

**EFFECT OF GREEN SUPPLY CHAIN MANAGEMENT ON ORGANIZATIONAL
PERFORMANCE AMONG TEA PROCESSING FIRMS IN KERICHO AND BOMET
COUNTIES IN KENYA**

MUMA BENARD ONYANGO

**A Research Project Submitted to Graduate School in Partial Fulfillment of the
Requirements for the Degree of Master of Business Administration**

(Operations Management Option) of Egerton University

EGERTON UNIVERSITY

OCTOBER 2014

DECLARATION AND APPROVAL

Declaration

This study is my original work and has not been submitted to any other Institution of higher learning for the award of degree.

Signature_____

Muma Benard Onyango

Date

CM11/00691/12

Approval

This Research Project has been submitted with my approval as the University Supervisor.

Signature_____

Mr. Richard Nyaoga

Date

Lecturer, Department of Accounting, Finance & Management Science
Egerton University

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DEDICATION

I dedicate this work to my late mum, Conslata Muma, my wife Lynet Kerubo and son, Blesvin Oyoo without forgetting my extended family for their unconditional financial and moral support throughout my study.

ACKNOWLEDGEMENT

I express my sincere gratitude to all people who have immensely contributed to this work. Special thanks to my supervisor, Mr. Richard Nyaoga for his valued advice and support in this work and Mr. Henry Kombo and Simon Kamau for their valued ideas.

ABSTRACT

The aim of this study was to investigate the effect of Green Supply Chain Management (GSCM) on Organizational Performance among tea processing firms in Kericho County. The objectives of the study were: to investigate the effect of Green Purchasing on Organizational Performance, to establish the effect of Green Manufacturing on Organizational Performance, to investigate the effect of Green Distribution on Organizational performance, to examine the effect of Green Marketing on Organization Performance and to investigate the effect of Reverse logistics on Organizational Performance. The study adopted a correlational study design and was a census survey. Data was collected from 32 tea processing firms in Kericho and Bomet Counties and analyzed using SPSS. The respondents for this study were Factory managers and Environmental representatives. Multiple regression model was developed and used to establish the effect of GSCM on Organizational Performance. Correlation analysis coupled with single tailed significance test was conducted to test each hypothesis. ANOVA test was used to determine the level of significance of the relationship between the variables. The results were presented using tables. The study established that GSCM has positive effect on organizational performance. The study therefore recommends that managements of tea processing firms and other manufacturing firms adopt GSCM practices. The study suggests that further studies should be conducted in other processing firms other than tea processing firms. Further studies should also be done to relate GSCM with other variables like quality and customer services as well as to explore other GSCM practices other than green purchasing, green manufacturing, green distribution, green marketing and reverse logistics.

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LIST OF ABBREVIATIONS

GSCM	Green Supply Chain Management
SD	Sustainable Development
JIT	Just in Time
IT	Information Technology
KTDA	Kenya Tea Development Agency
EP	Environmental Performance
ECP	Economic Performance
SP	Social Performance
GP	Green Purchasing
GMA	Green Manufacturing
GD	Green Distribution
GM	Green Marketing
RL	Reverse Logistics

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

There has been increasing environmental concern from the government and the general public in the recent past and even today. Much of this concern has been on the impact of corporate activities on the natural environment. This is due to the negative impacts some of these activities have on the environment such as global warming and scarcity of some critical resources. This has led to environmental management becoming a critical business consideration for any company that aims to survive from many regulations and tough business requirements. (Yoon et al 2010). Nimawat and Namdev (2012) argued that organizations and people must adopt environmentally responsible production and consumption in order to recover environmental quality, reduce poverty and bring about economic growth, with resultant improvements in healthy working conditions, and sustainability. Every organization including tea processing firms must put measures in place to ensure all dimensions of its operations are environmentally friendly.

According to Pietro et al (2012), every organization must make better use of natural resources for sustainable growth. Every organization must incorporate environmentally friendly practices in all its activities. Just like other business activities, Supply Chain activities are no exception. Since the early 1990's, manufacturers have been forced to address Environmental Management in their supply chains (Wu et al, 2012). Being environmentally conscious in supply chain operations is not only associated with reduced negative impacts on the environment but also improvement in overall company performance (Green et al, 2012). While many organizations have in the past have concentrated on reverse logistics, there is need to adopt green supply chain management (GSCM) practices that looks at the entire supply chain. (Chang 2013)

Dheeraj (2012) defined GSCM as the practice of monitoring and improving environmental performance in the supply chain by integrating environmental thinking into a supply chain management throughout a product's life cycle. As put forward by Manufacturing Research Centre of Michigan State University, GSCM ensures that every agent in the supply chain: suppliers, manufacturers, vendors and consumer and all the processes involved in the entire life

of a product: material acquisition, processing, package, transportation and waste processing have no negative impact on the environment. (Bin & Jun, 2009). This is achieved through total integration and coordination of all business processes: purchasing, manufacturing, marketing, logistics, and information systems and strategy alignment of customer focus, efficiency, quality, and responsiveness (Zelbst et al. 2009), and environmental sustainability (Green et al, 2012) throughout the supply chain.

1.1.1 Green Supply Chain Management

GSCM is an emerging concept from the traditional Supply Chain Management. Its development can be traced back to late 1980s during the quality revolution and the Supply Chain Revolution in early 1900s when organizations started seeing the need of being environmentally conscious (Srivastava, 2007). According to Ageron et al, (2011), GSCM is the strategic, transparent, integration and achievement of an organization's social, environmental, and economic objectives in the systemic coordination of key inter-organizational business processes for improving the long-term performance of the firm and its supply chain partners.

Toke et al (2012) defined GSCM as a systematic integrated process, from raw material to finished product, up to customers to disposal aimed at protecting the environment from degradation and to improving productivity and profitability. It aims at producing more friendly output from less input through clean manufacturing while integrating economic development, social progress and ecological balance. To Mefford (2011), it is a way of creating economic value through harmonization and control of flow of material, capital, information and work in the product's life. Achieving GSCM requires working closely with customers and suppliers, analyzing internal business operations and processes and considering environmental factors in the entire life cycle of a product. (Hasrulnizam et al, 2013)

Dheeraj and Vishal, (2012) discussed four major practices of GSCM. These are green purchasing, green manufacturing and materials management, green distribution and marketing and reverse logistics. Green and Zelbst (2012) on the other hand discussed internal environmental management, green information system, green purchasing, cooperation with consumers, eco design and investment recovery while Ninlawan et al (2010) discussed green procurement, green manufacturing, green distribution, and reverse logistics. Irrespective of how

the researchers group these practices. An outstanding fact is that they all aim at achieving sustainable operations throughout the organizations.

1.1.2 Organizational Performance

As pointed by Pierre et al. (2012) organizational performance comprises three specific areas: financial performance, market performance and shareholders return while to Rha (2010) it is the ability of an organization to achieve high efficiency, high level of customer service and ability to respond to changing business environment. Teuteberg and Wittstruck (2010) on the other hand identified three dimensions of organizational performance. These are environmental performance, economic performance and social performance. A number of studies that have looked at GSCM and organizational performance have focused on operational performance, economic performance, environmental performance and social performance. An understanding of the parameters of organizational performance is paramount in measuring the general organizational performance and effectiveness. This study focused on operational performance, environmental performance and social performance.

1.1.3 Tea Manufacturing Firms in Kenya

In Kenya, tea is grown mainly as a cash crop sold both locally and internationally. According to Der wal (2011), Kenya is at third position in global tea production and second position in tea export accounting for 20% of tea exported in the whole world. Much of the tea is grown in the Kenyan Highlands located on the West of the Rift Valley with some grown on highlands east of the Rift Valley as well as in central Kenya. About 60% is grown by small scale farmers with about 40% being grown by large scale privately owned estates. The major tea producers in Kenya, among others are: Kenya Tea Development Agency (KTDA), Unilever Tea Kenya Ltd , James Finlays Kenya limited, Eastern Produce Kenya limited and George Williamson Tea Kenya limited. There are 107 registered tea processing firms in Kenya (Tea Board of Kenya, 2011).

