



**EFFECTS OF SUSTAINABLE SUPPLY CHAIN PRACTICES ON ORGANIZATION PERFORMANCE IN  
MANUFACTURING FIRMS IN MOMBASA COUNTY**

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<sup>1</sup>Otieno, J. O., & <sup>2</sup>Kitheka, S. S.

<sup>1</sup> PhD Candidate, Technical University of Mombasa, Kenya

<sup>2</sup> Doctor, Lecturer, Technical University of Mombasa, Kenya

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**ABSTRACT**

*Firms make a concerted effort to implement business strategy that meets sustainability requirements, not just for financial gain but also for social good and environmental protection. The study's broad purpose was to determine the effect of sustainable supply chain strategies on the success of manufacturing enterprises in Mombasa County. Specifically, it sought to determine whether green procurement, reversing logistics and environmentally friendly package influence the organization achievement in select public entities. The study adopted an empirical and descriptive design with the technique of non - probability sampling was used to choose a sample that was representative of the total sample. The data were analyzed descriptively using Software SPSS 26 to identify the relationship between independent and dependent variable. Data was presented in form of tables, mean and standard deviation. Linear regression analysis was used to test the strength of the relationship between the variables. The study concluded that there was a significant relationship between sustainable supply chain practices and the performance of manufacturing firms in Mombasa County. The study recommended management of manufacturing firms should focus on supporting the sustainable supply chain strategies and their effective implementation. Similarly, it's ideal to develop a system to implement and monitor the suitable supply chain management implications. This research study can be exploring into mining and transportation sector. Further, other study may also expand the advancement of knowledge base with the integration of case study analysis of any multinational organizations and identifying the successful implications of sustainable supply chain management.*

**Key terms:** Sustainable Development, Sustainable Supply Chain, Green Procurement, Reverse Logistics, Green Packaging, Performance

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## INTRODUCTION

Sustainable development refers to growth which meets the wishes of current generation and not negotiating the capability of the future generation to meet its personal requirements (World Commission on Environment and Development, 1987). Companies tend to adopt competitive strategies which accomplish sustainability standards, to achieve success in economic, social and preserving the environment. The transition from SCM to SSCM puts a lot of pressure on businesses to make improvements to their current supply chain to meet the requires right now for long-term viability (Busse et al., 2017). The concept of supply chain management refers to a management approach that takes into account the economical, social, and environmental impacts of its operations. To meet long-term performance goals and sustainability concerns, SSCM was developed after it was determined that procurement and supply chain decisions have strategic significance. (Panigrahi, Bahinipati and Jain, 2018).

According to Baliga, Raut & Kamble, (2019), it is important to preserve natural resources since their future is key for human survive on the planet. These necessities have motivated several countries to take responsibility and increase actions to improve the states for future generation's well-being. It is SSCM's accomplishment that is built on a triple - bottom - line method that encompasses planet-people-profit, therefore it is characterized in regards to social, environment, and economic factors. TBL strategy may be used by firms to measure and verify their attempts towards long-term business sustainability view (Laurell et al., 2019). Rudnicka (2016) finds supply chain sustainability in order to strike a balance between the needs of the consumer and the needs of the business dimensions.

Liu et al., (2017), how to get an advantage by maximizing revenue and boosting the positive effect on society and minimizing the negative impact on the environment through a sustainable

supply chain. They consider Triple Bottom Line as a strategic planning tool and measurement and accountancy model which involves financial, environmental and social achievement in its three facets. Sustainable supply chain management, therefore encompasses integrating financially and environmentally feasible methods into from product design and development all the way through the distribution chain of materials, production, packaging, transportations, storage facility, distributions, consumptions, returns and disposals. Green et al., 2012; Hasan, 2013; and Ortas, 2014), supply chain management is now also essential to be managed in a sustainable manner. Competition at supply chain level must be addressed more stringent by adopting a sustainable supply chain management practices which will lead in a competitive edge, which in turn could increase performance of the company and at the end contribute to the sustainable performance.

