variable: Organization Performance

Regression model shows p value of 0.002 which is less than 0.05. This indicates a statistically fit of model to the data. The ANOVA results indicate that F-critical (2.307) while the F-calculated was 4.092. This shows that Fcalc>Fcr. Therefore, the model was significant. It implies that the model is best in assessing the relationship between the study variables.

Table 4.19: Regression Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-50.345	14.231		-3.538	.001
	Sustainable Purchasing	.439	.133	.423	3.303	.001
	Sustainable Supplier Partnerships	.356	.153	.317	2.326	.011
	Green Information Sharing	.483	.187	.425	2.584	.006
	Green Marketing	.321	.130	.304	2.465	.008
	Reverse Logistics	.191	.071	.124	2.693	.004

a. Dependent Variable: organizational performance

Y = -50.345+ 0.439sustainable purchasing + 0.356sustainable supplier partnerships + 0.483green information sharing + 0.321green marketing + 0.191reverse logistics+ ε

The regression model shows a constant value of -50.345 shows that holding predictor variable to a constant; the organizational performance of public universities in Kenya would be at -50.345. Regression analysis indicates that sustainable purchasing had a coefficient of 0.439. This means that a unit rise in sustainable purchasing practices leads to increased organizational performance of public universities by 0.439.

The regression analysis finds that sustainable supplier partnerships had a 0.356. This displays that unit surge in sustainable supplier partnerships in public universities would lead to increased performance by 0.356. From the regression coefficient table, green information sharing showed a coefficient of 0.483. This indicates that a unit surge in green information sharing in public universities surges organizational performance by 0.483.

From the regression analysis, green marketing had a regression coefficient of0.321. This indicates that a unit increase in green marketing surges in organizational performance of public universities in Kenya by a factor of 0.321. On the other hand, a unit increase in reverse logistics would lead to increased organizational performance of public universities in Kenya by 0.191 as shown by the regression coefficient.

From the regression analysis, the significance values were less than 0.05. As such, they were considered to be statistically significant. This shows that there exists a direct and significant affiliation of SSCMP and organizational performance among public universities in Kenya.

4.8 Discussion of the Findings

The regression results showed that increase in sustainable purchasing enhanced organizational performance by public universities. Hence, sustainable purchasing has a direct influence on organization performance. These findings are in line with Walker and Jones (2012) who found a positive relationship.

The findings showed that sustainable supplier partnerships enhanced organizational performance by public universities. This shows that sustainable supplier partnerships have a direct affiliation with Organization performance. This agrees with Eltayeb and Zailani (2014) that it is possible for a company to generate long-term cost savings by building mutually beneficial relationships with its main suppliers.

Test regression results show that green information sharing enhance organizational performance by public universities. This shows that green information sharing had a positive effect on performance of public universities. This means that when green information sharing improves, public universities experience improved performance metrics. Similar conclusions by Huang & Wang, (2017) also re-affirm that organizations increase their performance through the ability to better coordinate their actions with their supply chain partners through the use of green information exchange.

The findings showed that green marketing increased organizational performance of public universities. This shows that green marketing had a direct influence on organizational performance in public universities. The findings concur with those of Ko, Hwang and Kim (2013) who found that green marketing practices enhanced Organization performance. The regression analysis found that reverse logistics had a coefficient with Organization performance. The findings differ with those of Pushpamali, Agdas, Rose and Yigitcanlar (2021) who found that reverse logistics negatively influence organization performance.

Public universities had registered positive performance in terms of supply chain. These findings concur with those of Eltayeb and Zailani (2014) who found that suitable supply chain management enhanced employee motivation and morale at the work place hence increasing on their productivity and enhancing organization performance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Summaries, conclusions and recommendations are shown in this section. The study specific objectives that this study sought to achieve were: to determine the magnitude to which SSCMP were applied, to find out the impact sustainable supply chain management practices have on the performance of public universities in Kenya, to determine how sustainable management of supply chains serves as a strategic management tool and to find out the challenges that are encountered by public universities in implementing sustainable supply chain management practices.

Here, we will look at some of the conclusions. Primary and secondary sources, such as published reports, were used to perform the study. There are discussions, conclusions, recommendations, and opportunities for additional study in the chapter's organization.

5.2 Summary of Findings

Findings show that participants agreed that university had adopted various sustainable supply chain practices which were reviewed often. The universities were found to adopt sustainable purchasing as a sustainable supply chain management practice, sustainable supplier partnerships, green information sharing and green marketing to a great extent. However, they adopted reverse logistics to a moderate extent.

As a strategic management tool, descriptive results show that public universities practiced purchasing. The study established that suppliers in the public universities focused more on sustainable purchasing practices. The study established that most of the public universities in Kenya have formed long term partnerships with the suppliers. On green information sharing, descriptive statistics showed that nearly all the public universities shared green information with its stakeholders regularly. The universities adopted green information sharing. From the findings, green marketing was adopted with product development and process being environment-friendly. Reverse logistics was practiced in the selected universities.