In Kericho and Bomet Counties, there are thirty two tea processing firms (factories). Eight of these factories are owned by KTDA. Seven are owned by Unilever Tea Kenya limited while James Finlays Kenya limited owns six, Sotik tea owns two tea factories while George Williamson owns one. The rest are owned privately (Kirui, 2013).

1.2 Statement of problem

GSCM in itself is not a new concept since literature has been developed in this area from as early as 1989 (Chien and Shih, 2007). However, this literature had not been broadly developed making it difficult to understand the relationship between GSCM and Organizational Performance. In Kenya, limited research had been done on GSCM notwithstanding that the little research already done had focused on the manufacturing industry and had majorly related GSCM and Environmental Conservation (Amemba et al, 2013). None of these researches had been done in the Tea processing industry. It is important to note that despite the studies already done, there was continued outcry from environmental conservatists on the issue of conserving the natural resources for sustainable growth and a long-standing concern about land degradation, deforestation and environmental pollution in general (Amemba et al, 2013). To respond to this outcry, many tea processing firms which majorly rely on firewood as source of energy have resorted to plant their own trees and manage energy sources through reforestation. They have also improved their transportation systems to reduce wastages and pollution (Tea Board of Kenya, 2011). However, because of the limited research on GSCM, the effect of adopting these green practices on organizational performance in the Kenyan Context was still not clear. There was therefore need for further examination on this area through research so as to bridge the existing knowledge gaps. This study aimed to bridge such gaps by examining the effect of GSCM on Organizational Performance among Tea Processing Firms in Kericho and Bomet Counties.

1.3 Objectives of the Study

The general objective of this study was to study the effect of GSCM on Organizational Performance among Tea Processing Firms in Kenya.

The specific objectives of the study were:

- i. To examine the effect of Green Purchasing on Organizational Performance among tea processing firms in Kericho and Bomet Counties
- ii. To establish the effect of Green Manufacturing on Organizational Performance among tea processing firms in Kericho and Bomet Counties
- iii. To determine the influence of Green Distribution on Organizational performance among tea processing firms in Kericho and Bomet Counties

- iv. To examine the effect of Green Marketing on Organization Performance among tea processing firms in Kericho and Bomet Counties
- v. To determine the influence of Reverse logistics on Organizational Performance among tea processing firms in Kericho and Bomet Counties

1.4 Research Hypotheses

This study tested the following hypothesis;

Ho₁: Green Purchasing has a negative effect on Organizational Performance among Tea

Processing Firms in Kericho and Bomet Counties

Ho₂: Green manufacturing has negative effect on Organizational Performance among Tea

Processing Firms in Kericho and Bomet Counties

Ho₃: Green distribution negatively affects Organizational Performance among Tea

Processing Firms in Kericho and Bomet Counties

Ho₄: Green Marketing negatively affects Organizational Performance among Tea Processing

Firms in Kericho and Bomet Counties

Ho₅: Reverse Logistics has negative effect on Organizational Performance among Tea

Processing Firms in Kericho and Bomet Counties

1.5 Significance of the study

The research findings and recommendation of this study could be important in enriching literature and stimulating further research on various aspects of supply chain management and Organizational Performance. The findings of the study could also be useful to tea processing firms in implementation of GSCM as well as other firms in understanding the contribution of GSCM to Organizational Performance. Supply Chain Management organizations could also find these findings and recommendations useful in the management of their Supply Chain operations.

1.6 Limitations of the Study

The study focused mainly on internal supply chain management activities by the tea processing firms with data majorly collected from within the firms. Some respondents could be unwilling to give accurate information for fear that the information may be sensitive or confidential bearing in mind the level of importance attached to environmental protection. It was also important to note that GSCM was still a gray area to some organizations and some organizations could be practicing it without proper documentation. This could compromise of the reliability of the data collected. The study could also be limited by financial constraints owing to the fact that the targeted firms are widely spread within the county.

1.7 Delimitations of the Study

The above limitations were overcome by taking the following actions: Necessary measures were taken to ensure that proper communication is made on the purpose of the study. The respondents were assured of confidentiality of the use of information provided. To minimize the problems associated with collecting data from respondents who may not fully understand green supply chain management, data was collected only from production manager and environmental representatives from the firms. To ensure the study was conducted within the proposed timelines and there were adequate funds, regular follow ups were done and financial provisions were made in the budget.

1.8 Scope of the Study

The research aimed at investigating the effect of GSCM on Organizational Performance among Tea Processing Firms in Kericho and Bomet Counties. The study was conducted in all the thirty two firms in the county see appendix 2. It focused on the activities and processes in supply chain of all tea processing firms in Kericho and Bomet Counties from the time when tea is collected from the fields to when it is ready for sale as a finished product. The respondents for this study were a production manager or an environmental representative from each tea processing firm in the county.

1.9 Operational Definition of Terms

Green Supply Chain Management: a systematic integrated process aimed at conserving the environment and improving productivity and efficiency throughout the supply chain

Organizational Performance: the recurring activities to establish organizational goals and make adjustments to achieve the goals more effectively and efficiently

CHAPTER TWO

LITERATURE REVIEW

2.1 Green Supply Chain Management

Green practices and environmental consciousness are beginning to shape the economy and drive the way in which firms compete. An integrated approach to environment must be taken. This calls for integration of all business functions like purchasing, manufacturing, marketing, logistics, and information systems (Green et al., 2010). One approach to achieve this integration is through GSCM through its individual practices. Various researches have put forward various practices that can be used to achieve GSCM. Other researchers call them GSCM or activities. It is important to note that different organizations may adopt different GSCM practices depending on their operations and characteristics (Liu et al., 2011) and industrial sector (Huang et al., 2012).

Hazen et al. (2011) associated GSCM with recycling and re-manufacturing. Dheeraj and Vishal, (2012) discussed four major practices of GSCM. These are: green purchasing, green manufacturing and materials management, green distribution and marketing and reverse logistics. Green and Zelbst (2012) on the other hand discussed internal environmental management, green information system, green purchasing, cooperation with consumers, eco design and investment recovery while Ninlawan et al. (2010) discussed green procurement, green manufacturing, green distribution, and reverse logistics. Amemba et al. (2013) and Srivastava (2007) discussed green procurement, green manufacturing, green operations, reverse logistics and waste management as the major elements of GSCM. In addition to the above practices, Samson and Simpson (2008) argued that GSCM can be implemented through the following strategies: Risk-based Strategy based on minimal inter-organizational engagement, Efficiency-based Strategy which ties environmental performance to operations in the supply chain, Innovation-based Strategy which involves use of more environmentally specific performance strategy in the Supply Chain and Closed-loop Strategy which involves capturing and recovery of materials to either re-manufacture or recycle based on their value. Irrespective of how the researchers group these practices. An outstanding fact is that the all aim at achieving sustainable operations throughout the organizations.

Ninlawan, et al. (2010) identified Green Supply Chain Management activities as shown in the figure 2.1.

