GREEN SUPPY CHAIN MANAGEMENT PRACTICES AND SUSTAINABLE PERFORMANCE OF COUNTY GOVERNMENTS IN KENYA

BY

NICHOLAS ODERO

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR AWARD OF THE DEGREE OF MASTER OF SCIENCE IN SUPPLY CHAIN MANAGEMENT, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES, UNIVERSITY OF NAIROBI

2021

DECLARATION

Student

I hereby declare that this project is my novel idea and has not been submitted to any other institution of learning for an award.

Signature: ..... **Date**...22nd Nov,2021

NICHOLAS ODERO

D67/20253/2019

Supervisor

This research project has been submitted for examination with my endorsement as the students Supervisor.

Signature ..... **Date**...22nd Nov,2021

MICHAEL.K. CHIRCHIR

LECTURER,

DEPARTMENT OF MANAGEMENT SCIENCE AND PROJECT PLANNING.

SCHOOL OF BUSINESS

UNIVERSITY OF NAIROBI

DEDICATION

This research project is dedicated to my entire family, friends, colleagues and relatives, May God bless you.

ACKNOWLEDGEMENT

Special acknowledgement to Almighty God for the spiritual gift of wisdom, strength and knowledge which has led to the successful completion of this study.

My special appreciation also goes to my project supervisor who has burn all his time to provide professional guidance throughout this endeavor. I further express my gratitude to the project moderator for his professional assistance and guidance. It was amazing working with you.

To the management of the University of Nairobi, students and all distinguished colleagues whom we have walk this journey together, thank you and may God bless you.

ABBREVIATIONS AND ACCRONYMS

CO_2	Carbon Dioxide
CoG	Council of Governors
GDP	Gross Domestic Product
GoK	Government of Kenya
GSCM	Green Supply Chain Management
SMEs	Small and Medium Enterprises
SCM	Supply Chain Management

TABLE OF CONTENT.

LIST OT FIGURES

LIST OF TABLES

ABSTRACT

This study aimed at ascertaining the effect of green supply chain management on sustainable performance of the county governments in Kenya. The 3 objectives which steered the research are; to establish the level that green supply chain management practices have been adopted by county governments in Kenya; to establish the correlation between green supply chain management and sustainable performance of county governments in Kenya and to find out the challenges encountered in the implementation of green supply chain management by the county governments of Kenya. The methodology adopted was descriptive research design and primary data was acquired through questionnaires which were sent by electronic mails. The population was made up of all the 47 county governments in Kenya and thus census was carried out as per the small population. Descriptive statistics was used in the analysis of objective one and three wile objective two was analyzed through regression analysis. The findings indicate that green procurement was adopted to a large extent whereas green packaging, green distribution and supplier integration were adopted to a medium extent by the county governments in Kenya. Green supply chain management (green procurement, green distribution, green packaging, and supplier integration) were also found to influence sustainable performance through economic, environmental and social performance of the county governments in Kenya. some of the challenges faced in the implementation of green supply chain management include high costs linked with implementation of green supply chain management practices, absence of clear government regulations on adopting green supply chain management, lack of resources for investing in human capital and new technologies to implement green supply chain management practices, inadequate skilled labor and lack of top management support. It is recommended that green procurement, green packaging, green distribution and supplier integration should be adopted to a maximum extent as they have been established to influence social, economic and environmental performance of the county governments in Kenya. Future studies can introduce a third variable be it mediating or intervening variable to see how the outcome will be.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Communities globally bear responsibility for developing and subsequently implementing procurement policies which promote sustainability in making of goods and services (Nasiche & Ngugi, 2014). Governments and enterprises are increasingly adopting an environmentally friendly criterion across their supply chains to be able to promote their corporate objectives on their sustainable development (Nijaki & Worrel, 2012).

Several researchers have undertaken studies that looked into the significant link that exists between management of green supply chains and its effect on the reduction in wastes and promote the recycling of products along with their overall performance (Guenther, 2010).

The procurement contribution has resulted in positioning of environmental considerations in organizations as part of their corporate objectives. The function of procurement has advanced across time to become a strategic contributor to realization of an entity's corporate objective through reduction of their effect on their environment as they undertake their activities (Preuss, 2001).

The study was guided by institution theory and Tripple bottom line theory accompanied by resource dependence theory. According to Berthog (2016), institution theory places firms at the forefront for analysis of the behavior and designs of the organizations. Institution theory majorly bases on the part played by of social, political and economic operations that an organization operates to gain their legitimacy. Under the resource dependence theory, organizations have to undertake transactions with external entities to procure resources. The resource dependence theory tries to provide an explanation on how the external resources of an entity impacts the organizations behavior (Pfeffer & Salancik, 1978). Triple Bottom Line (TBL) theory views economic, ecological and social worth of asset that may accumulate besides a company's financial bottom line as explained by Elkington (2004).

The devolved governance system is provided for in the constitution 2010, as it actualizes the development of devolved system of government which created the 47 county governments under article 191 and 192 in the fourth schedule (Rasheed, 2004). The devolution chapter has been one of the most significant chapters of the constitution as it provides for change in the governing ways from a centralized system to a system of governance that is devolved. The

functions of the county government include legislations, executive functions and functions transferred from the national government and staffing of public servants at the county level (Nga`nga, 2011).

1.1.1 Green Supply Chain Management Practices

In the current contemporary competitive markets, managing supply chain in a Green manner has emerged as a strategic development goal that is sustainable for entities as it is a new innovative approach that enables the achievement of the environmental and financial benefits at the same time elimination of risks to the environment (Hoek, 1999). Zhu (2005) states that Managing Ecological Supply Chain (ESC) is just a contemporary tool in management which puts consideration on the environment and utilization of resources efficiently across the supply chain of an organization that is implemented through employment of ESCM in the organization's processes.

The Practice of GSC Management entails a combination of activities that a company makes use of to integrate activities of environmental management across the supply chains through employment of mechanisms that are market based (Sheu, Yen & Chae, 2005). These practices require entities to operate in collaboration with their supplying entities and customers to improve stability in the environment (Martusa, 2013).

According to Lacroix (2008), elements of green management include recycling of used products, use of energy efficient products, use of alternative fuels for vehicles and use of non-ozone depleting substances. Organizations across the world are making efforts to purchase goods and services that are environment friendly as both public and private entities institute measures that focus on the environment. Public sector entities realize reduced overall costs and reuse of materials and resources, improve employee health and stimulate the markets with new innovative products as observed by Zhu and Sarkis (2011).

Cankaya and Sezen (2019) established that the most used GSCM Practices are: purchase of green products, manufacturing of eco-friendly goods, distribution of green natured goods, eco-packaging, marketing of green products, civic education on environmental conservation, management of internal environmental and recovery of investment. The GSCM practices which were featured in this project are Green Procurement, Green Distribution, Green Packaging and Supplier Integration.

1.1.2 Sustainable Performance

Sustainability is concerned with the economic, social, and ecological levels, and it is motivated by advancement anxieties that are supported by a logic of being socially responsible (Das, 2018). Entities need to take into consideration how to maximize interpretations and knowledge suggestions to maintain sustainability amongst their diverse shareholders, as well as a commitment to sustainable development (ankaya & Sezen, 2019).

Sustainability entails thinking of the future with regards to economic, ecological and social parameters are interconnected, rather than separated, and balanced while pursuing greater quality of life (UNESCO, 2011). To accomplish this, institutions' economic and ecological aspects must be exclusive incorporated (Ahmed & Najmi, 2018). As a result, sustainable performance considers the economic, environmental and social fronts of performance.

According to Ahmed et al. (2020), TBL communicates to all shareholders that the firm's goal is to consider not just economic but social and ecological factors. Social performance considers the people factor, in that the organization must ensure that the people are comfortable and have better working conditions, that they are well paid, that the firm gives back to society through programs such as CSR, and that employees' rights are respected (Cousins et al., 2019). Social performance refers to an arranged set of GSCM ideologies and regulations that aim to advance the entity's image, protect workers' wellbeing and health, and ensure customer satisfaction and loyalty (Laari et al., 2016).

The economic factor in the TBL is a company's economic value and profits. The traditional quantifying parameters that is most commonly adopted when evaluating an organization's performance is the economic aspect. Additional economic indicators related to GSCM include costs and delivery reliability (Bu et al., 2020). This study adopted Annika and Cheng's (2018) definition of economic performance, which contends that economic performance is the company's might to reduce costs associated to materials purchased and processes of the entity.

1.1.3 County Governments in Kenya

In Kenya, County Governments is a creation of the 2010 Kenyan Constitution that is the actualization of devolved units as envisioned in the constitution which created the 47 County Governments under Articles 191 and 192 in the fourth schedule (GoK, 2010) which was further reinforced by the County Government Act of 2012 (Appendix II). The functions of the County

Governments include legislations, executive functions and functions transferred from the national government and staffing of public servants at the county level.

The counties handle various devolved functions including agriculture, health, advertising control, culture, education, childcare, animal control, transport, policy implementation and coordination (Nga`nga, 2013). The purpose of devolved governments was to enhance delivery of service to the people as well as governing the people in an effective way. Devolution has managed to safeguard the interest of marginalized and minority people in the county governments as well as ensuring that resources are equally shared Karanja (Njiiri, Were & Muturi, 2021).