The study established that public universities in Kenya faced various challenges. Among identified challenges include difficulty in operationalizing, high overall cost increase, resistance from the community's, inability to anticipate disaster, reliance on traditional

accounting methods. Other challenges reveled included complexity of problems, Sustainable management of demand & supply uncertainties, consumer desire for lower prices and changing cultures and lack of support from partners and inadequacy in management backing. Further, they lacked a robust supply chain, funding limitations and delays and lack of commitment among suppliers, competitive pressures, lack of robust supply chains, and strains in control, lack of supportive corporate structure & processes and managing tradeoffs.

Inferential regression results showed that sustainable purchasing impacted on organizational performance positively. Further the study established that sustainable supplier relationships improved performance metrics. Green information sharingwas found to enhance performance by public universities. The regression analysis showed that green marketing increased organization performance of public universities. Reverse logistics had a positive effect on with performance of public universities. Due to adoption of sustainable supply chain management, most of the public universities had registered positive growth through increased service quality, enhanced employee productivity and efficient allocation of resources.

5.3 Conclusion of the Study

Public universities in Kenya have adopted sustainable supply chain management practices. They greatly adopt various SSCMP. However, reverse logistics is adopted moderately. Public universities adopt sustainable SSCMP as strategic tools. The universities practice sustainable purchasing, form long term partnerships with the suppliers, adopted green information sharing, green marketing and reverse logistics as strategic management tools.

The study concludes sustainable purchasing increase performance of public universities in Kenya. Sustainable supplier partnerships affect performance of public universities in Kenya. Green information sharing increases organization performance of public universities in Kenya. Green marketing was found to increase organization performance of public universities in Kenya. This leads to the conclusion that green marketing increases public universities' performance in Kenya. Reverse logistics increased organization performance. This leads to the conclusion that reverse logistics has a direct influence on organization performance of public universities in Kenya.

Public universities encountered various challenges implementing SSCMP. This creates the need to come up with relevant strategies to mitigate the issues experienced in the

implementation of SSCMP among public universities.

5.4 Recommendations of the Study

Sustainable performance management needs to be embraced by all public universities in Kenya. Adding value requires management support, additional expenditure, and the involvement of supply chain practitioners. Adoption of flexible, sustainable supply chain techniques based on suitable research will aid in meeting various, rapidly changing supply chain needs as well as addressing issues posed by a dynamic competitive business environment. Green information sharing practices should be embraced by the management of Kenya's public institutions; as such integration throughout the group will create synergies.

Continuous knowledge management should be embraced as an initiative for solving risks and organizational challenges to guarantee that the various sustainable supply chain management strategies are applied effectively.

5.6 Recommendations for Further Research

This research investigated relation of SSCMP and performance of public universities in Kenya. Researcher recommends a similar study based on other independent variables other than the ones included in the study. A similar study in private universities is recommended.

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APPENDICES

Appendix I: Introduction Letter

Dear Respondent,

RE: INTRODUCTION LETTER.

I am an MBA student at the University of Nairobi. I am carrying out a study in the area of Supply Chain: Topic "SUSTAINABLE SUPPLY CHAIN MANAGEMENT PRACTICES AND PERFORMANCE OF PUBLIC UNIVERSITIES IN KENYA." This questionnaire is designed to gather information on the application of the concept of Sustainable Supply Chain Practices and Performance in your university. This study is being carried out in partial fulfillment of the degree of Master of Business Administration of The University of Nairobi. All information you disclose will be treated in strict confidence and at no instance will your private details be mentioned in any report. The information will be used for academic purpose only. The results and the final report of the study will be availed to you upon request. Your co-operation will be highly appreciated.

Yours Faithfully,

SHAMIM ALI Date_____ Sign_____

D67/18972/2019

Appendix II: List of Public Universities in Kenya

1. Chuka University
2. Dedan Kimathi University of Technology
3. Egerton University
4. Garissa University
5. JaramogiOginga Odinga University of Science and Technology
6. Jomo Kenyatta University of Agriculture & Technology (JKUAT)
7. Karatina University
8. Kenyatta University
9. Kibabii University
10. Kirinyaga University
11. Kisii University
12. Laikipia University
13. Machakos University
14. Maasai Mara University
15. Maseno University
16. Masinde Muliro University of Science and Technology
17. Meru University of Science and Technology
18. Moi University
19. Multi Media University
20. Murang'a University of Technology
21. Pwani University
22. Rongo University
23. South Eastern Kenya University
24. Taita Taveta University
25. Technical University of Mombasa

26. Technical University of Kenya

27. The Co-operative University of Kenya

28. University of Eldoret

29. University of Embu

30. University of Kabianga

31. University of Nairobi

Source: University Commission Of Kenya, 2020

Appendix III: List of Public Universities with Branches in Nairobi

1. Cooperative University College of Kenya
2. Dedan Kimathi University of Technology
3. Egerton University
4. Jomo Kenyatta University of Agriculture and Technology
5. Kisii University
6. Laikipia University
7. Maasai Mara University
8. Kenyatta University
9. Masinde Muliro University of Science and Technology
10. Moi UniversityNairobi Campus
11. South Eastern University
12. The university of Nairobi
13. Technical University of Kenya

Source: University Commission of Kenya, 2020

Appendix IV: Questionnaire

The concept of Sustainable Supply chain practices is an emerging philosophy based on the principle that socially responsible products are not only good for the environment but are important for long term profitability. It is a holistic perspective of supply chain processes that focuses on social environmental and economic systems. Please indicate where appropriate by putting a tick in the spaces provided or alternatively, please write in the space provided.