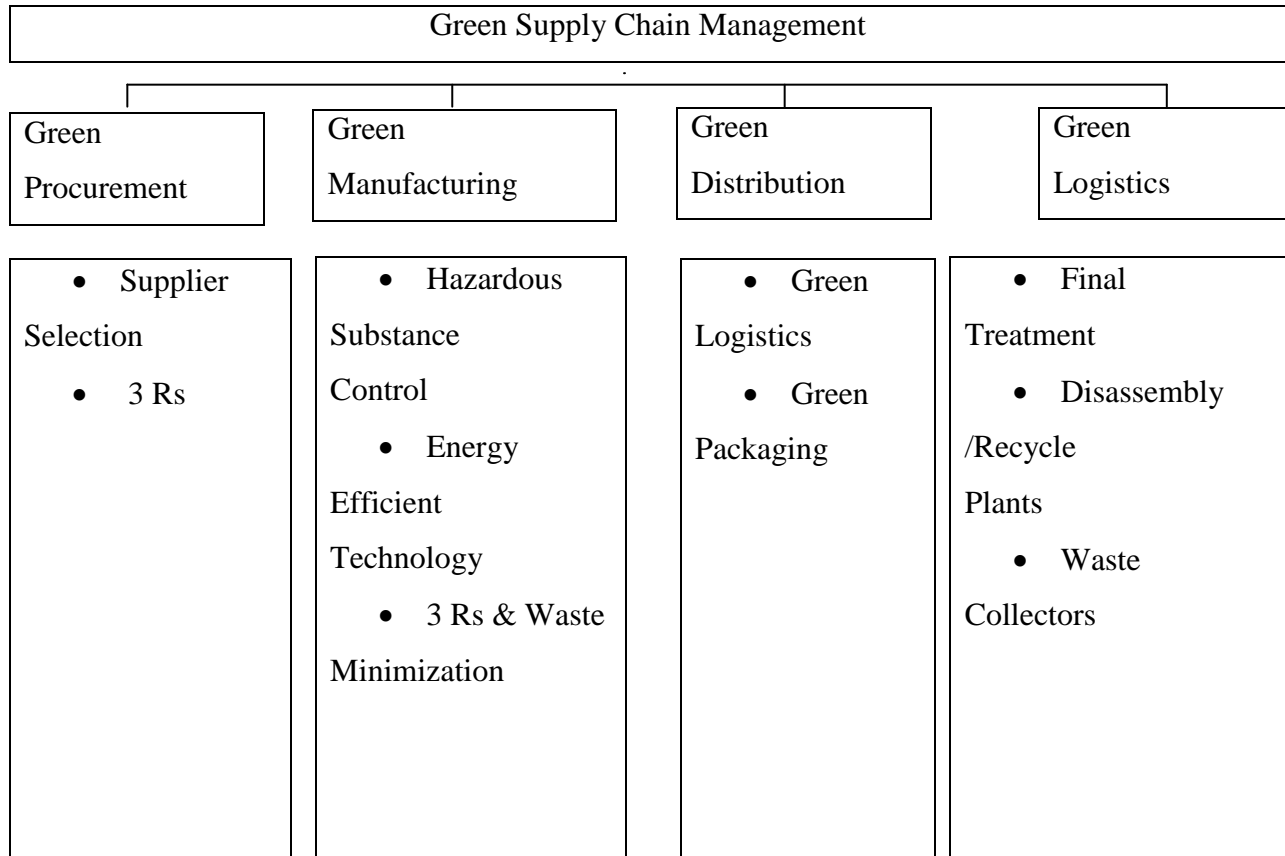


Figure 2.1: Activities in Green Supply Chain Management

Source: Ninlawan et al. 2010

As seen in the literature, different researchers have different views on GSCM practices. Generally, according to Hervani et al. (2005) and Bhardwaj and Singh (2013), GSCM practices can be grouped into the following major activities: green purchasing and inbound logistics, green manufacturing, green materials management, green distribution/marketing and reverse logistics.

2.1.1. Green Purchasing and In-bound Logistics

Purchasing activities include vendor selection, material selection, outsourcing, negotiation, buying, delivery, scheduling, and materials management (Toke et al., 2010). Amemba et al. (2013) defined green purchasing as environmental purchasing involving activities such as

reduction, reuse and recycling of materials (3Rs) in the process of purchasing. In their study on GSCM Toke et al. (2010) identified a number of initiatives that can be incorporated in the purchasing function to achieve environmental sustainability. Organizations can develop Supplier Environmental Questionnaire to help in finding out suppliers' stance on Climate Change and related Environmental issues before selecting suppliers. Organizations can conduct Supplier Environmental Audits and Assessments to monitor supplier compliance to environmental standards and requirements. These requirements can also be used to identify possible weaknesses and help the suppliers to develop and improve environmental performance. Organizations can also make it a requirement for their suppliers to undertake independent Environmental Certification for instance ISO 14000 certification or even make environmental criteria part of their suppliers' contracts conditions.

Other than the above initiatives organizations can opt for a participative approach to green purchasing by jointly developing cleaner technology and processes with their suppliers; this may be done by engaging suppliers so as to design for the environment, encouraging reuse and recycling of materials. Alternatively, an organization may opt for purchasing of materials or parts only from "Green Partners", suppliers who satisfy green partner environmental quality standards and follow regulations for the environment-related substances, suppliers who have acquired ISO14000, OHSAS18000 or RoHS directives and suppliers who have control systems for hazardous substances in their standard lists and have obtained green certificate (Ninlawan et al., 2010)

In-bound logistics can be defined as materials management system that is concerned with purchasing and supplier management. It is the aim of every production firm to reduce the necessary overhead and resource consumption needed to manage inventory (Chandrakar & Kumar, 2012). The approach adopted has been to reduce inventory, thus reducing or eliminating costs associated with inventory like storage costs and waste (Toke et al. 2010). Some producers have opted to deliver inputs and produce in small batches. Just in Time (JIT) method of manufacturing system has been seen as one way that can be used to reduce inventory costs and at the while at the same time meeting customer orders. JIT is defined by Lee White as an inventory control philosophy whose goal is to maintain just enough materials in just the right place at just the right time to make just the right amount of products. JIT manufacturing system requires that

all materials arrive where they are needed, when they are needed and in the exact quantity needed. These materials must be made available in their usable form. The manufacturing firm must make timely and proper materials forecasts and communicate this to suppliers. It is important to note that JIT environment permits only few suppliers making it extremely important to build strong and long term relationship with the suppliers as well as well-developed supply chain system (Nimawat & Namdev, 2012).

2.1.2 Green Manufacturing

According to Nimawat and Namdev (2012), green manufacturing involves use of fast, reliable, and energy efficient production equipment aimed at eliminating wastes and improving productivity. It involves production processes that use inputs with minimal or reduced environmental impacts and which are highly efficient, and are associated with little or no waste or pollution (Amemba et al., 2013). Al-Odeh and Smallwood (2012) associated green manufacturing with clean production method, efficient technology, reduced raw materials and resources so as to reach low input, high output and low pollution while Amemba et al. (2013) advocated for use environmentally friendly energy sources like solar energy, recycling of raw materials and use biodegradable energy sources and materials in manufacturing operations. Lean manufacturing and Just-in-time production methods are very popular approaches that haven't adopted in the past to achieve environmental production or green manufacturing. Green manufacturing is associated with benefits such as reduced environmental degradation, reduced cost of manufacturing, improved quality to customers, both from within and outside the organization as well as better environment to the community (Wan Mahmood et al., 2013). Generally, Green manufacturing involve green design, total quality environmental management, closed loop manufacturing, energy efficient production technology and lean production.

Green design, according to Otago (2009) is about designing a product or a service that encourages environmental awareness while to Amemba et al. (2013) and Fiksel (1996), green design as a systematic consideration of design issues associated with environmental safety and health throughout the full product life. According to Wan Mahmood et al. (2013), Optimization of resource opportunities must be considered when designing products. Long term waste management strategy for the product must be considered to enhance its lifetime and to increase its ease of disassembly for recycling. As put forward by Ninlawan et al. (2010), an organization

can opt to use improved technology so as to produce using low quantity of materials, use highly recyclable materials, or use bio-based plastics. Green design may take either structural designs or product designs: an organization can use biodegradable raw material and inputs in the design of products or embrace continuous development so as to improve their product so as to conform with environmental standards and requirements (Amemba et al., 2013)

Total Quality Environmental Management (TQEM) is a method of applying total quality management approaches to corporate environmental strategies (Lazibat, 2009). It is a managerial philosophy that involves involvement and empowerments of employees, continuous improvement, team efforts, inter functional collaboration, and leadership.