It has also promoted economic and social development at the county level by making services to be accessed easily throughout the devolved counties. Devolution also brought about financial growth due to the taxes and revenues collected by the local government (Njagi, Namusonga & Shale, (2020). Trade has also been promoted due to devolution as new markets have been developed, licensing of trade has been improved, the counties have been able to market themselves through digital and print media as well as issuance of subsidies.

Education has also been promoted through the devolution as bursaries and CGF funds have been increased at the county level and thus the bright but needy students are able to go on with their studies as they receive bursaries from the county governments (Gathu, Gichunge & Senaji, 2021).

Devolution of counties has played a major role in creating employment opportunities to the residents of the respective counties. More funds have been channeled through the devolved government and thus development projects have been carried out and governance has also been brought nearer to the people as compared to the previous system where governance and all major decisions took place in the national government as opined by Hope (2014). Devolution has also brought economic growth to the counties as the county government collect revenues from its residents and carry out development within the county which enhances economic growth as noted by Gathu et al. (2021).

The existing regulatory framework in the counties has not been effective as there have been many cases of delays in service delivery, high cost and improper management of wastes. These challenges can only be addressed through implementation of GSCM Practices in performing

of key sector in managing the supply chain. County Government procurement is responsible for 20-30% of GDP, implying that the necessity to embrace Green supply chain management cannot be understated (Thai & Grimm, 2000; Ngigi & Busolo, 2019)

1.2 Research Problem

To achieve an equilibrium between Ecological and Economic Performance has become the new norm and most entities are striving to achieve these through their daily operations. This has been occasioned by the competition that entities face, increased and stringent government regulations, pressure from different stakeholders who are all championing for green services and products and clean environment. Ecological effects like diminishing resources that can't be replenished, global warming, use of noxious substances has been on the rise and most entities are trying to fight them through the adoption of GSCM Practices (Habib, Bao, Nabi, Dulal, Asha & Islam, 2021).

Firms are trying to gain competitive edge over their peers as well as enhance their performance by adoption of GSCM Strategies. Adoption of the Green Strategies has enhanced economic as well as ecological Performance (Tseng, Islam, Karia, Fauzi & Afrin, 2019). Some of the benefits of GSCM include reducing emission and environmental impact (Wang, Zhang, Zhang, Gao & Zhang, 2021), conservation of natural resources (Jiang, Han & Huo, 2020)), reduced waste (Micheli, Cagno, Mustillo & Trianni, 2020), lower transportation cost by reducing shipment waste, reverse logistics and making shorter trips (Çankaya & Sezen, 2019), improved reputation (Jemai, et al., 2020) and improved quality products.

County governments have faced challenges in the past including poor green supply chain management strategies resulting in provision of poor service delivery, not engaging suppliers early enough and educate them on green products and innovations, not providing clear specifications pertaining green products and not educating the public on the relevance of environment conservation. Ngigi and Busolo (2019) conclude that the government is also not doing enough to fund the county government and enable them fully engage in GSCM. There are also lack of stringent measures and availability of cheap alternatives are also some of the GSCM implementation challenges faced by the County Governments (Ambrose, 2017).

Several studies that directly link Green Supply Chain and performance have been conducted and the outcomes have been mixed: comprising of negative and positive, significant as well as non-significant. A positive relationship was observed by Cousins, Lawson, Petersen and Fugate

(2019), Cankaya and Sezen (2019), Ochieng (2019) and Mohammed, Lagat and Ngeno (2019). Other studies found non-significant relationship (Ngugi and Kihara, 2019) and Ondoro (2018) while others found mixed results (positive and negative) like Serem (2019) who noted that support towards environmental management affirmatively impacts on performance of SC while re-usability of product has an undesirable and significant result on performance. These inconsistent findings need further research to resolve them.

Many of the reviewed studies have concentrated on other sectors and not County Governments, some have concentrated in the manufacturing Sectors (Cankaya & Sezen, 2019; (Cousins, Lawson, Petersen & Fugate, 2019; Nyariaro, 2017). some were done in the supermarkets (Watulo, 2017; Oduor 2019; Wahome, 2020). These gaps have occasioned the need for a study to configure possible connection between implementing GSCM by the County Governments and performance.

Methodological gaps were also noted in some of the studies linking GSC Management to performance as some used simple analytical methods such as descriptive statistics. (Cousins, Lawson, Petersen and Fugate 2019) and explanatory Research (Mohammed, Lagat & Ngeno, 2019) Also, some researchers used secondary data which may not be relevant to the study (Sharma, Chandna & Bhardwaj, 2017; Mutangili, 2019). This study utilized primary data and analyzed by multiple regression analysis.

From the aforementioned studies, it is apparent that there are major conceptual, contextual and methodological gaps on the studies linking sustainable Performance to GSC Management at the Counties in Kenya. This research addressed these gaps by providing answers to the subsequent queries: to what level has Green Supply Chain Management Practices been adopted at the county government in Kenya? What is the correlation amongst green supply chain management practices and Sustainable performance at the county government in Kenya? What are the barriers encountered in implementing green supply chain management practices at the county government in Kenya?

1.3 Research Objectives

Specific objectives were:

i. To find out the level of implementation of Green SCM practices in county governments in Kenya

ii. To establish the relationship between Green SCM practices on Sustainable performance of county governments in Kenya
iii. To determine the challenges encountered in implementing green SCM practices at the county government in Kenya.

1.4 Value of the Study

The outcome will assist county governments in Kenya through formulating best practices and policies on GSCM practices to improve their overall performance.

Other firms apart from the county government are bound to benefit as they will use the study to see how beneficial the practices are and decide to adopt them. Other firms can use it as a benchmark to see the best adopted GSC management practices that has influence and decide to incorporate them in their entities to see if they can have the same performance.

Future scholars will also use the outcome of this research to carry out further studies with regard to how GSCM practices can be put in place to enhance sustainable performance. This can be achieved by looking at the research's limitations. The outcome will add more literature and theory to the existing one with regard to the concepts of the study and how they help an organization improve on their supply chain performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This segment starts by a discussion of theories of foundation of the research, followed by a discussion of green SCM practices then empirical review is carried out and the chapter concludes by providing conceptual framework.

2.2 Theoretical Literature review

Diverse theories that can governs Green Supply Chain practices exists. This research was founded on institutional theory, resource based theory and triple bottom line theory.

2.2.1 Institutional Theory

Institutional theory was fronted by Hirsch (1975) to explain how external pressure influences the operations of the firm. There are three external pressures (DiMaggio & Powell, 1983) that may have an impact on operations of the entity. According to this theory, these pressures include normative, mimetic and coercive. These pressures emanate because firms operate in social networks of institutions. Coercive pressure emanates from those people in authorities and power for example the government.

With mimetic pressure, an organization strives to copy or mimic the actions and activities undertaken by successful firms in an industry. This is one of the key drivers for companies that have adopted practices of green supply chain management (Taylor & Christmann, 2001). Normative pressure, on the other hand, emanate from external parties with a stake in the company like shareholders (Sarkis & Zhu, 2007). Firms that yield to these identified pressures are ones conceived to be legitimate in the society. The theory is thus pertinent to the concepts under research as it explains how society and pressure from different fronts can affect the use and implementation of practices of GSCM.

2.2.2 Resource Dependency Theory

The development of this theory goes to Pfeffer and Salancik (1978) and Godfrey (1998). The theory was formulated to illustrate how the behavior of an organization is affected by external resources. For an overall competitiveness of an organization and improved performance, procurement of external resources is crucial. The theory is based on an assumption that very

few firms can sustain their operations from internal critical and strategic resources hence they should depend on others for resources that can help them improve performance (Heide, 1994).

It is vital for suppliers to provide rare green materials or products, for the firm to use the materials or products well and for the customers to effectively use and dispose of the products in the right way as required. According to this theory, partners in the supply chain depend on each other for strategic resources. Therefore, the theory forms the basis of this discussion on GSCM practices especially collaboration and partnerships with suppliers.

2.2.3 Triple Bottom Line Theory

Business consultant John Elkington devised the notion "triple bottom line" in the 1990s to refer to the economic, ecological and social value of investment that may accumulate outside of a company's financial profit (Elkington, 2004). The TBL school of thought seeks to more accurately evaluate the assets and moderate resources in order to use capital in an efficient and effective way. The notion can be viewed in terms of the three Ps (people, planet, and profit), as explained by Roberts & Cohen (2002),

The concept of triple bottom line aspect is guided by and related to the sustainable development ideology—that development ought to take place in such a manner that the needs of present generations are realized while also preserving the circumstances and prospects for upcoming generations to do likewise (WCED, 1987). To achieve sustainability, a company should look beyond the single bottom line of profits, according to the triple bottom line theory. Sustainable management is achieved when businesses commit to their communities and the environment, as well as their profits, in a balanced relationship (Braccini & Margherita, 2019).

This theory therefore helps managers and decision makers in determining the way they manage their operations. Thus, TBL is applicable as it helps decision makers of county governments in Kenya to make strategic decisions that incorporates the 3PS in their operations and come up with better GSCM practices that influence sustainable performance. The theory is also relevant due to the fact that the topic under study is factors in sustainable performance which is evaluated on the triple bottom line aspects of social, ecological and economic performance.