Different customer needs and components of a high quality product have given increase to a fierce domestic and international rivalry among firms (Raut et al., 2015). SSCM creates ability sets that are appropriate for the job for the company to distinguish itself from its competitors (Khodakarami et al., 2015; Panigrahi, et. al., 2018). Chin et al., (2015), SSCM performs an important influences the environment as a whole effect of any firm that is actively engaged in the distribution chain and so helps to improve sustainability goals. Sustainable Supply Chain Management (SSCM) brings in a accomplishment and integration of a company's economic, social and aspirations for the conservation of the environment via coordinated business procedures that improve both the long-term profitability of a company and its value chain" (Subramanian, Campos & Wateau, 2017).

Firms with sustainable supply chain have a competitive advantage over their rivals. Different drivers, facilitators, and obstacles of supply chain management performance influence supply chain performance, and the sustainability of supply chain management practices differs with industry;

consequently, sustainability study in various industries is recommended (Khurana, 2016; Oelze, 2017; Köksal, Strähle, Müller & Freise, 2017). As social and environment issues grow, it is essential to move the attention from the company to the SC and link the goals of the company with environmental objectives. To achieve long-term sustainability, the SC's many members must work together.

Without actual dedication, teamwork, and inclusion, sustainability cannot succeed. Participants of the distribution chain, both internally and externally must be a long-term resource, as well as organizations' departments, and the staff must be sustainable. Besides, organization' external spouse's viability is also critical. It is imperative that the supply chain play a role procurement decisions should influence supplier relationships in order to minimize the environmental influence, prioritize suppliers based on the environmental impact, and promote suppliers to provide environmental impact reports. (Chin et al., 2015). Sutduan, Joemsittiprasert & Jermsttiparsert, (2019), inclusion of SSCM practices within supply chain operations supports the reaching of its financial and market oriented goals. In the absence of clear legislation, firms will be reluctant to adhere to sustainable norms. The performance of sustainable initiatives is measured in different ways by different companies. Government in various countries had now been developing rules and policies related to business practices oriented to sustainability (Lee et al., 2012).

### **Statement of the Problem**

Researchers' focus has shifted to supply chain sustainability at a time when environmental warnings are becoming more widespread. Raw sewage, water, and industrial emissions, as well as gas emissions from the logistics process of the firms, account for 12.9 percent of the environmental pollution (Intergovernmental Panel on Climate Change, IPCC, 2016). In order to compete in today's global economy, businesses are looking for ways to achieving the sustainable

development goals that are both environmentally and socially responsible. Unless sustainable procurement operations are planned to improve efficiency, these greater pollutants pose a threat to the environment. As a result, there is widespread demand for supply chain strategies that incorporate social and environmental concerns.

Scholars have been studying sustainability challenges over the last two decades. Environmental pollution, as well as human resource exploitation, are major environmental and social consequences of the manufacturing process, particularly in countries where manufacturing is exported to low-wage countries. As a result of research, it has been found that manufacturers not only have an impact on the environment but also have an impact on the social well-being of the individuals who work with them. As a result, manufacturing companies' environmental effects have been examined, and recommendations have been made regarding the necessity of implementing optimal supply chain practices. (Connell and Kozar, 2017; Shen, Dong & Perry, 2017).

Mogeni and Kiarie (2016) claim that the topic of sustainable procurement exercises in Mombasa County has become a pressing one for a while now. Interest in environmental and climate change is paralleled by governments and organizations around the world's efforts to reduce their environmental footprint. Sustainable procurement has become increasingly popular in recent years, but there are still many areas that need additional investigation, such as the impact of green logistics techniques on distribution networks for multinational firms in Mombasa County. The green distribution system has been viewed as a crucial concern in the purchasing of sustainable goods and services, (Amemba, Getuno and Osoro, 2015).

Despite the rise in sustainable supply chain information worldwide, the adoption of practices such as green procurement has been very slow in Mombasa County (Njeru and Namusonge, 2021). This study thus in an effort to ascertain the effects of procedures in the distribution chain on

organization performances companies that produce in Mombasa County.