According to McKinsey Global Institute (2011), by the year 2030 thirty percent of the world's demand for resources could be met through resource efficiency improvements. Organizations must build efficiency in their production system. A closed-loop manufacturing system can be adopted to improve performance of organization's internal supply chain and to attain sustainability. A Closed-loop manufacturing is a process of producing products with no negative environmental impact (Toke et al., 2010). As Fleischmann et al. (2001) points out, a recovery networks links a "disposer market", market for used products available for repair, remanufacturing, or recycling with a "reuse market" It is driven by the philosophy of zero-emissions in the production system and helps to reduce waste streams that flow from the production process. Environmentally toxic materials may be substituted with other materials that are more environmentally friendly. Returned or recycled products have found their way into the supply chain as a way of reducing wastages.

How efficient manufacturing technology of an organization is dictates how efficient its production process is. It dictates the consumption rate of inputs and the level productivity. Appropriate technology can be used to increase product life-span resulting in higher efficiency and productivity. Use of appropriate technology and proper maintenance leads to improved machine uptime and improve machine performance (Ninlawan et al. 2010)

Lean production is a manufacturing approach aimed at elimination of waste in area of manufacturing. Any expenditure that does not add customer value is considered a waste and is eliminated. Lean production aims at reducing human labor, inventory levels, products

development time and production and storage space while ensuring customers' needs and expectations are met through high quality products. It aims at creating competitive advantage for the organization through reduced costs, improved environment and excellent quality (Nimawat & Namdev, 2012).

2.1.3 Green Distribution

Manufactured products have to reach the market in time; the market has to be informed about the products' availability, their features and capabilities. This requires appropriate distribution and marketing systems. It is important that environmental concerns are taken care of by offering environmentally friendly products through environmentally friendly distribution and marketing system. Green distribution is achievable through; green packaging, green transportation and logistics (Nimawat & Namdev, 2012).

It is important that the products are packed in a way that minimizes negative impacts on the environment. According to Ninlawan et al., (2010) Green packaging involves downsized packaging and use of green packaging materials. They also point out the need to cooperate with vendors to standardize packaging, encourage and adopt returnable packaging methods, promote recycling and reuse of packaging materials. On the other hand, Zhang and Zheng (2010) pointed out that green packaging can be achieved by use of biologically gradable plastics and implementation of simplified packaging as this can significantly reduce negative environmental impacts as well as reduce packaging waste. Use of packaging materials that can be recovered or regenerated not only helps to reduce their impact on the environment, but also encourages use of recycled materials and to reduce waste disposal costs. Al-Odeh and Smallwood (2012) pointed out sustainable design strategies for the product and for the package as the first activities of implementing green supply chain management.

The next aspect of green distribution is green storage. It is the aim of every business organization to reduce transport mileage and save transportation costs as much as possible. There is therefore the need to choose the best location for the storage facility and come up with the most appropriate storage layout with adequate space. Too dense storage facility layout will lead to increased number of transport trips resulting to increased energy consumption and emissions of pollutants to the environment. Too loose facility layout on the other hand will reduce the

efficiency of transport and increase load rate. The storage facility should be capable of storing different categories of materials. In addition, the design and construction of storage facilities must meet the requirements of non-polluted environment, while strengthening maintenance of good humidity, corrosion, waterproofing among other factors (Zhang & Zheng, 2010)

Another important dimension of green distribution is green transportation and logistics. According to Zhang and Zheng (2010), one of the business activities with greatest impact on the environment is the means of transport, especially through emissions, noise and traffic congestion caused by road transport. Joint distribution and uniform delivery of materials can improve resource allocation, reduce the flow of materials, improve effectively and ease traffic congestion conditions especially on roads. Firms can use third party logistics to improve use and allocation of resources and avoid issues such uneconomical transport operations, overdependence on own transport systems and increased pollution. Firms can also deliver directly to user site. Products can be transported together rather than in small batches using alternative fuel modes so as to reduce the number of trips and hence reduce emission (Ninlawan et al., 2010). To Al-Odeh & Smallwood (2012), factors like fuel, modes of transport, infrastructure, and operational practices are important factors to consider in developing green transportation.

Toke et al. (2012) discussed some tradeoffs facing logistics. While waiting for freight to become a full load may lead to longer lead times, it is sometimes associated with cost savings and reduction of emission to the environment. Selection of transportation mode is another factor. Different transport modes utilize different levels of energy and vary in efficiency. Others are also considered to be more flexible than others. Timing, speed and flexibility are therefore very important factors to consider in choosing a transportation option. Another important tradeoff is the 'carrier', the choice for carrier will depend on factors such as the nature of the products, whether they require special conditions, whether they have uniform shape, their size etc.

However, if analysis is done on the basic characteristics of logistical systems, a number of inconsistencies with regards to environmental compatibility become evident. Rodrigue et al. (2001) discussed basic paradoxes of green logistics as summarized in the table 2.1.

Table 2.1: Paradoxes of Green Logistics

Dimension	Outcome	Paradox
Costs	Costs reduction through improved packaging and reduced wastes with most of the benefits to the distributors.	Environmental costs are often externalized.
Time/ Flexibility	Flexible and efficient distribution achieved through Integrated supply chains.	More space and energy consumption and hence more emission due to extended production, distribution and retailing structures.
Network	Improved efficiency of the distribution system through network changes.	Concentration of adverse environmental impacts next to major hubs and along corridors and Pressure on local communities.
Reliability	Reliable and timely distribution of materials and people	Transportation modes used are the least environmentally efficient.
Warehousing	Reduction of the needs for private warehousing facilities.	Inventory contributing to congestion and space consumption.
E-commerce	Better business opportunities and diversification of the supply chain systems.	Adoption of physical distribution systems with higher levels of energy consumption.

Source: Rodrigue et al., (2001)

2.1.4 Green Marketing

There has been increased customer information exposure in the recent years. This has led to global increase in concern and pressure on organizations to protect consumer rights, and ensure their operations and products are in accordance with customer rights and have no adverse effects on the environment. Al-Odeh and Smallwood, (2012) pointed out that achieving sustainable marketing needs keeping biological balance and pay more attention to environmental protection. The concept of green marketing tries to address these issues. It involves commitment of organizations to make sure their products and operations are environmentally friendly.

According to Nimawat and Namdev (2012), green marketing is any marketing activity of an organization that aims at creating a positive effect or removes a negative effect of a particular product on the environment. In their study on green supply chain management in India, they discuss a number of benefits associated with green marketing. Such benefits include owners' satisfaction, organization social acceptance and improved sustainability. It also brings an organization close to its clients, particularly clients with particular interest consumer rights and environment. In addition to the above benefits, Al-Odeh and Smallwood (2012) argued that green marketing helps organizations enhance their relationship with customers, suppliers, and other stakeholders.

2.1.5 Reverse Logistics

According to Nimawat and Namdev (2012), reverse logistics refers to the role of logistics in product returns, source reduction, recycling, materials substitution, reuse of materials, waste disposal, repair and remanufacturing. It is a system for the recovery of used materials and products. Organizations can implement reverse logistics through recycling and waste logistics which can be established according to the actual need for the collection, classification, processing, packaging, handling, storage, and distribution to specialized treatment facility for processing (Zhang and Zheng, 2010). According to Olaf Schatteman (2013), reverse logistics involves the activities to avoid returns, to reduce materials in the forward system so as to reduce materials flow back and ensure reuse and recycling of materials.

Reverse logistics is associated with a number of benefits: such benefits include increased revenues from secondary sales, introduction of new products in place of unsold and slow moving stock, improved shareholder goodwill and public perception, reduced operating costs from reuse of recovered products and components and higher turnover rate due to better management of returns inventory (Nylund, 2012). The process of reverse logistic can be explained in terms of: removing new or used products from their initial point in a supply chain and redistributing the products using disposition management rules that will result in maximized value at the end product.