2.3 Green Supply Chain Management Practices

These are activities that reduce carbon dioxide, have minimal effect on the environment, have economic viability and be able to preserve the quality of life for the current and future

generation. The GSCM practices which were featured here are Procurement of Green Products, Green Distribution, Ecological Packaging and Supplier Integration.

Green Procurement is about all the activities involved in purchasing of services and products that has little effect on the environment. It puts into consideration both the environment and the health of living beings be it animals or humans by ensuring that they produce products of high quality at affordable prices (Lee & Klassen, 2008). Green Procurement basically entails purchasing of products or raw materials that is environment friendly and has minimal effect on the environment.

The organization that is involved has to measure the effect of the product its purchasing to the environment at all the life cycle stages. For this to happen the following costs has to be considered: disposal, transportation, handling, warehousing and inventory, procuring and lastly the cost of securing the initial raw materials for manufacturing (Lee & Klassen, 2008). Green procurement influences the production of quality products (Walker & Jones, 2012).

Distribution is the product movement from the stage of production to the end customers across the supply chain (Wisner & Stanley, 2007). Distribution entails all the processes that transpire between the retailers, producers, and end users. The main roles of distribution are reverse logistics, physical transportation, labeling, warehousing and storage, and packaging. Green distribution refers to any means of hauling or transporting of goods between suppliers and customers with lowest possible influence on the environmental.

It involves the entire process of distribution from the processing of the order, storage, picking of the order, packaging, loading of the truck, delivery to the customer or purchaser and return of packaging (Walker et al., 2008). Green Distribution takes into consideration reduced CO2 emissions, developing products that are friendly towards the environment, and well designed and reduced packaging (Walker et al., 2008).

Sarkis (2009) posits that the characteristics of Green Distribution involves; fulfillment of demand at the right place and time, put into consideration social and ecological aspects and not only economical, ensure complete life cycle of products are sustainable, factor in the reverse logistics aspect, monitoring and improving socio-ecological effects of distribution processes in order to adopt better technology developments and latest opinions of the green term, be

competitive without jeopardizing the efficiency of the distribution channels (Walker et al., 2008).

Packaging entails how a product is covered and its outside looks as well as the quantity contained in each batch. Packaging affects a products transportation based on its features like packaging material and size. Green packaging entails the use of packaging materials that are eco-friendly and reduced packaging (Ninlawanet al., 2010). Ninlawanet al. (2010) further posits that there is need to collaborate with suppliers in order to have a standardized packaging, encourage the vendors to adopt methods of packaging that incorporates return and reuse and also help in promotion of returned packaging.

Green packaging also entails proper labelling of products (Amemba et al., 2013). Labeling of a product plays an important role in ensuring that there is proper communication on how to use the product by its destined users (Hasan, 2013). Eco-labels enlighten the users about a products socio-environmental effects, production methods, the products packaging and recyclability ability, the traits that a product possesses or even the content of the product and how to use it (Sustainable Packaging Coalition, 2017).

Sustainable Packaging Coalition (2017) characterizes Green packaging as that which can be reused, renewable, recyclable and have economic viability. Improving the design and materials that are used for packaging enhances its logistical operations and improves vehicle load (Sustainable Packaging Coalition, 2017).

Supplier Integration is how the organizations deals with its suppliers through the formation of a good and working relationship between the two parties and involving their suppliers through Early supplier engagement, developing them by funding them, sharing of relevant information with suppliers and training them through seminars and workshops (Walker et al., 2008). For the success of the entity, the firm often consents to form a relationship with its key suppliers on a long-term basis to achieve financial stability and at the same time have a sustainable relationship (Baenasa et al., 2010). It involves making sure that the suppliers are educated on each and everything that the company requires of them.

This means that the suppliers work closely with the organization to be able to integrate sustainable policies and beliefs into their corporate strategy and their daily operations. The company does this to ensure that there is trust between them and the suppliers which will make

them have a shared thinking regarding green and sustainable issues and being able to build one another thus improving the overall performance (Sarkis et al., 2011). Walker and jones (2012) add that formation of good relationship with the suppliers through supplier integration helps reduce unnecessary cost, improves product quality and enhances speed of delivery of materials to the company.

2.4 Empirical Literature Review

Numerous researches on GSCM Practices and performance have been done both globally and locally. Globally, Cankaya and Sezen (2019) on practices of managing Green Supply Chains on sustainable performance while aiming at exploring the impacts of the scopes of management of supply chains Social, Economic and Ecological performance. The dimensions to be covered in this study include; purchasing of green products, manufacture of green materials, distribution of green products, packaging of green materials, undertaking green marketing, educating on environmental conservation, management of the environment and recovery of investments. The methodology used was e-mail survey and cross-sectional one on one with data being gathered from manufacturing entities in Turkey. The findings indicated that GSCM influenced sustainability performance. Methodologically, there is a gap as the current study is adopting descriptive research design.

Afum et al. (2020) on determining how manufacturing SMEs of Ghana's sustainable performance was impacted by Green manufacturing and explanatory research design was employed. Questionnaires were embraced in information gathering of 178 manufacturing SMEs in Ghana and the outcome revealed that green manufacturing affirmatively impacts social, economic and ecological performance. Focused on green manufacturing and not GSCM.

Han and Huo (2020) focused on the impacts of GSC integration on sustainable performance. Structural equation modeling was the methodology embraced to assemble data from 206 Chinese manufacturers. The results reveal that integrating green customer and supplier influences ecological, economic and social performance. Focus was on GSC integration and not GSCM practices

According to Cousins, Lawson, Petersen and Fugate (2019) which was based on an investigating GSCM and organizational performance that relied on information obtained from the manufacturing entities in UK that was analyzed by use of moderated hierarchical regression, practices of GSCM are correlated to an improved performance. As a result, there

exists a correlation among GSCM and performance mainly cost element. The study used survey data while the current study intends to adopt Census which is the study of the whole population.

Sharma, Chandna and Bhardwaj (2017) studied performance pointers of Green SCM in agricultural Sector and adopted systematic literature review method. The study findings indicated the management of the internal environment, designing of the environment and pressure from the regulator are significant indicators of performance. The study focused on related performance indicators and not sustainable performance and methodologically, it was systematic literature review and not descriptive research design.

Sinaga, Mulyati, Darrini, Galdeano & Prasetya (2019) focused on management of Green supply chains and performance in organizations. The random sampling technique was utilized across the three hundred Indonesian medic officers who were respondents. The SMEs that undertake practices of managing green supply chains have their sales improved, customer loyalty enhanced and improved profit levels. There is both conceptual and methodological gap as they focused on organizational performance and used sampling.

Bor. (2021) looked at Green Supply Chain Management Practices and Performance of Food and Beverage Processing Sector. The research adopted explanatory design with information gathered from 187 food and beverage processors registered by KAM. GSCM were found to influence performance. The study however did not focus on sustainable performance.

Ochieng (2019) focused on the Effect of Practices involved in Eco-Purchasing and Performance of Entity's that manufacture Chemical in Nairobi while using descriptive survey methodology. Eco-Purchasing practices were noted to contain a meaningful impact on performance of the firms manufacturing chemical manufacturing chemicals. The study focused on large chemical manufacturers and not county governments of Kenya.

Serem (2019) studied the Effect of Adopting GSCM on Supply Chain Performance in Uasin Gishu County. Descriptive survey was adopted as the methodology and it was noted that GSCM adoption has an affirmatively impacts SC performance. However, it only focused on one county leaving a gap for the study of all the 47 counties.

Ngugi and Kihara (2019) on Sustainable SC and Performance of Kenya's Oil Sector in adopted descriptive design. The outcome portrayed that managing reverse logistics, adopting ICT, early

vendor involvement and ecological procurement adoption positively correlates with oil entity's performance. The study focused on supply chain sustainability and not GSCM Practices.

Mohammed, Lagat and Ngeno (2019) employed explanatory research in determining how performance of Manufacturing Firms is influenced by Sustainable Supply Chain. It was postulated that for firms to boost their performance, decision makers need to implement social, economic and environmentally sustainable strategies. Ecological sustainable strategies like materials recycling, embracing ecological and clean systems of production ought to administer to augment the performance of production firms. The study focused on sustainable supply chain leaving a gap for green supply chain. Contextually, the study focused on manufacturing firms leaving a gap for the county governments.

Mutangili (2019) studied Green Purchasing and Performance of Parastatals in Kenya using Systematic Literature review. The firm's performance was influenced by Green Purchasing. Eco-Distribution, Reverse logistics and Eco-Procurement supplier selection and Eco-Marketing were noted to significantly impact performance. There is a methodological, contextual and conceptual gap in this study. Methodologically, the study used systematic literature review while the current one is using descriptive design. Conceptually, it focused on Green Procurement and not Green Supply Chain.

2.5 Challenges of Green Supply Chain Management Implementation

As per Wilkerson (2008), most of the organizations that implement GSCM Practices rarely integrate environmental approaches into their supply chain processes. Insufficient information on GSCM best practices and related metric have left entities handicapped on what to do and implement (Cognizant, 2008). The implementation practices of GSCM can be impacted by several aspects such as no support from the state. According to Lee (2008), government has the ability to improve awareness through improvement in funding, increase training in business and tax policy that enhances initiatives of GSCM.