### **Objectives of the Study**

The general aim of this research was to ascertain the outcomes of sustainable procedures in the distribution chain on organization achievement in manufacturing firms in Mombasa County. The specific goals were: -

- To establish the effect of green purchasing on organization performance in manufacturing companies in Mombasa County.
- To determine the effect of reverse logistics on organization achievement in manufacturing business in Mombasa County.
- To establish the effect of green packaging on organization success in manufacturing firms in Mombasa County.

The study was guided by the following research hypotheses;

- **H<sub>01</sub>**: There is no significant effect of green procurement on organization effectiveness in manufacturing firms in Mombasa County.
- **H<sub>02</sub>**: There is no significant effect of reverse logistics on organization efficiency in manufacturing companies in Mombasa County.
- **H<sub>03</sub>**: There is no significant effect of green packaging on organization performance in manufacturing firms in Mombasa County.

## **LITERATURE REVIEW**

### **Resource Based Theory (RBT)**

Organizational performance can be explained and predicted using the resource-based view of the firm (RBV) (Barney & Clark 2007). In order to remain competitive, a firm must be able to produce more financial benefit than the minimal (breakeven) rival in its market place, as according Peteraf and Barney (2003). In order for a company's operational efficiency to be sustainable, it must produce more economic benefit than the industry's marginal business and prevent competitors from duplicating the strategy's advantages (Barney & Clark 2007).

Resources can be viewed as the inputs that allow businesses to carry out their operations. In order to compete in the external business environment, companies must make strategic decisions based on their own internal resources and competencies. RBV predicts that not all of a company's resources will be strategic in nature. Only in the presence of resource heterogeneity (different resources between enterprises) and resource immobility can a company gain a competitive advantage (Madhani, 2010). "Capabilities" are defined as a structurally non-transferable raw material that serves to boost the effectiveness of the other resource owned by the firm (Kozlenkova, Samaha, and Palmatier, 2014). Although it is advised that the firm's resources, which include tangible and intangible assets as well as competencies, preserve the potential for a long-term competitive edge.

### **Institutional Theory**

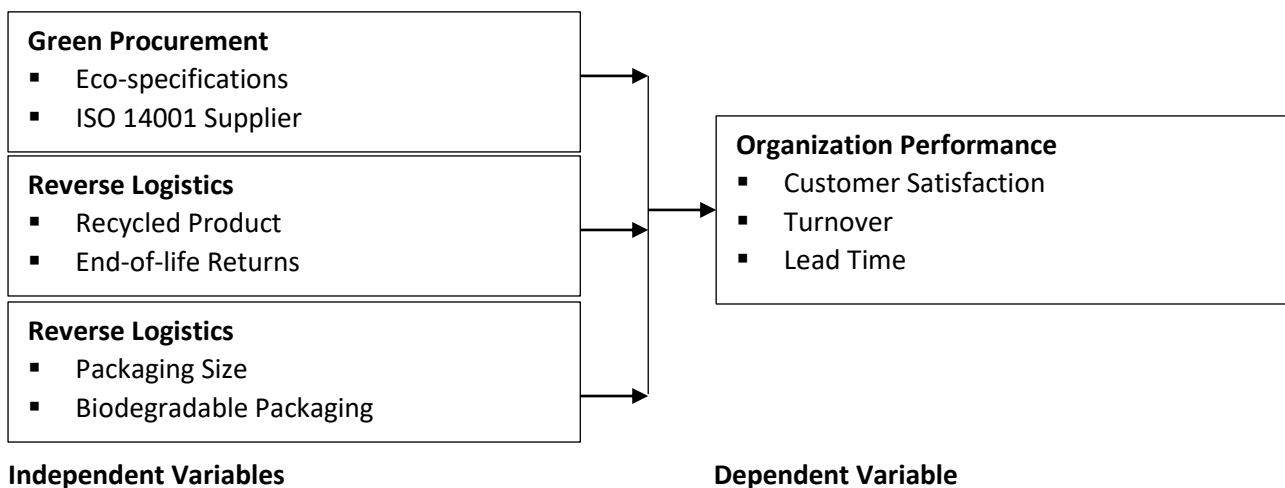
Efforts are made to understand how to establish legitimacy or recognition inside the organization as a whole (Zhu & Sarkis, 2007). Zhu and Sarkis (2007). The hypothesis investigates how a firm is affected by external variables. Organizational decisions are guided by values and culture, norms, and behaviors in the external world (Gualandris & Kalchschmidt, 2014). In an effort to legitimize themselves, all companies in the same industry follow the same processes and decision-making methodologies (Williams et al., 2009). A variety of external factors compel organizations to change their ways of doing things, and the institutional theory can help us understand why this happens (De Grosbois, 2016). Formal or informal requirements from influential groups on which the focal firm relies due to specific materials, complying to the laws, and even cultural norms are known as coercive pressures. According to organizational theory, there are three different kinds of isomorphic pressures that might exist within a company. The study by Sarkis et al. (2010). Industrial organisations may invite you to join in order to gain benefits, or you may fear being banned or penalized for noncompliance with