A good reverse logistics process should have the following characteristics: Firstly, it must establish convenient collection location to facilitate reception of recovered goods. Secondly,

there must be in place a packaging and storage systems to ensure the remaining value in the recovered good is not lost due to poor handling. Thirdly, there must in place a transportation mode compatible with existing forward logistic system to facilitate movement. Lastly, there must be in place a well-managed process to either return the goods to storage warehouses, return goods to the original manufacturer, selling goods in secondary markets, recycling, to get maximum value realization (Wipro, 2009).

2.2 The 5 steps Green Supply Chain Management Model

Wallerius and Zakrisson (2010) developed a five step green supply management model that can be used to implement green supply chain management. According to this model, the first stage is to identify and form a team with an executive leader for their GSCM initiatives, collect supply chain information and find out the possible risks so as to establish where the organization stands in terms of green supply chain management. It is also important to review materials management practices. The second stage is to plan for the green supply chain initiatives. This stage involves identifying opportunities in the industry in terms of green supply chain management and setting individual standards for your GSCM practices. It also involves coming up with GSCM options, evaluating the options and prioritizing the options based on the organization current state. The next stage is to decide on how to implement selected option, it is important to develop an implementation plan and a clearly stated decision making process and approach. After this stage, what follows is the implementation of the GSCM strategies according the initially developed plan. This must be done with clear understanding of the market progress. Employees must be made aware, trained and developed so as to acquire competencies and skills required in implementing GSCM. It is important to involve everyone both within and outside the organization. As the practices are implemented, a proper monitoring process must be put into place. There must be timely assessment on the progress and consistent management review so as to identify deviations and come up with improvement procedures.

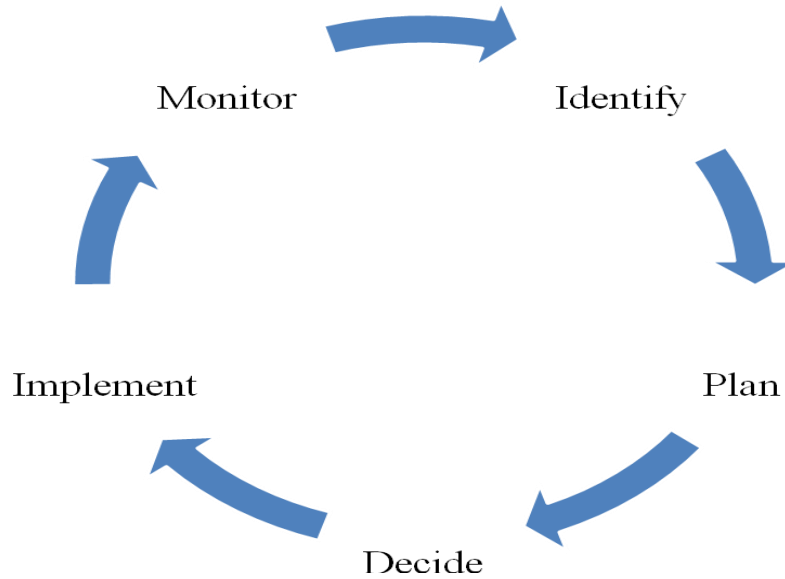


Figure 2: The 5 steps Green Supply Chain Management Model

Source: Wallerius and Zakrisson (2010)

2.3 Drivers and Barriers for Green Supply Chain Management

Dashore and Sohani (2013) and Luthra (2011) researched on the drivers and barriers GSCM. They recognized the increased pressure for certification of suppliers' environmental management system, collaboration by organizations with their suppliers to ensure quality assurance and environmentally friendly operations and reduction and elimination of product's harmful environmental impacts on the users and the environment by collaborating between product designer and suppliers not forgetting the role of government through friendly regulation and legislation that promote green operations. International quality standards like ISO 14001 standards encourage organizations towards continuous quality improvement and integration of total quality environmental management into planning and operations. Zhu et al. (2005) external groups like consumer pressure and government regulations that can drive an organization into adoption GSCM. Green operations that are considered to drive GSCM include reduced energy consumption and wastes, reusing and recycling materials and packaging, collaboration with customers to make them aware of the need to conserve the environment and the possible benefits. Reverse logistics and well managed feedback system is important in ensuring customer satisfaction and building their loyalty and a positive company image.

Environmentally friendly operations are associated with reduced cost and improved productivity and efficiency.

On the other hand, Zhu et al. (2005) found out that for a successful implementation of GSCM, a well-integrated IT system that is accepted in the organization is necessary. Inability to put into place such systems acts as a great impediment to implementation of GSCM. It is also important to align green strategies with the organization culture and the government policies and initiatives on green supply chain management. Failure to understand company culture or develop appropriate green strategies is a potential barrier just like the lack of proper policies and initiative from the government. Employees must be trained on the potential green supply chain practices with proper understanding of the market in terms of competition and diverse consumer interests. This must be followed by a proper implementation process led by top management and with every stakeholder of the organization involved. Where necessary, stakeholders may be trained. Failure to implement any of these important initiatives is an automatic barrier to implementation of green supply chain management.

Therefore, to be in a position to better implement GSCM in any organization, every organization must appreciate that the above drivers and barriers occur in most of the cases if not all. They must come up with strategies so as to overcome the barriers and to take advantage of the drivers (Kangangi, 2013)

2.4 Organizational Performance

Organizational performance is concerned with general well-being of the organization. A performing organization achieves high level of efficiency, high level of customer service and ability to respond to changing business environment Rha (2010). Teuteberg and Wittstruck (2010) identified three dimensions of organizational performance. These are environmental performance, economic performance and social performance. Green et al. (2012) in addition to environmental and economic performance discussed operational performance associated with production capabilities of the organization's production plant to produce and deliver products to customers. Chien (2007) on the other hand only looks at organizational performance in terms of environmental and financial performance. According to Green et al. (2012), environmental

performance and economic performance are both positively related to operational performance which is in turn associated with organizational performance.

2.4.1 Environmental Performance

ISO 14001 defines environmental performance as measurable results of the environmental management systems relating to the management of the environmental aspects performed by the organization based on its environmental policies and objectives (Dasgupta et al., 1998). It is focused on reduced levels of environmental pollutants (Green et al., 2012). Environmental performance of an organization may be achieved through reduction of air emission, reduction of waste water, reduction of solid wastes, decrease of consumption for hazardous materials, decrease of frequency for environmental accidents (Ninlawan et al., 2010). Environmental performance may be enhanced through among other factors assigning environmental responsibility to general managers, and they provide environmental training to non-environmental workers as well as environmental specialists (Dasgupta, 1997). Chien (2007) unlike other researchers looked at environmental performance in terms of favorable environmental policies and measures employed by the organization, operational performance, reduced emission and proper waste disposal.

2.4.2 Economic Performance

Economic performance is generally concerned with reduced cost and increased profitability (Green et al., 2012). It is focused on elimination or reductions of costs related to the environment like cost of acquiring materials and energy. According to Ninlawan et al. (2010), an economically performing organization is an organization that is able to achieve decreased cost for materials purchasing, decreased cost for energy consumption, decreased costs for waste treatment, decreased cost for waste discharge and decreased costs associated with environmental accidents in their operations. Laosirihongthong et al. (2013) associated improved economic performance with improved operations, what Green et al. (2012) called operational performance. He appreciates that improved operations leads to increase in the amount of goods delivered on time, decrease in inventory levels, decrease in scrap rate, increase in product quality, increase in product line, improved capacity utilization.

2.4.3 Social Performance

Every organization has an obligation to be socially responsible in its operations. Laosirihongthong et al. (2013) in his work discussed intangible performance that is concerned with the image the organization and its products has to its customers and its stakeholders. An organization performing socially enjoys improved community relations and corporation image (Chien, 2007).

The three dimensions of organizational performance may be measured through sustainability development perspective. Kafa et al (2013) developed key performance measures and indicators for green supply chain management and grouped in the context of sustainable development (SD) under economic, environmental and social perspectives. This was with the aim of evaluating economic, environmental and social performance so as to achieve the benefits of green supply chain management.