Walker *et al.* (2008) categorizes challenges under external barriers that are made up of poor commitment from suppliers and barriers that specific industries, while the internal barriers include no legitimacy and cost. According to Khiewnavawongsa and Schmidt (2013), implementing GSCM require investment in sophisticated technologies and specific skills sets. As such, organizations without these will mean that training programs are put in place for

employees which are costly again. Absence of regulations and stringent legislations is an additional barrier in adoption of GSCM in County Governments.

In countries where there are no rules and regulations governing environmental concerns, firms would be reluctant to implement these practices. Having clearly stated government rules and regulations result into coercive pressure that forces County Governments to adopt Green supply chain management practices (Ojo, Mbowa & Akinlabi, 2014). The other challenge in adoption of GSCMPs is the high initial costs (Balaji et al. 2014). Most organizations base their decision to a short-term horizon ignoring the long-term Green Initiatives benefits that would accrue from adopting Green supply chain management practices.

It becomes even extra challenging in organizations with limited budgets and prioritization is done on the basis of urgency rather than importance. Some of the initial costs incurred during GSC management include investment in advanced technologies, hiring, training and monitoring employees and making sure they are motivated (Srivastav & Gaur, 2015). Inadequate support from the senior and top management team in County and National governments is another challenge facing the implementation of GSCMPs.

According to Srivastav and Gaur (2015), top management support is key in implementation of GSCMPs and they are responsible for availing sufficient resources in terms of human capital, the technology, promoting effective communication and effectively rewarding and motivating employees to accept GSCMPs in their organizations. The process of GSCM is affected by lack of awareness in the public on the need to return the products that have been used.

It can also provide assistance by establishment of return collection points and development of collection points to enhance public participation. The manufacturers are to make use of green designs in development of their products so as to minimize the usage of hazardous and toxic materials order to enhance recycling

2.6 Summary of Empirical Literature Review and Knowledge Gaps

The Analysis of studies has aided in better understanding on the bearing that practices of GSCM have on sustainable performance of different organizations. The tabulation in 2.1 below summarized some of the work done on GSCM and various performance.

Table 2. 1 Summary of Studies on Green Supply Chain Management Practices

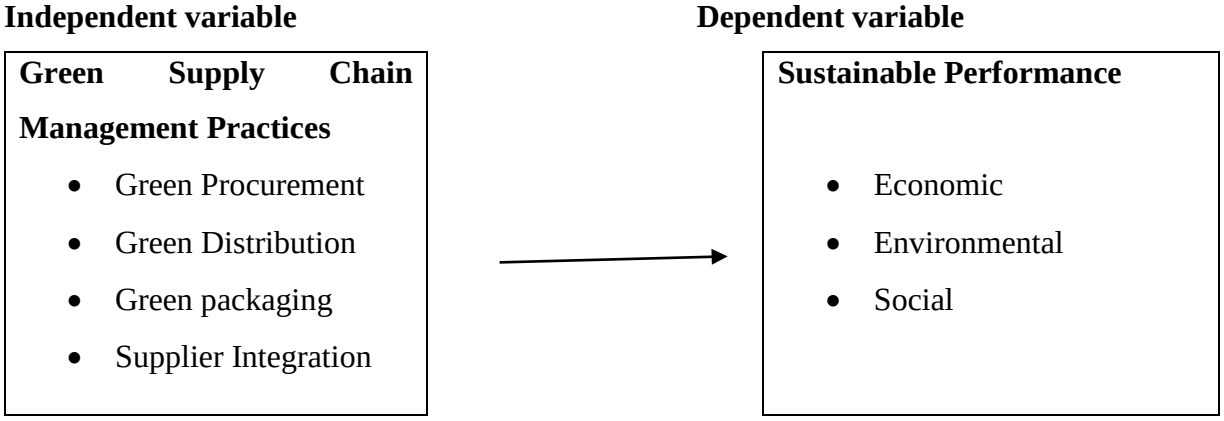
Author(s)	Focus of the Study	Methodology	Research Findings	Research Gap	How gaps are addressed in this study
Sharma, Chandna& Bhardwaj (2017)	GSCMP and related performance indicators	Systematic Literature review	External pressure leads to adoption of GSCM Practices	The study adopted secondary data and left a gap for	Primary data was adopted by the current study
Cankaya and Sezen (2019)	GSCMP on sustainability performance in turkey manufacturing firms	Cross-sectional research design	GSCM influenced sustainability performance	The study was conducted in manufacturing firms	The study focused on the county governments
Cousins, Lawson, Petersen and Fugate (2019)	GSCM and performance in UK manufacturing	descriptive survey	GSCM Practices had impact on cost and environmental preservation	The study used survey	The study used complete enumeration (Census) in all counties
Sinaga et al. (2019)	GSCM and Organizational Performance of SMEs in Indonesia	survey research design	GSCM leads to good reputation, customer loyalty and increased profit	The study only focused on SMEs and organizational performance	Covered county Governments and sustainable performance
Ochieng (2019)	Green purchasing and performance in manufacturing firms	Descriptive survey	Green purchasing Influences Performance	Mainly focused on manufacturing	Focus was on all the County Governments
Serem (2019)	GSCM and SC Performance of Uasin Gishu County	Descriptive survey	GSCM positively influences SC performance	Focused on Uasin Gishu County	Focus was on all the County Governments
Ngugi and Kihara (2019)	SC Sustainability and performance of Oil Industry	descriptive survey design	SC Sustainability influences performance	Focus on SC sustainability	Focus was on GSCM
Ngeno (2019	Sustainable SC in manufacturing entities	Descriptive cross sectional	Environmental sustainability influences performance	Covered sustainability as a whole and not	A gap in environmental sustainability and county government
Mutangili (2019)	Green procurement and performance of Parastatals in Kenya	Empirical Literature Review	Green procurement improves organizational performance	Used Systematic literature review	Adoption of descriptive research design

Source: Researcher (2021)

2.7 Conceptual Framework

The independent variable of this research is GSCM Practices that is operationalized by Green Procurement, Green Distribution, Green Packaging and Supplier Integration. The dependent variable is Sustainable Performance which is quantified through Economic, Environmental and Social Performance. Conceptual model is illustrated n figure 2.1 below

Figure 2. 1 Conceptual Model



Source: Researcher (2021)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section showcases the methodology utilized in fulfilling the objectives. It starts by an argument of the study design, elaboration on population; data gathering techniques are discussed next. The chapter concludes with the discussion of analysis' data tools.

3.2 Research Design

Descriptive design was conceptualized for the research since it entails the description of phenomenon in a careful and well-planned manner which allowed the researcher to get comprehensive and precise information. The design also provided the researcher with a way of collecting the data such as questionnaire. It showcases the features of specific situations and it contains the benefit of being flexible and accurate (Kombo & Tromp, 2009).

3.3 Population of the Study

The population was made up of the entire County Governments in Kenya which are Forty-Seven in number (CoG, 2021) (Appendix II). Census was executed as per the minimal population out since the population was relatively small and also to enhance the response rate.

3.4 Data Collection

A self-administered questionnaire was adopted in gathering primary data administered by emails (google forms). A single respondent per county, which were the heads of supply chain management of the 47-County Government in Kenya or their equivalent, were selected. The head of the supply chain management or their equivalents were the key persons to provide correct information because they oversee the procurement activities in the Counties. The questionnaire was made up of 4 segments namely; A captured data on demographic information while B asked questions on the practices of Green Supply Chain Management. Section C gathered data on measures of sustainable performance. Finally, Section D gathered data on challenges of implementation of GSCM Practices. A Likert scale was employed to standardize the research instruments and make them easy for the researcher to analyze.

3.5 Data Analysis

Quantitative data analysis method was used. Section A, B and D which captured the general information, objective one (implementation of Green Supply Chain Management practices and objective three (challenges of implementation) were analyzed using descriptive statistics.

Section C of the questionnaire correlated the link between GSCM and sustainable performance was regressed.

Regression model is;

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$

Y = Sustainable Performance

Y1=Economic performance

Y2=Environmental performance

Y3=Social performance

a = constant

b_1-b_4=are the regression coefficients for green procurement, green distribution, green packaging and supplier integration.

X_1-X_4= The independent Variables

Where:

X_1= Green Procurement

X_2= Green Distribution

X_3= Green Packaging

X_4= Supplier Integration

e is the error term

Table 3. 1 Summary of Collecting Data and Method of Analysis

Objective	**Questionnaire**	**Data Analysis**
Background data	Section A	Descriptive Statistics
Level of adopting GSCM in County Governments in Kenya	Section B	Descriptive statistics
Relationship between GSCM Practices on sustainable performance in County Governments in Kenya	Section C	Regression analysis
Challenges of implementation of GSCM on Sustainable performance in County Governments in Kenya	Section D	Descriptive statistics

Source; Researcher (2021)

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter displayed the analysis outcome and their clarifications as per the results and related literature. The rate of response is indicated followed by discussion of general information and then GSCM implementation and the regression analysis showing the correlation amongst Green supply chain management and sustainable performance of the county governments in Kenya.