various governmental rules or policies (Yang, 2017, Sarkis et al., 2010).

As a result of cultural expectations, the environment formalizes certain norms and standards. This creates normative pressures. The public, educational institutions, industrial groupings and associations, and nongovernmental organizations (NGO) are all sources of normative pressures. These forces are also heavily influenced by suppliers and customers (Zhu et al., 2013, Shu et al., 2017). It is because of mimetic pressures that companies copy or replicate other successful institutions' procedures or structures in order to

minimize uncertainty and risk. An organization's survival may be threatened by changes in the external environment. To prepare for this, organizations are looking for role models who they believe have successfully dealt with similar external difficulties (Williams et al., 2009).

Pressure is mounting on the global manufacturing industry to adopt and execute GSCM principles (Shu et al., 2017). Manufacturers have been forced to implement GSCM techniques by above - the stakeholders in order to demonstrate their legitimacy (Gualandris & Kalchschmidt, 2014).



**Figure 1: Conceptual Framework**

**Green Procurement**

Considerations should be taken into account when making all purchasing choices and awarding contracts, along with other factors like quality, production cost and delivery. Green procurement is defined by Njeru and Namusonge (2021). Product lifecycle and environmental impact are all taken into account in green procurement when purchasing goods and services. A dedication to the use of less damaging and eco - friendly products and processes is also taken into account when selecting products and service providers. Green Procurement is a method of sourcing goods and services that takes into account both the needs of the customer and the environment as a whole.

**Dependent Variable**

Environmental purchasing, as defined by Gakure, et al., (2021), is the acquisition of ecologically friendly services and goods, the selection of contractors, and the creation of environmental conditions in a contract, as according It evaluates the product, service, or contract in terms of cost, quality, and environmental effect.

Materials and components that can be reused, recycled, and do not contain hazardous/dangerous substances are ideal for green shopping. (Bor,2021).). Procurement professionals are being compelled to reexamine their current sourcing and purchasing strategies, as well as their impact on environmental sustainability, in light of growing environmental concerns. (Govindan and colleagues, 2015). Recycling and remanufacturing are

important components of eco-friendly purchasing. Recyclability and other supply chain operations are facilitated by the use of green sourcing, which supports waste reduction. Recycling, energy-efficient systems, and environmentally friendly technologies and fuels are becoming increasingly popular among consumers and businesses alike. The impact on the environment of a company's purchasing decision takes precedence over the price of goods and services in green procurement.