Table 2.2: Sustainability Performance Measures for Green Supply Chain Management

SD Perspective	Measure	Metric
Economic perspective	Environmental cost	Costs of environmental compliance, recycling, energy, disposal etc
	Supply chain cost	Delivery, inventory and information sharing costs
	Quality	Customer complaints level, availability of green product warranty, scrap, rework etc
	Flexibility	Demand, delivery and production flexibility
	Responsiveness	Manufacturing, purchasing, on time delivery and product return lead-time
Environmental perspective	Level of process management	Levels of process optimization, pollution control, energy consumption etc
	Product Features	Level of recycled material used, availability of eco-labeling, usage of design-for-assembly etc

	Recycling efficiency	Recycling time, energy consumption during recycling and waste reduction
	Environmental technology	Level of clean technologies and number of new products and process
Social perspective	Management commitment	Employees motivation, environmental control and management initiatives etc
	Customer satisfaction	Customer interest and satisfaction from green products
	Employee development	Employee training on green operations

Source: Kafa et al. 2013

2.5 Green Supply Chain Management and Organizational Performance

According to Hasan (2013) there is a positive relationship between sustainable/ GSCM and environmental and operational operations. Similarly, Rodrigue, et al. (2001) associated green operations with reduced costs and improved efficiency. Nimawat and Vishal (2012) argued that a direct relationship exists between green supply chain practices and cost savings and efficiency. Adoption of green supply practices has positive effects on competitive factors such as suppliers, consumers and green technology (Chien & Shih, 2007) and is associated with such intangible benefits as positive image and reputation of an organization (Rodrigue et al., 2001)

Similarly, Green et al. (2012) pointed that green supply chain management practices does not only improve environmental and economic performance but also improves operational and organizational performance which is consistent with the views of Chien and Shih (2007) that improved organizational environmental performance is achievable through adoption of GSCM and the views of Wan Hasrulnizam et al. (2013) that adoption of GSCM practices improves the organization's capabilities to sustain its environment and strengthens its economic viability. Adopting a green marketing for example removes negative effect of a particular product on the environment bringing the producing organization close to its clients, particularly those with environmental concerns. This is in addition to maintaining the environment and rationalizing the

use of natural resources (Nimawat & Vishal, 2012). Green Supply Chain practices can also positively influence manufacturing system performances (Wan Hasrulnizam et al., 2013).

It is important to note that positive image; brand building among other factors is some of the top incentives for organizations that implement green supply chain management. Such organizations have improved public perception of their operations (Nimawat & Vishal, 2012)

2.6 Empirical Literature

Choi and Zhang (2011) conducted a study on green logistics and business performance in China. Their results showed a positive relationship between green strategy and business performance. They associated green practices with improved competitiveness of an organization. They also found out that some organizations have found a match between environmental considerations and profitability. Otago (2009) argued in his findings on green supply management that GSCM helps reduce the ecological impacts of industrial activities. Green et al. (2012) developed a green supply chain management model focusing on green supply chain management practices implemented by manufacturing organizations. They wanted see whether the adoption of GSCM practices would improve environmental performance and consequently improve organizational performance. In their findings, it was evident that green supply chain practices had a positive contribution to environmental performance and economic performance leading to improved operational performance and hence improved organizational performance. GSCM offer an ideal management mode for the harmonious development of economic benefits and social benefits in enterprises (Zhou, 2009).

A study conducted by Wu et al. (2012) on GSCM Practices among Large Global Corporations showed that most organizations are gradually incorporating more proactive sustainable measures into their strategy and everyday practice, with over two-thirds producing some type of sustainability report. Approaches they use include green procurement, sustainable supply chain, and supplier audit aimed at ensuring environmental management. Other organizations adopts Development of an environmental management system, installing sustainability key performance indicators, requiring suppliers to meet specific sustainability requirements, and joining non-governmental organizations or professional organizations in their efforts to manage sustainability in a systematic way. Toke et al. (2012) studied GSCM in Indian manufacturing companies and

found out that the following among other practices to be used by companies to implement GSCM: Green product development, Green procurement, clean technology, lean manufacturing systems, reverse logistics and eco labeling of products. They also noted that there must be top management commitment if these practices are to succeed. Similarly, Green et al. (2012) advocated for management led organization wide green supply chain management strategy. They discussed a two stage approach to implementation of green supply chain management practices. The first stage is to develop organizational wide strategy coupled with modification of existing enterprise resource planning information systems aimed at keeping an eye on the environmental initiatives. This should be followed by implementation of green operations like green purchasing, green design, and investment recovery practices.

In another study conducted by Hasrulnizam, et al. (2013) on manufacturing performance in GSCM, findings showed that improvements in manufacturing systems such as work-in-progress reduction, throughput time reduction, lead time reduction and flexibility improvement have a high potential of greening supply chain management. The study further showed optimization of processes to reduce solid wastes, recycling of materials internal to the organizations, reduction of air emission and designing for the environment to be the most popular approaches practiced by manufacturing firms in achieving green supply chain accounting for about 94 per cent. Other approaches used include substitution of environmentally disastrous materials with more friendly ones accounting for around 92 per cent while eco labeling, recovery of company's end-of-life materials and taking back packaging accounted for 34, 52 and 56 per cent respectively. However, an organization that wants to succeed must consider cost of implementing these practices (Wu et al., 2012). Costs and complexity have been reported as the major barriers to implementing Green Supply Chain Management. There is therefore need for cost effective and easy to implement solutions (Nimawat & Vishal, 2012).

As discussed by Saman et al. (2012), Liu et al. (2011) in their study of green supply chain management in China found out a positive relationship between GSCM practices and economic and environmental performances in all the three cases they studied. In these studies, they found out that market actor-oriented models are more sustainable for enhancing GSCM practices than regulation-oriented models as they are based on mutual communications and cooperation among the core stakeholders. They suggested provision of more technical supports and application of

market mechanisms other than the mandatory regulations in achieving GSCM. They further suggested production of environmentally friendly products through joint research and making it a requirement for suppliers to satisfy higher environmental standards as strategies for improving the involvement of external green supply chain management practices. It was noted that in all cases, companies entirely focus on the internally proactive environmental management activities because the external part is not implementable. Due to limited scope of their studies, they suggested further studies on interactions between GSCM practices and financial performance, business process and client services and dissemination of successful GSCM practices. Similarly, Kafa et al. (2013) and Saman et al. (2012) suggested further research on this area especially as to whether certain green practices are more important than others with respect to overall sustainability performance and focus on the social dimension of sustainable development in performance measurement of GSCM. Their aim was to provide control capacity in evaluating the effects of GSCM practices on overall organizational performance from the three perspectives of sustainable development they developed that is economic, environmental and social in an integrated approach in an integrated approach.

2.7 Conceptual Framework

In this study, the dependent variable is organizational performance and the independent variable is GSCM. The moderating variable is Organizational factors. The variables and their relationships are shown in figure 2.2.