4.2 Response rate

This study was a census of forty seven county governments in Kenya and valid data were acquired from 39 county governments a representation of 82.98% of the respondents. The returned questionnaire rate was considered pertinent for the analysis as Tabachnick and Fidell (2007) noted that a rate exceeding 70 % is satisfactory for the analysis and presentation of findings.

4.3 General Information

This information was grounded on the participant's positions at the county governments and the period that they had served at their current positions and the outcome are illustrated below

Table 4. 1 General Information

Position in the organization	**Frequency**	**Percentage (%)**
Supply Chain Managers	20	51.28
Assistant Supply Chain Managers	10	25.64
Senior Supply Chain Officers	5	12.82
Supply Chain Officers	4	10.26
Total	**39**	**100**

Source; Research Data

Table 4.1 results displays that 51.28% of the study's participants represented supply chain managers, 25.64% assistant supply chain managers, 12.82% were senior supply chain officers while supply chain officers were 10.26%. The outcome concludes that most of the respondents (76.92%) occupied management levels (supply chain managers, assistant supply chain managers) and were better knowledge to provide information on the study.

Table 4. 2 Length of service

Length of service (years)	Frequency	Percentage (%)
0 -1	3	7.69
1 -5	6	15.39
6 -10	18	46.15
Over 10	12	30.77
Total	**39**	**100**

Source; Research Data

Table 4.2 displays that 7.69% of the supply chain managers and officers had served in the county government for less than a year (0-1), 15.39% for 1-5 years while 46.15% for 5-10 years. The last 30.77% had served the counties for a time exceeding ten years. Hence, 76.93% of the supply chain managers and officers had served in the county governments for a period exceeding five years, an indication that they had worked long enough at the county to monitor the influence of GSCM and sustainable performance and were suited to participate in the study.

4.4 Extent of Green Supply Chain Management Implementation

Objective one was to determine the extent that the county governments in Kenya had adopted Green supply chain management practices. A Likert scale of 5 points was utilized to analyze the outcome where 1 was to a very small extent while five to a very large extent.

The results are summarized in table 4.4.1 below

4.4.1 Ranking of green supply chain management practices

Green supply chain management were ranked based on their level of implementation and table 4.3 present the outcome.

Table 4. 3 Ranking of green supply chain management practices

GSCM Practices	Mean	Std. Dev	Ranking
Green procurement	3.65	1.58	1
Green distribution	3.44	1.66	2
Supplier integration	3.42	1.67	3
Green packaging	3.35	1.71	4

Source: Research Data (2021)

Table 4.3 indicate that green procurement was firstly ranked based on the level of implementation as it was implemented to a large extent by the county governments in Kenya showing that green procurement is crucial in the county governments and the outcome are supported with those of Lee and Klassen (2008) who noted that green procurement puts into consideration both the environment and the health of living beings by ensuring that they produce products of high quality at affordable prices. Thus green procurement is crucial in production of quality products as well as obtaining value for money. Walker and Jones (2012) affirms that green procurement influences the production of quality products as well as enhances a firm's environmental performance.

Green distribution was secondly ranked and it was implemented to a medium extent by the county governments in Kenya. The findings disagree with that of Walker et al. (2008) who noticed that green distribution aids a firm in reducing CO2 emissions, proper designing and well reduced packaging. Sarkis (2009) posits that green distribution helps in fulfillment of demand at the right place and time, put into consideration social, economic and ecological aspects as well as ensuring complete life cycle of products are sustainable.

Supplier integration was thirdly ranked, also implemented on a medium extent, by the county governments in Kenya. The results contradict that of Martusa (2013) who posited that supplier integration practices are vital as it enhances collaboration between the firm with its suppliers and aids in achieving sustainable performance. Baenasa et al. (2010) add that for the success of the entity, the firm often consents to form a relationship with its key suppliers on a long-term basis to achieve financial stability and at the same time have a sustainable relationship. Walker and jones (2012) continues that formation of good relationship with the suppliers through supplier integration helps reduce unnecessary cost, improves product quality and enhances speed of delivery of materials to the company

Lastly ranked was green packaging which was implemented to a moderate extent and had the lowest mean and standard deviations. The outcome are opposed to that of Sustainable Packaging Coalition (2017) who pointed out that improving the design and materials that are used for packaging enhances an entity's logistical operations and improves vehicle load. Labeling of a product plays an important role in ensuring that there is proper communication on how to use the product by its destined users (Hasan, 2013). Walker and jones (2012) concludes that Eco-labels and packaging enlighten the users about a products socio-

environmental effects, production methods, the product's packaging and recyclability ability, the traits that a product possesses or even the content of the product and how to use it.

4.5 Green supply chain management and sustainable performance

The research sought to establish the correlation between GSCM and sustainable performance and the outcomes are subsequently presented.

4.5.1 Green supply chain management and economic performance

The research aimed at ascertaining the correlation between green supply chain management and economic performance and the outcome are displayed in table 4.4

Table 4. 4 Regression Coefficient of economic performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.584	.364		4.356	.000
	Green Procurement	.639	.189	.720	3.381	.002
	Green Distribution	.199	.101	.187	1.970	.031
	Supplier Integration	1.015	.167	.022	6.078	.028
	Green Packaging	1.165	.172	-.063	6.773	.010

a. Dependent Variable: Economic Performance

Source: Research Data (2021)

$Y_1 = 1.584 +.639X_1+.199X_2+1.015X_3 +1.165X_4$ ……………………………………..…...(i)

For significant testing at 5% level, the critical p value is 5%

From table 4.4, it is noted that each variables are statistically significant since the p values are below 5%. Green procurement (P=0.002), green distribution (P=0.031), supplier integration (P=0.028) and green packaging (P=0.010). It is also observed that all these variables are positive coefficients. This implies that green procurement, green packaging, green distribution and supplier integration practices have a positive and statistically substantial correlation with economic performance at the county governments in Kenya

Table 4. 5 Model Summary of economic performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.829[a]	.687	.650	.44759

a. Predictors: (Constant), Green Packaging, Green Distribution, Green Procurement, Supplier Integration

Source: Research data (2021)

As shown in table 4.5, the R^2 is 0.687, approximated as 69%. This means that 69% of the variation in economic performance is accredited to the variation in green packaging, green distribution, green procurement and supplier integration model. From the rule of thumb, this is a good prediction model. Unexplained variation of 31% is accounted for by variation in independent variables not included in the model and pure chance factors.

Table 4. 6 ANOVA for economic performance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14.932	4	3.733	18.633	.000[b]
	Residual	6.812	34	.200		
	Total	**21.744**	**38**			

a. Dependent Variable: Economic Performance

b. Predictors: (Constant), Green Packaging, Green Distribution, Green Procurement, Supplier Integration

Source: Research Data (2021)

The overall model has a statistical relevance at significance level of 5% as the P value is 0 as indicated in Table 4.6 Further, the degree of freedom (4, 34), the critical value of F is 3.8 Table 4.6 display that the value of calculated F is 18.633 which is higher compared to the critical value. This also confirms the statistical significance of the overall model. Hence it can be concluded that this is a suitable prediction model for economic performance.

4.5.2 Green supply chain management and environmental performance

The research wanted to ascertain the correlation between green supply chain management practices and environmental performance and the findings are shown in table 4.7.

Table 4. 7 Regression Coefficient of environmental performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.067	.619		3.342	.002
	Green Procurement	-.190	.158	-.161	-1.203	.037
	Green Distribution	.516	.144	.552	3.580	.001
	Supplier Integration	-.056	.085	-.094	-.661	.013
	Green Packaging	.210	.124	.283	1.702	.038

a. Dependent Variable: Environmental Performance

Source: Research Data (2021)

$\mathbf{Y_2 = 2.067 - .190X_1 + .516X_2 - .056X_3 + .210X_4}$ **…………………….…………………..…...(ii)**

From table 4.7, it is noted that all the variables are statistically significant. Green procurement (p=0.037); green distribution (P=0.001); supplier integration (P=0.013) and green packaging (p=0.038). This infers that all the independent variables have significant correlation with environmental performance.

Table 4. 8 Model Summary of environmental performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.738[a]	.645	.491	.40095

a. Predictors: (Constant), Supplier Integration, Green Distribution Green Packaging, Green Procurement

Source: Research data (2021)

As shown under table 4.8, the R^2 is 64.5% and is approximately 65%. This indicates that 65% of environmental performance's variation is illuminated by variation in the independent variables. From the rule of thumb, this is a good prediction model. Unexplained variation of 35% is accounted for by variation in independent variables not included in the model and pure chance factors.

ANOVA's outcome are tabulated in 4.9.

Table 4. 9 ANOVA of environmental performance

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	6.534	4	1.634	10.162	.000[b]
1	Residual	5.466	34	.161		
	Total	**12.000**	**38**			

a. Dependent Variable: Environmental Performance

b. Predictors: (Constant), Supplier Integration, Green Distribution Green Packaging, Green Procurement

Source: Research Data (2021)

As per table 4.9 it is witnessed that the overall model is significant as seen from the P value of 0 and the F value of 10.162 which exceeds the critical value of 1.634; hence this is a suitable prediction model for environmental performance.