The ideas and practices of pollution prevention are at the heart of green procurement. Green procurement, also known as environmental purchasing or green purchasing, evaluates a product, service, or contract in terms of cost, technology, quality, and environmental effect. All firms, regardless of size, can benefit from green buying programs (Sarhaye and Mirendi, 2017). Environmentally-friendly procurement plans can be basic and straightforward, such as acquiring renewable energy and recycled paper, or they can be more complex, such as defining environmental standards for contractors and suppliers. There are less resources used in the production of green goods or services because they are made to be the last longer and have a lower environmental impact during their lifespan. In addition, environmental goods and services may have greater safety requirements and have little to no influence on human health.

Lowering waste and responsibility costs, saving resources, and enhancing a company's public image are all benefits of green purchasing. Corporate social responsibility (CSR), durability of products, supplier relationships, and ethical business practices (EBP) all assist to green purchasing in the industrial sector in Mombasa County as according Hussein and Shale (2014). The authors of this study, Blome and colleagues, claim that many businesses have just begun implementing green purchasing practices into its everyday activities. Efforts to implement the aspects of sustainability are increasing rapidly.

Purchase planning and scheduling that takes environmental considerations into account is known as green procurement in the Resource Based theory. A company's ability to compete effectively in the market depends, according to Hart, on the resources it has available. In the business world, firms can become more effective by achieving green security. Cater, for example, described green supply chain management as the acquisition of commodities or recyclable resources in order to create the safest environment possible.

### **Reverse logistics**

Reverse logistics (RL) is the process of moving items backwards in order to capture value, properly dispose of them, and perform operations such as remanufacturing and refurbishment. It is becoming increasingly popular in Supply Chain Management (SCM) to use Reverse Logistics (RL) in order to get a greater competitive edge in terms of value, profitability, sustainability, and extra advantages in any business. The 3R (Reuse, Remanufacturing, and Recycling) concept is the primary focus of this approach (Sathiyagothai and Saravanan, 2017; Bor, J 2020).

To put it another way, logistics management is more than simply reusing and recycling containers and packaging materials. Waste products are recycled, returns are tracked and waste materials are properly disposed of as part of the reverse logistics process. It is crucial to reduce the amount of material used in packing or to reduce the amount of energy and pollutants used in transportation, although these may be secondary in relevance to total reverse logistics. Processing damaged returns, replenishing seasonal inventories, reclaiming recalled goods and hazardous material disposals are all part of reverse logistics. In recent years, the strategic value of reverse logistics operations has been increasingly recognized in supply chain management.

For sustainable growth, both ecological and financial goals must be met through the use of reverse logistics. As a result of the reuse and recycling of products, reverse logistics reduces the

environmental impact and waste disposal. Reverse logistics can be used to reduce waste and improve profit in underdeveloped countries by implementing an effective recycling procedure. Firms are under increasing pressure to develop a more effective reverse logistics strategy due to the growing awareness of environmental concerns and the benefits of recycling.

Returned products from production, advertising return, recalls goods, guarantee returns, service returns, and return at the end of use or life are all examples of products that can have a significant impact on a company's supply chain. The authors (Kariuki, Ndung'u, and Moronge, 2017) Poor packaging and quality difficulties are two common causes of product returns. Customers are better served, staff are better trained, and the value of a product's life can be reclaimed through reverse logistics. The fundamental objective of reverse logistics is to keep expenses under control and to boost the company's output and performance by ensuring that consumers are satisfied. Logistics in reverse are more efficient and successful when they are proactive.

### **Green Packaging**

Packaging that is environment - friendly friendly and safe for people health and to the environment is known as 'eco design', or environmentally packaging, or 'sustainable packaging.' It is also known as 'recyclable wrapping' or 'eco-friendly wrapping.' As defined by Odock (2016) and Kumar, Agarwal, and Singh (2017), packaging is the invention and usage of packaging that has a lower negative effects on the natural. This results in better management of goods. Packaging serves as both a physical barrier and a means of transmitting information about a product. Even while packaging serves these and other purposes, it is an object that is disliked after the product has been consumed. Decrease the amount of materials used, boost warehouse and truck space utilization as well as reduce the handling required, therefore reducing the environmental effect. Evidence-based indicators of eco-friendly packaging.