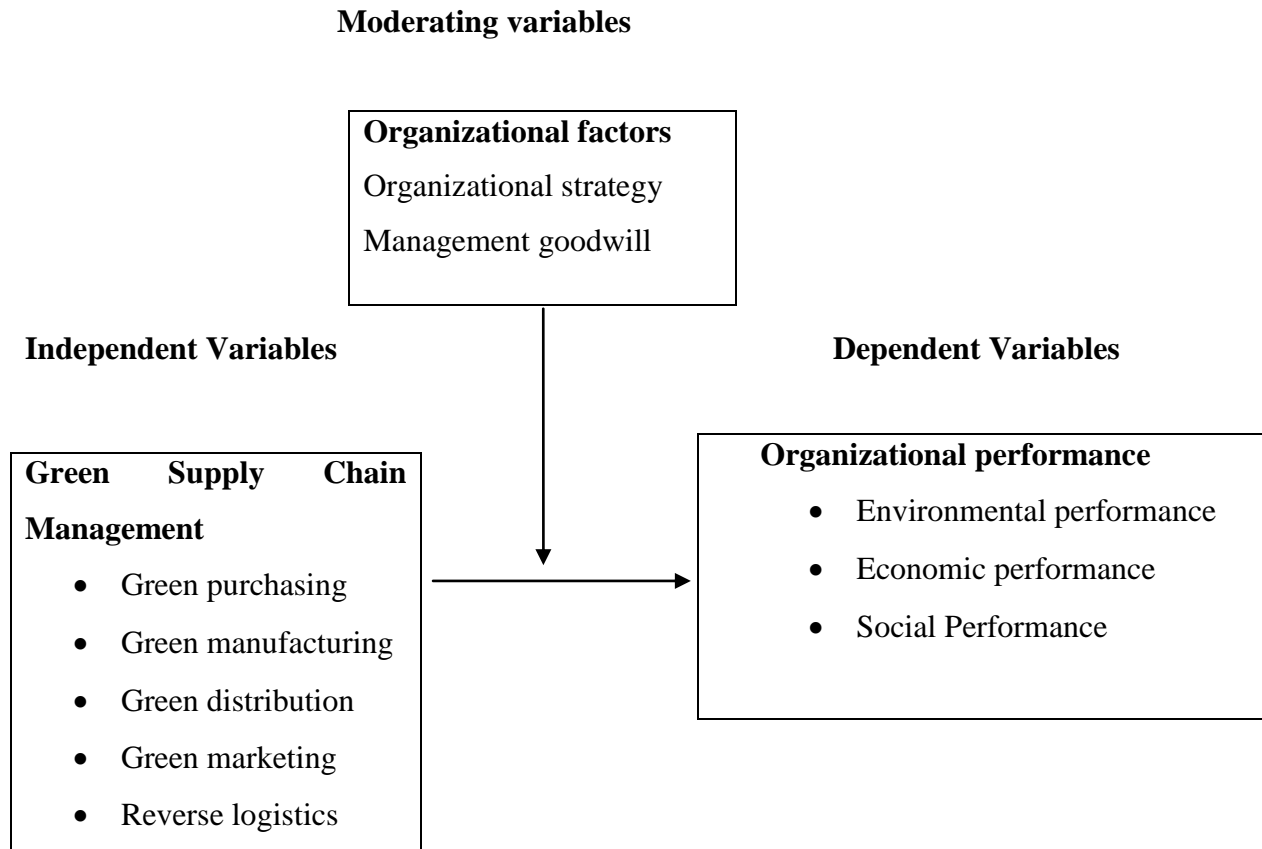


Figure 2.2: Relationship between Green Supply Chain Management Practices and Organizational Performance

Source: Laosirihongthong et al. (2013)

According to this framework, GSCM practices constitute independent variable while organizational performance is the dependent variable. GSCM was assessed through the specific activities in areas of; green purchasing, green manufacturing, green distribution, green marketing and reverse logistics. On the other hand organizational performance was assessed in relation to environmental performance, economic performance and social performance.

According to Green et al. (2012), environmental sustainability must first be adopted as a strategic imperative. This requires that top-level management work to incorporate environmental sustainability as a key part of the organization's mission statement and that the necessity to develop processes and deliver products and services that are environmentally friendly be communicated throughout all levels of the organization (Chandrakar & Kumar, 2012). As

Laosirihongthong et al. (2013) points out, it is also important to take into account the competitive strategies an organization is implementing as this has a bearing on the effect of GSCM practices on organizational performance. For example low cost strategy and quality and time-based strategies have a moderating effect on the relationship between GSCM and organizational performance.

Other factors such as environmental law regulations both from the country of operations and from international front can influence organization's efforts in implementing GSCM. Similarly, competitive factors like customers, suppliers and green technology are very influencing factors that can drive an organization to adopt green supply chain management (Chien & Shih, 2007 and Laosirihongthong et al., 2013).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

This study adopted a correlational research design. A correlational research investigates one or more characteristics of a group to discover the extent to which the characteristics vary together (Simon, 2011). The study sought to determine the effect of GSCM on performance outcomes. It adopted a cross sectional census survey and data was collected at a single point in time from all the Tea Processing firms in Kericho County.

3.2 Target Population

The study was conducted in Tea processing firms in Kericho and Bomet Counties. Given the small number of the population elements, data was collected in all the tea processing firms. The target population of this study comprised factory managers and environmental representatives from all the tea processing firms in Kericho and Bomet Counties. Since there are 32 tea processing firms in the County as shown in appendix 2. The total making the total number of respondents be 64.

3.3. Data Collection

Primary data were collected regarding green supply chain management and organizational performance. The respondents were the Factory production managers and environmental representatives who were considered to be informed on GSCM. Data was collected using structured questionnaires which were self-administered. Questionnaires were preferred because of the simplicity in their administration and low cost associated.

3.4 Validity and Reliability

The questionnaire items (questions) were developed to represent each variable in the research. A pre-test was done on the items and their measurement by checking the results obtained from the focus groups. Expertise opinions were also sought from lecturers and environmentalists.

Reliability analysis seeks the extent to which a measurement procedure produces the same result if the process is repeated (Toke et al., 2012). To ensure data collection procedure was reliable,

cronbach alpha coefficient was calculated using the formula adopted from Toke et al. (2012) shown below;

$$\alpha = 1 + \frac{n}{n-1} \left(1 - \frac{\sum Vi}{Var(X)} \right)$$

Where: n=number of questions

Vi =Variance of Scores of each question/sum of item variance

Var (X) = Composite Variance

A value of 0.77 was obtained and compared with the threshold of 0.7. In addition, a pilot test was conducted in Tirage Tea factory. A total of 12 questionnaires were issues and collected for test analysis. Tiraga tea factory was excluded in actual data collection.

3.5 Data Analysis and Presentation

The data collected was coded, and analyzed through SPSS (statistical package for social sciences) version 21. Descriptive statistics such as mean score and standard deviation were used to describe and explain the green supply chain management practices and organizational performance. A multiple regression analysis was used to test relationship between Green Supply Chain management and Organizational Performance; Value greater than 0.05 indicated a strong relationship while value less than 0.05 indicated weak relationship. ANOVA test was used to determine the level of significance of the relationship between Green Supply Chain Management and Organizational Performance. Value more than 0.05 indicated statistically insignificant effect while value less than 0.05 indicated statistically significant effect.

A general regression model that was used in the study is as shown below.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where; Y - Organizational Performance

β_0 - Constant

$\beta_1 - \beta_5$ - Regression coefficients

X_1 - Green Purchasing

X_2 - Green Manufacturing

X_3 - Green Distribution

X_4 - Green Marketing

X_5 - Reverse logistics

ε - Error term

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Descriptive Analysis on Background Information

In this study, a total of 62 questionnaires were issued out to respondents. 43 questionnaires were filled and collected by the researcher. This showed a response rate of 69.35 %. The respondents' distribution by gender is shown in figure 4.1

Table 4.1.1: Respondents distribution by gender

Position	Frequency	Percent
Male	30	69.79
Female	13	30.21
Total	43	100

From table 4.1.1, Out of the 43 respondents who responded, 30 were males while 13 were females. This showed that majority of factory managers and environment representatives in tea processing firms are males. The distribution of the respondents according to the position held was as shown in table 4.1.2

Table 4.1.2: Position Held by Respondent

Position	Frequency	Percent
Production Managers	34	79.1
Environmental Representatives	9	20.9
Total	43	100

Table 4.1.2 shows that 79.1% of the respondents were production managers while 20.9 % were environmental representatives. This shows that majority of the tea factories had production managers in charge of production and environmental issues.