Section I: General Information

1. What is your gender?

Male ( )

Female ( )

2. What is your age?

Less than 20 years ( )

20-30 years ( )

31-40 years ( )

41-50 years ( )

More than 50 years ( )

3. What is your highest level of education?

Secondary and below ( )

Certificate ( )

Diploma ( )

Undergraduate ( )

Post graduate ( )

4. How long have you worked for your university?

Less than 5 years ( )

5-10 years ( )

10-15 years ( )

More than 5 years ( )

Section II: Sustainable Supply Chain Management Practices

5. Has your company adopted sustainable supply chain management practices?

a) Yes ()

b) No ()

6. How often does your university review its sustainable supply chain practices?

Very Often () Often () Less Often () Not at all ()

7. To what extent has your university adopted the following sustainable supply chain management practices (where: 5-very great extent, 4-great extent, 3-Moderate extent, 2-Little extent, 1-very little extent).

	1	2	3	4	5
Sustainable purchasing					
Sustainable supplier partnerships					
Green information sharing					
Green Marketing					
Reverse Logistics					

8. Please indicate the extent to which you agree on the following statements relating to sustainable purchasing practices in your university. Use the scale of 1-5; (where: 1- strongly disagree, 2- disagree, 3- not sure, 4- agree, 5- strongly agree). Tick as appropriate.

	1	2	3	4	5
Sustainable Purchasing					
In my university the sources of suppliers are examined for selection					
My firm deals with environmental conscious suppliers					
My university purchases materials that are in line with environmental requirements as well as regulations					

there are environmental requirements and regulations for purchasing in my university					
sustainable purchasing services enable the university to reduce supply chain costs					
suppliers share relevant environmental information for sustainable purchasing practices					
Suppliers in my university focus more on sustainable purchasing practices					
Sustainable Supplier Partnerships					
My university has adopted sustainable supplier partnerships					
In my university, partnerships with the suppliers are long-term					
My university has a large number of loyal suppliers					
Suppliers in the university are conscious of sustainability					
Sustainable partnerships with suppliers have led to effective delivery by the suppliers					
University partnerships with suppliers are environment conscious					
Sustainable supplier relationships improve performance metrics of a university					
Green Information Sharing					
Environmentally friendly information sharing with stakeholders is common in my university					
My university share information with its stakeholders regularly					
My university adopts green information sharing					

strategies in managing its supply chain					
Green information sharing makes the supply chain effective and efficient					
Organizations that adopt green information sharing practices					
Green Marketing					
Product development and process are environment-friendly					
Marketing communications convey green products to increase the awareness of customers					
Customers are willingly to pay higher prices for university services due to environmental concerns					
Price of our services and products is lowered partially due to green practices					
Corporate social responsibility of my university is involved in environmental protection					
Contractors in our university adopt green marketing practices					
Reverse Logistics					
My university facilitates product returns to their suppliers					
University collaborates with its suppliers to ensure recycling of materials takes place					
Reverse logistics reduce storage and retrieval delays in my university					

Section III: Challenges in implementing Practices

9. The following are some of the challenges that are faced by organization in their commitment to implementing sustainable operations. Please indicate the extent to which the following challenges are faced in your organization. Please rank in a scale of 1 – 5,

(where: 1- strongly disagree, 2- disagree, 3- not sure, 4- agree, 5- strongly agree). Tick as appropriate.

	1	2	3	4	5
High overall cost increase					
Difficulty in operationalizing					
Sustainable development					
Changing cultures and mindsets					
Strains in control					
Management of demand & supply uncertainties					
Complexity of problems					
Managing tradeoffs					
Staff resistance to adopting the change					
Resistance from the communities					
Funding limitations and delays					
Procurement delays					
Lack of support from partners					
Lack of robust supply chains					
Inability to anticipate disaster					
Lack of commitment among suppliers					
Competitive pressures					
Consumer desire for lower prices					
Lack of supportive corporate structure & processes					
Reliance on traditional accounting methods which do not facilitate recording of triple bottom line measures					
Lack of management support					

Section IV: Organization Performance

9. The following are some of the statements relating to performance of Universities in Kenya. Please indicate your level of agreement based on the scale of 1 – 5, (where: 1- strongly disagree, 2- disagree, 3- not sure, 4- agree, 5- strongly agree). Tick as appropriate.

Suitable supply chain management has led to;	1	2	3	4	5
Supply Chain Costs					
reduction in supply chain costs					
Value Added					
Enhanced employee productivity					
Increased supply chain efficiency					
Increased service quality					
Reduced material costs					
Production efficiency					
Lower occupational safety expenses					
Asset Management					
Efficient allocation of resources					
Efficient use and management of university resources					
Higher returns on investment by the university					
Delivery Performance					
Improved delivery performance					

THANK YOU