Green packaging reduces waste and CO2 emissions by reducing the amount of material that must be disposed of. The most effective way to reduce GHG emissions is to consolidate shipments. One of the green projects that has a big impact on the environment is such an environmentally friendly logistics service (Karia, N. (2020). Product transport characteristics are influenced by packaging factors such as the product's size, shape, and materials. By rearranging loading patterns and using better packing, it is possible to conserve resources, make better use of warehouse and trailer space, and lessen the number of dealing necessary. (Serem,2019). Requiring environmentally friendly packaging from suppliers (reusable, degradable, and non-hazardous). Packaging and environmental requirements have made companies more liable for their day-to-day activities even after the sale of their products. Actions that encourage packaging to be recycled, reused, or returned (Herrmann, et. al., 2021).

As well as serving as a means of protecting your goods and projecting a positive image of your firm, packaging must also meet regulatory requirements and reduce environmental impact while yet being economically viable. Packaging has emerged as a key problem for users, conservationists, legislators, and architects due to growing worldwide significance over resource overuse (Khan et al.,2016). As a result, businesses are faced with the problem of developing packaging that is efficient, value, and visually appealing while also considering all of the potential environmental implications. developing environmentally sustainable goods with green packaging by collaborating with customers on a cleaner production process

There are three primary characteristics of green packaging: reducing the use of difficult packing, employing a package with minimum energy consumption, and using ecologically friendly wrapping. Companies frequently utilize the problem of eco-friendly packaging as a marketing tool to display their concern for the environment (Tuwanku et al., 2018). Using ecologically friendly materials



and lowering the size, shape or weight of packaging are examples of green packaging.

According to Gajanan, eco-friendly packaging gives businesses an advantage over their rivals. Green marketing includes packaging that is recyclable and biodegradable, as well as products that are safe for the environment (Bhatti, 2016). "Packing is a source of sustainable competitive advantage," says Sambu (2016). According to a study conducted by Gajanan (2015), businesses can get a competitive edge by using green packaging. A few of the environmental distribution practices that has a significant effect on the overall performance of Kenyan food-producing companies is green packaging. This investigation, based on the prior discussion, suggests the following hypothesis: Competitive advantage can be gained through the use of green packaging.

Sustainability, environmental efforts of organizations, and green product qualities are all associated with green packaging (Ghodeswar & Kumar 2014..). Environmentally friendly packaging refers to products that do not harm future generations, do not squander and limit subsurface resource use, and respect human demands as far as salaries are concerned (Quoquab, Thurasamy, and Mohammad, 2017).

As a competitive advantage element, green packaging is well-considered. One of the methods of ecological marketing is ecological or green packaging, which provides a competitive edge over other competitors, according to Jarin, 2014.

## **METHODOLOGY**

Sustainable procurement practices in Mombasa County's manufacturing sector was examined in this study using an empirical and descriptive study design. As a quantitative research design, this study's hypotheses was examined by measuring the correlations between variables, and the results analyzed using statistical methods. The study population was 61 registered manufacturing companies in Mombasa County operating different lines of production (KAM, 2019). The unit of analysis

consisted of employees from different functional units 226 valid responses was utilized to collect data from the companies that participated in the study. The Kenya Association of Manufacturers (KAM) was the unit of study in a population census of all 61 authorized manufacturing enterprises. Personnel from the distribution chain, sales, production, and environmental departments of the 61 companies comprised the observational unit. The information shown in this study was obtained from departments that were randomly selected. The surveys were given to a subset of the target group, which included personnel who were familiar with their company's Supply Chain activities, such as supply chain, marketing, production, and the environment. The questionnaire used to assess the research variables was built on a five - point likert scale, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." SPSS statistical software Version 26 was utilized to evaluate the results to determine the impact of a long-term distribution chain practices on performance of manufacturing firms in Mombasa County. Descriptive and Inferential Statistical analysis techniques were adopted. Sustainable Supply Chain Practices comprised of three dimensions which included green procurement, reverse logistics and green packaging.