4.5.3 Green supply chain management and social performance

The study intended to determine the correlation between green supply chain management and social performance and the outcome are tabulated below.

Table 4. 10 Regression Coefficient of social performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	2.036	.405		5.027	.000
	Green Procurement	-.199	.101	-.210	-1.970	.395
1	Green Distribution	.251	.127	.347	1.976	.036
	Supplier Integration	.641	.186	.958	3.446	.002
	Green Packaging	.273	.192	.274	1.421	.015

a. Dependent Variable: Social Performance

Source: Research Data (2021)

$$Y_3 = 2.036 - .199X_1 + .251X_2 + .641X_3 + .273X_4 \quad \text{...(iii)}$$

From table 4.10, it is noted that 3 of the variables are statistically significant. These are green distribution (P=0.036), supplier integration (P=0.002) and green packaging (P=0.015). One variable, which is green procurement is not significant (P=.395)

These variables also have positive coefficients. This implies that green packaging, supplier integration and green distribution practices have an affirmative and statistically significant correlation to social performance. This indicates that green distribution, supplier integration

and green packaging have statistically significant relationship with social performance. While that of green procurement is non-significant.

Table 4. 11 Model Summary of social performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.770[a]	.592	.544	.49898

a. Predictors: (Constant), Green Packaging, Green Distribution, Green Procurement, Supplier Integration

Source: Research data (2021)

As shown in table 4.11, the R^2 is 59.2 % and is approximately 59%. This infers that 59% of the variation in environmental performance is due to the variation in the adopted independent variables. From the rule of thumb, this is a satisfactory prediction model. Unexplained variation of 41% is accounted for by variation in independent variables not included in the model and pure chance factors

ANOVA outcome are tabulated in 4.12.

Table 4. 12 ANOVA Analysis of social performance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.304	4	3.076	12.354	.000[b]
	Residual	8.465	34	.249		
	Total	**20.769**	**38**			

a. Dependent Variable: Social Performance

b. Predictors: (Constant), Green Packaging, Green Distribution, Green Procurement, Supplier Integration

Source: Research Data (2021)

Table 4.12 demonstrates that at 5% significance level, the calculated value of F is 12.354 and F critical is 3.076 and a P value of 0% that does not exceed 5%. Hence, the study model is significant and thereby suitable for prediction of social performance.

4.5.4 Green supply chain management and sustainable performance

The research sought to examine the correlation between green supply chain management and sustainable performance and the variables were regressed to produce the subsequent outcomes.

Table 4. 13 Regression Model Summary of sustainable performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.855[a]	.732	.700	.35067

a. Predictors: (Constant), Green Packaging, Green Distribution, Green Procurement, Supplier Integration

Source: Research data (2021)

As per table 4.13, R^2 is 0.732 which is approximately 73%. This implies that 73% of the changes in sustainable performance is attributed to the variation in the studied independent variables. From the rule of thumb, this is a very good prediction model. Unexplained variation of 27% is accounted for by variation in independent variables not included in the model and pure chance factors. Analysis of variance is subsequently presented

Table 4. 14 ANOVA for sustainable performance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.409	4	2.852	23.195	.000[b]
	Residual	4.181	34	.123		
	Total	**15.590**	**38**			

a. Dependent Variable: Sustainable Performance

b. Predictors: (Constant), Green Packaging, Green Distribution, Green Procurement, Supplier Integration

Source: Research data (2021)

With regards to table 4.14, the model P value is 0% and does not exceed 5%. Hence the model is a suitable predictor of sustainable performance.

Table 4.15 presents the regression coefficients of the research

Table 4. 15 Coefficients Analysis of sustainable performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.499	.285		5.259	.000
	Green Procurement	.397	.148	.528	2.682	.011
	Green Distribution	-.066	.089	-.105	-.741	.464
	Supplier Integration	.315	.131	.198	2.404	.035
	Green Packaging	.328	.135	.264	2.429	.011

a. Dependent Variable: Sustainable Performance

Source: Research Data (2021)

The regression equation is:

$Y = 1.499 + .397X_1 - 0.66X_2 + .315X_3 + .328X_4$

Where

Y = Sustainable performance

X_1= Green procurement

X_2= Green distribution

X_3= Supplier integration

X_4= green packaging

From table 4.15, the significant independent variables green procurement (P=0.011), green packaging (P=0.011) and supplier integration (P=0.035) they also have positive coefficients. Only green distribution is not significant (P=0.464) and it has a negative coefficient.

From the above findings, green supply chain management practices had statistical relevant correlations with sustainable performance. Specifically, green procurement, green packaging and supplier integration were found to positively influence economic, social and environmental performance while green distribution had no influence on sustainable performance. These results are aligned with literature of Hoek (1999) who ascertained that GSCM aids in the achievement of the environmental and financial benefits at the same time elimination of risks to the people in the community.

Tseng et al. (2019) add that the adoption of green strategies by entities has enhanced economic as well as ecological performance. Some of the environmental benefits of GSCM include reducing emission and environmental impact (Wang et al., 2021), conservation of natural resources (Jiang et al., 2020)) and reduced waste (Micheli et al., 2020). Green supply chain management was also found to influence economic performance through lower transportation cost by reducing shipment waste, reverse logistics and making shorter trips (Çankaya & Sezen, 2019), improved reputation (Jemai et al., 2020) and improved quality products.

Cankaya and Sezen (2019) indicated that GSCM influenced sustainability performance. Cousins, et al (2019) established that GSCM influenced economic performance through cost saving. Sinaga, et al. (2019) found that SMEs that undertake practices of managing green supply chains have their economic performances enhanced through improved sales, enhanced customer loyalty and improved profit levels.

4.6 Challenges faced in implementing green supply chain management

The third objective was to find out the challenges encountered in implementing GSCM and the outcome are tabulated in 4.20

Table 4. 16 Challenges of green supply chain management implementation

GSCM Challenges	Mean	Std. Dev
High costs linked with implementation of GSCM.	3.87	1.18
Lack of Resources for investing in human capital and new technologies to implement GSCM practices	3.81	1.26
Absence of clear government regulations	3.79	1.36
Lack of top managers commitment	3.61	1.49
Inadequate skilled Personnel	3.54	1.52

Source: Research Data (2021)

Table 4.16 listed some of the challenges encountered in the implementation GSCM and high costs linked with implementation of GSCM practices (M=3.87, SD=1.18), absence of clear government regulations on implementation of GSCM practices (M=3.52, SD=1.18) and lack of resources for investing in human capital and new technologies to implement GSCM practices (M=3.81, SD=1.26) were found to be impediment factors of implementation of GSCM to a large extent. Inadequate skilled Personnel (M=3.54, SD=1.52) and lack of top management support (M=3.61, SD=1.49) were also established, to a large extent, as the major challenges encountered in the implementation of GSCM.

The outcome is consistent with the literature as based on Cramer (2002), challenges faced in the adoption of GSCM minimum management support, high initial investment costs presence of other techniques, limited software tools that enable optimizing end to end supply chains and limited information on best practices or GSCM. Walker *et al.* (2008) categorizes challenges under external barriers that are made up of poor commitment from suppliers and internal barriers include no legitimacy and cost incurred. Some of the initial costs incurred during GSC management include investment in advanced technologies, hiring, training and monitoring employees and making sure they are motivated (Srivastav& Gaur, 2015). According to Khiewnavawongsa and Schmidt (2013), implementing GSCM require investment in sophisticated technologies and specific skills sets. Srivastav and Gaur (2015) concludes that backing from top managerial staff is critical in implementation of GSCM practices.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section discussed and summarizes the study's outcome as well as draw conclusions from the key outcomes of the research. Limitations, proposed suggestions and Recommendations on further study are covered.

5.2 Summary of Findings

The aim of the research had to establish the correlation amongst green supply chain management and sustainable performance. Three objectives guided the study, all of which were fulfilled. The foremost objective was ascertaining the extent of implementation of green supply chain management, the second being determining the correlation between GSCM and sustainable performance with the third being to ascertain the challenges of implementation by the county governments in Kenya. Descriptive design was used with census being performed in all the 47 counties in Kenya.

On objective one, it was established that only green procurement was adopted to a large extent. Green packaging, green distribution and supplier integration were all implemented to a medium extent by the county governments in Kenya. On green procurement, the county governments in Kenya purchased product with minimal effect on the environment and also made purchases from suppliers who are committed to green initiative policies. Adoption of IFMIS also had little effect on the environment being and the county governments formulated policies and inserted clauses that promote green purchasing and procurement

Green distribution was adopted to a moderate extent by having distribution channels with little effect on the environment, adopting reverse logistics to minimize movement and pollution, having routing and transport scheduling even for suppliers and having proper disposal channels in place. Green packaging was moderately adopted by the county government ensuring that they only receive products having packaging material with minimal effect on the environment, ensuring the products are well labelled for proper use, coordinating with suppliers to have a standardized package and encouraging suppliers to adopt methods of packaging that incorporates return and reuse and also help in promotion of returned packaging. Supplier integration was moderately adopted through the formation of strategic alliances with suppliers, engaging suppliers in the development and design process, conducting trainings and seminars

to educate suppliers on the need of green and encourage them in supplying green products as well as maintaining a database of strategic supplier

On objective two, GSCM Practices were found to influence economic performance, environmental performance and social performance of the county governments in Kenya. The overall sustainable performance was observed to contain a statistically noteworthy correlation with GSCM and green procurement, green packaging and supplier integration practices were found to have an affirmative and substantial relationship with sustainable performance. However**,** green distribution was found to have no bearing on sustainable performance of the Kenyan county governments.