## **FINDINGS AND DISCUSSIONS**

The researcher used descriptive statistics to find out the mean and standard deviation of the responses with Likert scales of 1 to 5. The results were displayed on tables rated as; 5-strongly agree, 4-agree, 3-neutral, 2 disagree, 1-strongly disagree.

### **Descriptive Findings of the variables**

The study aimed at determining the effect of sustainable supply chain practices on organization performance of manufacturing firms in Mombasa County. Table 1 illustrates the dimensions of the independent variable sustainable supply chain practices (SSCP) and it shows mean and ranking of respondents' answers at independent.

**Table 1: Mean and ranking of independent variables (SSCP)**

#	Items	Mean	Importance	rank
1	Green Procurement	4.01	High	2
2	Reverse Logistics	3.92	High	3
3	Green Packaging	4.05	High	1
Total		3.99	High	

The table 1 above illustrates green packaging with a mean of 4.05 and ranked one which shows a high level when it comes to issues that are important to the respondents, green procurement with a mean of 4.01 and reverse logistics ranked last with a

mean of 3.92.

Table 2 shows the mean, and the level of the respondents' answers at organization performance dimensions.

**Table 2: Mean and ranking of dependent variable**

#	Items	Mean	Importance	rank
1	Customer satisfaction	4.12	High	1
2	Turnover	4.11	High	2
3	Lead time	3.99	High	3
Total		4.07	High	

Table 2 indicates that the mean of consumer satisfaction (4.12), this displayed a high degree of relevance in the eyes of the responders while turnover (4.11) came second and last was lead time with a mean of 3.99. The overall mean of 4.07 indicates high level of importance in measuring organization performance.

### Hypotheses Test

This involve testing of the variables to check possibility of relationship. Having good correlation between the independent variables is a sign of multiple linear regression, which is something to avoid at all costs. There could be no tightly correlated between variables in order for Multiple Regression to work. Tolerance and

the Variance Inflation Factor are two statistics used to assess multicollinearity. Close to 1 indicates little or no Multicollinearity, while close to zero indicates the presence of Multicollinearity. Multicollinearity is indicated by a Variance inflation factors of around or higher than 5 for that variable. A variance coefficient of less than 1 and greater than 1 is permitted in independent variables, as seen by the data in Table 3. (0.01). Inflation variance coefficients were lower than expected (5). No strong association can be seen in between independent factors. This signifies that the data have been accepted and can be used in a multiple linear regression. (Hair et al., 2011).

**Table 3: Correlation strength between the independent variables**

SCM	VIF	Tolerance
Green Procurement	1.786	0.560
Reverse logistics	1.425	0.702
Responsive Packaging	1.151	0.869

### Test results of the first main hypothesis

The study first hypothesis was: "There is no statistically significant effect of green

procurement on organization performance of manufacturing firms in Mombasa County."

**Table 4: Multiple regression test of the effect of green procurement on organization performance**

Green Procurement	St. Dev.	Beta	T	Sig.
Eco-specification	0.039	0.293	5.550	*0.00
ISO 14001 Suppliers	0.045	0.135	2.714	*0.001
Environmental requirement vendor selection criteria	0.034	0.102	2.983	*0.001

R = 0.571 R<sup>2</sup> = 0.326  $\hat{R}^2$  Adj. = 0.318 F = 54.204 DF = 222/3 F tab. = 2.60 (0.000) H<sub>0.1</sub> hypothesis result = Reject

Table 4 The three-dimensional influence of green procurement is shown in this multiple linear regression test result (eco-specifications, ISO 14001 suppliers and Environmental requirement vendor selection criteria) on organization performance. The table shows that there is a statistically significant effect of green procurement on the effectiveness of Manufacturing firms in Mombasa County, where the level of significance is 0.00. The value R<sup>2</sup> of

0.326 means about 32.6% of changes in performance of these manufacturing firms and strong relationship between the variables since the value of (R) is 57.1%. Based on the result, we're open to other possibilities H<sub>01</sub> which affirms "there is a statistically significant effect of green procurement on the performance of manufacturing firms in Mombasa County."

#### Test results of the second main hypothesis

The second research hypothesis was: "There is no statistically significant effect of reverse logistics on organization performance of manufacturing firms in Mombasa County."

**Table 5: Multiple regression test of effect of reserve logistics on organization performance**

Reverse Logistics	St. Deviation	Beta	T	Sig.
Recycled product	0.087	0.415	4.231	*0.00
End of life return	0.078	0.063	0.462	0.532
Waste disposal	0.086	0.228	3.170	*0.001

R = 0.487 R<sup>2</sup> = 0.237  $\hat{R}^2$  Adj. = 0.227 F = 21.450 DF = 222/3 F tab. = 2.60 Sig. = 0.00 H<sub>0.2</sub> hypothesis result = Reject

Table 5 indicates the results of the multiple linear regression test, that is the effect of reverse logistics with three dimension (recycled product, end of life returns and waste disposal) on organization performance. The table shows that there is a statistically significant effect of reverse logistics on the performance of Manufacturing firms in Mombasa County, where the level of significance is 0.00. The value R<sup>2</sup> of 0.237 explains 23.7% of

changes in performance of these manufacturing firms and strong relationship between the variables since the value of (R) is 48.7%. Based on the result, we accept the alternative hypothesis H<sub>02</sub> which states that "there is a statistically significant effect of reverse logistics on the performance of manufacturing firms in Mombasa County."

#### Test results of the third main hypothesis

The third hypothesis states: "There is no statistically significant effect of green packaging on organization performance of manufacturing firms in Mombasa County."

**Table 6: Multiple regression test of effect of green packaging on organization performance**

SCM	St. Deviation	Beta	T	Sig.
Packaging size	0.077	0.114	2.192	*0.00
Biodegradable package	0.088	0.673	10.588	0.512
Substitution of materials	0.070	0.110	2.023	*0.001

$R = 0.782$   $R^2 = 0.611$   $\hat{R}^2$  Adj. = 0.601  $F = 15.518$   $DF = 222/3$   $F_{tab.} = 2.60$   $Sig. = 0.00$   $H_0.3$  hypothesis result = Reject.

Table 6 indicated the results of the multiple linear regression test, that is the effect of green packaging with three dimension (packaging size, biodegradable package and substitution of materials) on organization performance. The table shows that there is a statistically significant effect of green packaging on the performance of Manufacturing firms in Mombasa County, where the level of significance is 0.00. The value  $R^2$  of 0.611 explains 61.1% of changes in performance of these manufacturing firms and strong relationship between the variables since the value of (R) is 78.2%. Based on the result, we accept the alternative hypothesis  $H_{03}$  which states that "there is a statistically significant effect of green packaging on the performance of manufacturing firms in Mombasa County."

### CONCLUSION AND RECOMMENDATIONS

The results showed that sustainable supply chain strategies have an impact on Mombasa County's Manufacturing firms' overall performance. Researchers found that most of the companies investigated had implemented green procurement, reverse supply, and green product,

and that these practices improved the efficiency of the organizations. Another conclusion of the study is that there are strong positive relationship between sustainable supply chain practices (independent variables) and performance (dependent variable).

Based on the findings, it was recommended that management of manufacturing firms ought to focus on supporting the sustainable supply chain strategies and their effective implementation. Similarly, it's ideal to come up with systems to execute and watch the sustainable supply chain management implications on overall performance.

### Areas for Further Research

Future research should be conducted focusing other industrial sector in Kenya. This would lead knowledge base advancement and development of understanding of how organization performance is influenced by adoption of sustainable supply chain management practices. A similar study can be exploring into mining and transportation sector. Further, other study may also be done on as a case study analysis of a multinational firm to determine the successful impact of sustainable supply chain management hence expand the advancement of knowledge base through with the integration of case study analysis.

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