Objective three had to determine the challenges faced in implementing GSCM practices and high costs linked with implementing GSCM practices, absence of clear government regulations, lack of resources for investing in human capital and new technologies, inadequate skilled and absence of managerial commitment and support were all established as the challenges encountered in the embracing and actualization of GSCM by the county governments in Kenya..

5.3 Conclusion

The outcome has revealed an affirmative and significant correlation between GSCM practices and sustainable performance. Green (procurement, packaging & distribution) and supplier integration were found to influence economic, environmental and social performance of the county governments in Kenya.

Objective one on determining the extent of adoption of GSCM practices was achieved as it was noted that green procurement was adopted to a large extent whereas green packaging, green distribution and supplier integration were adopted to a medium extent thus it is concluded that the first objective was achieved.

The study also concludes that the second objective, determining the relationship between GSCM and sustainable performance, was achieved. Based on the regression analysis carried out, it is concluded that GSCM practices (green; procurement, packaging and supplier integration) influences sustainable performance and more specifically economic, environmental and social performance of the county governments in Kenya while green distribution has no influence on sustainable procurement.

On the third objective, the study concludes that the challenges encountered by the county governments were high costs, absence of clear government regulations, lack of resources for investing in human capital and new technologies, inadequate skilled and lack of top managerial support.

5.4 Limitation of the study

A hundred percent response rate of the county governments in Kenya was not achieved. However, inference was made from the outcome to be a true reflection of the county governments in Kenya. This could also not hinder the quality of the study as the response rate realized was adequate for generalizability.

The research was limited conceptually as it only focused on GSCM practices and sustainable performance. The study did not focus on other factors which influences sustainable performance as it was noted that GSCM practices only account for 70% of sustainable performance and the other 30% could not be accounted for.

Methodologically, the study was limited as it only used primary data while overlooking the role of secondary data. This limitation however did not interfere with the quality of the outcome.

5.5 Recommendations for further study

The researcher recommends that the county governments in Kenya need to fully adopt GSCM practices so as to boost their sustainable performance. Since green distribution, green packaging and supplier integration have all been moderately adopted to a medium extent, it is recommended that the county government ought to embrace them to a large extent so as to enhance sustainable performance.

Green distribution should be adopted to a large extent as it has been established to have some benefits upon its adoption. Green distribution aids a firm in reducing CO2 emissions, proper designing and well reduced packaging. Sarkis (2009) posits that green distribution helps in fulfillment of demand at the right place and time, put into consideration social, economic and ecological aspects as well as ensuring complete life cycle of products are sustainable and thus firms should fully adopt it.

Supplier integration was moderately adopted by the county governments in Kenya and thus it is recommended that they be adopted to a large extent. This is because supplier integration

practices are vital as they enhance collaboration between the firm with its suppliers and aids in achieving sustainable performance. For the success of the entity, the firm often consents to form a relationship with its key suppliers on a long-term basis to achieve financial stability and at the same time have a sustainable relationship. Formation of good relationship with the suppliers through supplier integration helps reduce unnecessary cost, improves product quality and enhances speed of delivery of materials to the company

Green packaging was moderately adopted by the county governments in Kenya and it is recommended that they be adopted to a large extent. Therefore, since improving the design and materials that are used for packaging enhances an entity's logistical operations and improves vehicle load. Labeling of a product also plays an important role in ensuring that there is proper communication on how to use the product by its destined users. Eco-labels and packaging also enlighten the users about a products socio-environmental effects, production methods, the product's packaging and recyclability ability, the traits that a product possesses or even the content of the product and how to use it.

The adoption of all green procurement, green packaging, green distribution and supplier integration should be adopted to a maximum as they have been established to influence social, economic and environmental performance of the county governments in Kenya.

5.6 Suggestions for Further Research

Further research may divert their aim on the drivers of GSCM practices in the county governments in Kenya so as to establish the factors that pushes the county governments to adopt GSCM practices.

The study may be replicated in other sectors that is green supply chai n management and sustainable procurement of manufacturing firms or third party logistics firms to see if the outcome will be the same

Future studies can also introduce a third variable be it mediating or intervening variable to see how the outcome will be.

Lastly, the methodology can be changed in that subsequent research can embrace secondary data to see if the results will be the same,

REFERENCES

Afum, E., Osei-Ahenkan, V. Y., Agyabeng-Mensah, Y., Owusu, J. A., Kusi, L. Y., & Ankomah, J. (2020). Green manufacturing practices and sustainable performance among Ghanaian manufacturing SMEs: the explanatory link of green supply chain integration. *Management of Environmental Quality: An International Journal*.

Amemba, C.S., Nyaboke, P.G.,Osoro, A. &Mburu, N. (2013). Elements of green supply chain management. *European Journal of Business and Management,* 5(12), 51-61.

Azzone, G. (1994). Exploitinsg green strategies for competitive advantage. *Long Range Planning Journal, 27(6),* 69-81.

Bor, J. K. M. (2021). *Green Supply Chain Management Practices and Performance of Food and Beverage Processing Sector in Kenya* (Doctoral dissertation, JKUAT-COHRED).

Çankaya, S. Y., &Sezen, B. (2019). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management*.

Cousins, P. D., Lawson, B., Petersen, K. J., & Fugate, B. (2019). Investigating green supply chain management practices and performance. *International Journal of Operations & Production Management*.

Di Vaio, A., & Varriale, L. (2020). Blockchain technology in supply chain management for sustainable performance: Evidence from the airport industry. *International Journal of Information Management*, *52*, 102014.

Esty, D. C. & Porter, M. E. (1998). Industrial ecology and competitiveness. *Journal of Industrial Ecology, 2 (1),* 35-43.

Fortes, J. (2009). Green Supply Chain Management: A Literature Review. *OtagoManagement Graduate Review Journal, 7 (1),* 51-62.

Garcia, K. (2013). An analysis of Mexican private versus public sector responses to the environmental challenges of the supply chain. *Journal of Public Procurement, 2(1),* 93-105.

Gathu, S., Gichunge, E. M., & Senaji, T. (2021). The Effect Of Trade Promotion On Performance Of Small Enterprises In Nairobi City County, Kenya. *International Journal of Information, Business and Management*, *13*(1), 68-78.

Geng, R., Mansouri, S. A., &Aktas, E. (2017). The relationship between green supply chain management and performance: A meta-analysis of empirical evidences in Asian emerging economies. *International Journal of Production Economics*, *183*, 245-258.

Guenther, E., Scheibe, L. &Farkavcova, V.G. (2010). The hurdles analysis as an instrument for improving sustainable stewardship. *Management Research Review*. 33(4), 340-356.

Han, Z., & Huo, B. (2020). The impact of green supply chain integration on sustainable performance. *Industrial Management & Data Systems*.

Hasan, M. (2013). Sustainable Supply Chain Management Practices and Operational Performance. *American Journal of Industrial and Business Management*, (3), 42-48.

Hope, K. R. (2014). Devolved government and local governance in Kenya: Implementing decentralization underpinned by the 2010 constitution. *African and Asian Studies*, *13s*(3), 338-358.

Jermsittiparsert, K., Namdej, P., &Somjai, S. (2019). Green Supply Chain Practices and Sustainable Performance: Moderating Role of Total Quality Management Practices in Electronic Industry of Thailand. *International Journal of Supply Chain Management*, *8*(3), 33-46.

Karanja Njiiri, P., Were, S., & Muturi, W. (2021). Servant Leadership Style and Public Participation in the County Governments in Kenya. *Journal of Business and Management. 23 (2), 58-69*

Khaunya, M. F., & Wawire, B. P. (2015). Devolved governance in Kenya; is it a false start in democratic decentralization for development? International Journal of Economics, Finance and Management. 4(1), 27-37

Kombo, D. K., & Tromp, D. L. (2009). Introduction to proposal writting. *Nairobi: Pauline publications*, *25*, 266-283.

Kothari, C. R. (2004). Research methodology: Methods and techniques. New Age International.

Le, T. (2020). The effect of green supply chain management practices on sustainability performance in Vietnamese construction materials manufacturing enterprises. *Uncertain Supply Chain Management*, *8*(1), 43-54.

Martusa, R. (2013). Green supply chain management: Strategy to gain competitive advantage. *Journal of Energy Technologies and Policy, 3(11),* 334-341.

Mohammed, Z. C., Lagat, C., & Ngeno, V. (2019). Sustainable Supply Chain Practices and Performance of Manufacturing Firms in Kenya. *African Journal of Education, Science and Technology*, *5*(3), 106-118.

Mutangili, S. K. (2019). Influence of Green Procurement Practices in Supply Chain Management and Leadership on Performance of Parastatals in Kenya; A case of Kenya Airways and Kenya Pipeline. *Journal of Procurement & Supply Chain*, *3*(2), 64-78.

Nasiche, F. &Ngugi, G. K. (2014). Determinants of adoption of green procurement in the public sector: a case study of Kenya Pipeline Company. *International Journal of Social Sciences and Entrepreneurship,* 1 (11), 351-372.

Ngugi, C. A., & Kihara, D. A. (2019). Influence of Supply Chain Sustainability on Performance of Companies In The Oil Industry In Kenya. *International Journal of Supply Chain and Logistics*, *3*(2), 84-104.

Nijaki, L.K. &Worrel, G. (2012). Procurement for sustainable local development. *International Journal for Public Sector Management,* 25(2), 133-153

Ninlawan, C. Seksan, P. Tossapol, K. &Pilada, W. (2010). The implementation of green supply chain management practices in electronics industry. *Proceedings of the International Multi-conference of Engineers and Computer Scientists, 21 (2),* 1563-1568.

Njagi, E. G., Namusonga, G. S., Shale, N. I. (2020) Public Participation in Contract Administration for Sustainable Procurement Management in Devolved System of Governments in Kenya. *International Journal of Social Sciences and Information Technology. 5 (9),* 72-79

Ochieng, B. E. (2019). Effect of Green Purchasing Practices on Performance of Large Chemical Manufacturing Firms in Nairobi County Kenya.

Oduor, O. D. (2019). *Sustainable Supply Chain Management And Operational Performance Of Medium And Large Supermarkets In Nairobi, Kenya* (Doctoral dissertation, University of Nairobi).

Perotti, S (2012). Green supply chain practices and company performance: the case of 3PLs in Italy. *International Journal of Physical Distribution & Logistics Management, 42(7),* 640-672.

Preuss, L. (2009). Addressing sustainable development through public procurement: the case of local government. *Supply Chain Management,* 14(3), 213.

Sarkis, J., Zhu, Q., & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. *International journal of production economics*, 130(1), 1-15.

Serem, W. (2019). Effect of Green Supply Chain Adoption on Supply Chain Performance in County Governments in Kenya. *American Based Research Journal*, *8*(11).

Sharma, V. K., Chandna, P., & Bhardwaj, A. (2017). Green supply chain management related performance indicators in agro industry: A review. *Journal of Cleaner Production, 141*, 1194-1208.

Shrivastava, P. (2007). Environmental technologies and competitive advantage. *StrategicManagement Journal, 16 (1),* 183-200.

Sinaga, O., Mulyati, Y., Darrini, A., Galdeano, D. M., &Prasetya, A. R. (2019). Green supply chain management organizational performance. *International Journal of Supply Chain Management*, *8*(2), 76-85.

Srisawat, S., & Srisawat, N. (2020). The Effect of Green Supply Chain Management Practices on the Sustainable Performance of the Textile Industry. *Int. J Sup. Chain. Mgt Vol*, *9*(2), 300.

Suharsono, J., Ngatimun, N., & Wulandari, N. (2020). The Mediating Impact of Green Supply Chain Management on the Relationship of Supply Chain Integration and Corporate Sustainable Performance. *Talent Development & Excellence*, *12*(1).

Wahome, P. M. (2020). *Factors Influencing the Sustainability of Family Businesses in Kenya: A Case of Naivas Supermarket* (Doctoral dissertation, United States International University-Africa).

Walker, H., & Jones, N. (2012). Sustainable supply chain management across the UK private sector. *Supply Chain Management: An International Journal*, *17*(1), 15-28

Wisner, J., & Stanley, L. (2007). *Process management: Creating value along the supply chain*. Nelson Education.

Worku, H. A., & Virdi, S. S. (2019). Green Supply Chain Management Practices in Ethiopia's Leather and Leather Product Industry. *IUP Journal of Supply Chain Management*, *16*(2), 25-42.

Zhu, Q. &Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *Journal of Operations Management, 22*

Zhu, Q. (2005). Green supply chain management in China: pressures, practices and performance. *International Journal of Operations & Production Management, 25 (5),* 449-468.

Zhu, Q. Sarkis, J. & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics, 130 (1),* 1-15.

APPENDIX 1I: RESEARCH QUESTIONNAIRE

i. This questionnaire aims to collect data on Green Supply Chain Management Practices and Sustainable Performance of County Governments in Kenya.

ii. Information acquired will only be exploited for scholarly use and will be taken care of by definitive confidentiality.

SECTION A: RESPONDENTS DEMOGRAPHICS

1. Please indicate your position in the organization?

a) Supply chain manager [ ]
b) Assistant Supply Chain manager [ ]
c) Senior Supply chain Officer[ ]
d) Supply Chain officer [ ]

2. What is the period of your working at the County?

a) Less than one-year [ ]
b) 1 -5 years [ ]
c) 6-9 years [ ]
d) 10 and above [ ]

SECTION B: GREEN SUPPLY CHAIN MANAGEMENT PRACTICES IMPLEMENTED

To what extent have the subsequent GSCM practices been implemented in the County? Kindly indicate on a scale 1 to 5: (where: 1- very small, 2- small, 3- medium , 4- large and 5- very large

Green Procurement	**1**	**2**	**3**	**4**	**5**
Purchasing of products that has little effect on the environment					
Purchasing from suppliers who are committed to green initiative policies					
The procurement process (IFMIS) has little effect on the environment					
Formulation of policies and clauses that promote green purchasing and procurement					
Green Packaging					
The firm only receive products that its packaging material has minimal effect on the environment					
Ensuring the products are well labelled for proper use					

Coordinating with suppliers to have a standardized package					
Encouragement of suppliers to adopt methods of packaging that incorporates return and reuse and also help in promotion of returned packaging					
Green Distribution	**1**	**2**	**3**	**4**	**5**
Distribution channels have little effect on the environment					
Adopt reverse logistics to minimize movement and pollution					
Routing and transport scheduling even for suppliers					
Proper disposal channels are in place					
Supplier integration	**1**	**2**	**3**	**4**	**5**
Formation of strategic alliances with suppliers					
Engagement of suppliers in the development and design process					
Maintaining a database of strategic suppliers					
Conducting trainings and seminars to educate suppliers on the need of green and encourage them in supplying green products					

SECTION C: GSCM AND SUSTAINABLE PERFORMANCE

To what extent has implementing GSCM influenced Sustainable performance measures indicated below? Please rate adopting a 1 to 5 scale.

Measures of Sustainable Performance	**Rating scale between 1-5**				
ECONOMIC SUSTAINABILITY					
Minimized cost of purchasing materials					
Reduced penalties and fines for violating environmental laws					
Minimized cost of consuming energy					
Reduced waste disposal costs					
ENVIRONMENTAL SUSTAINABILITY					
Reduced waste generation					
Reduced water usage					
Enhance firms environmental position through ISO 1400 Certification					

Minimized harm to environment					
SOCIAL SUSTAINABILITY					
Enhanced employee satisfaction					
Better community welfare through CSR					
Better employee remunerations					
Improved working conditions					

SECTION D: CHALLENGES OF IMPLEMENTING GREEN SUPPLY CHAIN MANAGEMENT PRACTICES

Kindly rate the level of agreement with the listed challenges of implementing GSCM practices. Kindly indicate on a scale 1 to 5

Challenges	**Rating scale between 1-5**				
High related costs					
Absence of clear government regulations.					
Lack of Resources for investing in human capital and new technologies					
Inadequate skilled Personnel					
Lack of top management support.					

Any other challenges kindly indicate.……
……

Thank you for your cooperation

APPENDIX II: LIST OF COUNTY GOVERNMENT IN KENYA

1. MOMBASA COUNTY	**25.** SAMBURU COUNTY
2. KWALE COUNTY	**26.** TRANS NZOIA COUNTY
3. KILIFI COUNTY	**27.** UASIN GISHU COUNTY
4. TANA RIVER	**28.** ELGEYO MARAKWET COUNTY
5. LAMU COUNTY	**29.** NANDI COUNTY
6. TAITA TAVETA	**30.** BARINGO COUNTY
7. GARISSA COUNTY	**31.** LAIKIPIA COUNTY
8. WAJIR COUNTY	**32.** NAKURU COUNTY
9. MANDERA COUNTY	**33.** NAROK COUNTY
10. MARSABIT COUNTY	**34.** KAJIADO COUNTY
11. ISIOLO COUNTY	**35.** KERICHO COUNTY
12. MERU COUNTY	**36.** BOMET COUNTY
13. THARAKA NITHI COUNTY	**37.** KAKAMEGA COUNTY
14. EMBU COUNTY	**38.** VIHIGA COUNTY
15. KITUI COUNTY	**39.** BUNGOMA COUNTY
16. MACHAKOS COUNTY	**40.** BUSIA COUNTY
17. MAKUENI COUNTY	**41.** SIAYA COUNTY
18. NYANDARUA COUNTY	**42.** KISUMU COUNTY
19. NYERI COUNTY	**43.** HOMA BAY COUNTY
20. KIRINYAGA COUNTY	**44.** MIGORI COUNTY
21. MURANGA COUNTY	**45.** KISII COUNTY
22. KIAMBU COUNTY	**46.** NYAMIRA COUNTY
23. TURKANA COUNTY	**47.** NAIROBI COUNTY
24. WEST POKOT COUNTY	

Source: Council of Governors (2021)

Htpp.www.cog.go.ke