4.2 Descriptive Analysis on Green Supply Chain Management

Green Supply Chain Management was studied in terms of green purchasing and inbound logistics, green manufacturing, green distribution, green marketing and reverse logistics. Analysis of the responses is presented in tables 4.2.1, 4.2.2, 4.2.3, 4.2.4 and 4.2.5

4.2.1 Green purchasing and inbound logistics

The respondents' pinions were sought on green purchasing and inbound logistics. The responses were as presented in table 4.2.1

Table 4.2.1: Green purchasing and inbound logistics

No.	Statements on Green Purchasing and Inbound Logistics of the organization						
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	
1.	Organization environmentally conscious in its purchasing operations	-	-	27.9 %	62.8 %	9.3 %	
2.	Organization collaborate with suppliers to develop cleaner technology and processes for its inputs	-	11.6 %	41.9 %	46.5 %		
3.	Organization purchases from suppliers who meet quality standards.	-	37.2 %	48.8 %	14.0 %		
4.	Organization reuse and recycle materials where possible	-	2.3 %	23.3 %	62.8 %	11.6 %	
5.	Organization practices just in time to avoid wastages due to excess stock.	-	7.0 %	62.8 %	30.2 %		
6.	Organization purchases from suppliers with strong relationship to avoid wastes	-	-	9.3 %	62.8 %	27.9 %	

According to table 4.2.1, 27.9 % of the respondents were indifferent that tea processing firms are generally environmentally conscious in their purchasing operations, 62.8 % agreed while 9.3 strongly agreed. 11.6 % disagreed that tea processing firms collaborates with suppliers to develop cleaner technology and processes for inputs, 41.9 % were indifferent while 46.5 %

agreed. As to whether tea processing firms only purchase from suppliers with environmental standards, 37.2 % disagreed, 48.8 % were indifferent while 46.5 % agreed. 2.3 % of the respondents disagreed that tea processing firms reuse and recycle materials where possible, 23.3 % were indifferent, 62.8 % agreed while 11.6 % strongly agreed. 7.0 % of the respondents disagreed that tea processing firms practice just in time purchasing, 62.8 % were indifferent while 30.2 agreed. Lastly, 9.3 % of the respondents were indifferent that tea processing firms only purchase from a few suppliers with whom there were strong relationship, 62.8 agreed while 21.9 strongly agreed.

The results show that tea processing firms are generally environmentally conscious in their purchasing operations; the firms have collaborations with their suppliers aimed at developing cleaner technology and processes for its inputs and the firms only purchase from a few suppliers with strong relationship to avoid wastes. However, it is not clear whether the tea processing firms purchase only from suppliers who follow environmental regulations and meet environmental quality standards. Generally, tea processing firms re-use and recycle materials where possible. As to whether they use just in time purchasing approach to avoid wastages associated with excess stock was not clear as shown by high level of indifference among respondents.

4.2.2 Green Manufacturing

The respondents were asked to express their opinions on green manufacturing. Their responses were as shown in table 4.2.2

Table 4.2 2: Green manufacturing

No.	Statements on Green Manufacturing practices of the organization	Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree
1.	Energy sources used in manufacturing in the organization are environmentally friendly	-	-	51.2 %	48.8 %	-
2.	Manufacturing technology used reduce material wastages and increase productivity	-	-	41.9 %	51.2 %	7.0 %
3.	The production technology used has minimal	-	-	4.7 %	48.8 %	46.5 %

environmental pollution						
4.	Inputs used in the organization are associated with little wastes and pollution	-	-	7.0 %	53.5 %	39.5 %
5.	Products offered are designed to be used over a long time, reused or recycled.	-	-	7.0 %	60.5 %	32.6 %
6.	There are waste management strategies to ensure product and its components are safe	-	-	30.2 %	62.8 %	7.0 %
7.	Everyone in the organization is involved in quality and environmental management	-	-	48.8 %	46.5 %	4.7 %
8.	Any expenditure that does not add value to customers is eliminated.	-	-	34.9 %	60.5 %	4.7 %

From table 4.2.2, 51.2 % of the respondents were indifferent that energy sources used in tea processing firms are environmentally friendly while 48.8 % agreed. 41.9 % of the respondents were indifferent that the manufacturing technology used in tea processing firms reduces material wastages and increase productivity, 51.2 % agreed while 7.0 % strongly agreed. 4.7 % were indifferent that the production technology used in tea processing firms is associated with little wastages, 48.8 % agreed while 7.0 % strongly agreed. 7.0 % of the respondents were indifferent that the inputs of tea processing firms are associated with minimum wastes, 53.5 % agreed while 32.6 % strongly agree. 30.2 % were indifferent that there are long term strategies to ensure products are safe, 62.8 % agreed while 7.0 % strongly agreed. 48.8% were indifferent as to whether everyone in tea processing firms is involved in quality management, 45.6 % agreed that everyone is involved in quality management while 4.7 % strongly agreed. Lastly, 34.9 % of the respondents were indifferent that tea processing firms have measures to eliminate expenditures that do not add value, 60.5 % agreed while 4.7 % strongly agreed.

The results show that: the energy sources used in manufacturing in tea processing firms are generally environmentally friendly, manufacturing technology used in manufacturing in tea processing firms reduce material wastages and increase productivity, the production technology used in manufacturing in tea processing firms have minimal environmental pollution, inputs used in tea processing firms are associated with little wastes and pollution and products offered by tea processing firms are designed such that they can be used over a long time, reused or recycled.

The results also show that there is in place long term waste management strategies to ensure the products and their components are safe to the users throughout their lifespan, that everyone in tea processing firms is involved in quality and environmental management in tea processing firms and that measures are in place to ensure any expenditure that does not add value to customers is eliminated.

4.2.3 Green Distribution

The third aspect of green supply chain management that was studied is green distribution. The respondents were asked to express their opinions on green distribution. Their opinions were as presented in table 4.2.3

Table 4.2.3: Green Distribution

No.	Statements on Green Distribution practices of the organization	Strongly	Disagree	Indifferent	Agree	Strongly	Agree
1.	Products of the organization are packed in a way that minimizes environmental pollution	-		37. %	60.5 %	2.3 %	
2.	Company's products are packed in packaging materials that can be recycled or reused.	-		-	72.1 %	27.9 %	
3.	The company's products are packed to minimize wastage of packaging materials.	-		34.9 %	53.5 %	11.6 %	
4.	Organization recovers non-biodegradable packaging materials	-		9.3 %	74.4 %	16.3 %	
5.	Transportation methods used have minimum negative impacts on environment.	-		32.6 %	60.5 %	7.0 %	
6.	Transportation modes, means and routes are selected in a way aimed at reducing costs.	-		44.2 %	48.8 %	7.0 %	
7.	Storage facilities used by the organization are located so as to reduce transportation costs.	-		51.5 %	44.2 %	4.7 %	
8.	Layout of the storage facilities is aimed at maximum capacity utilization.	-		14.0 %	81.4 %	4.7 %	
9.	The storage facilities' layout is aimed at reduced accidents and material damage.	9.3%		44.2 %	41.9 %	4.7 %	

According to table 4.2.3, 37.2 % of the respondents were indifferent that products of tea processing firms are packed in a way that minimizes environmental pollution, 60.5 % agreed while 2.3% strongly agreed. 72.1 % of the respondents agreed that tea processing firms'

products are packed in packaging materials that can be recycled or reused while 27.9% strongly agreed. 34.9 % were indifferent that tea processing firms' products are packed in a way that minimizes wastage of packaging materials, 53.5 % agreed while 11.6 % strongly agreed. 9.3 % were indifferent that the tea processing firms recover packaging materials where non-biodegradable packaging materials are used, 74.4 % agreed while 16.3 % strongly agreed. 32.6 % of the respondents were indifferent that transportation methods used by tea processing firms have minimum negative impacts on environment, 60.5 % agreed while 7.0 % strongly agreed. 44.2 % were indifferent that transportation modes, means and routes are selected in a way aimed at reducing costs, 48.8 % agreed while 7.0 % strongly agreed. 14.0 % of the respondents were indifferent that layout of the storage facilities is aimed at maximum capacity utilization, 81.4 % agreed while 4.7 % strongly agreed. Lastly, 9.3 % disagreed that storage facilities' layout is aimed at reduced accidents and material damage, 44.2 % were indifferent, 41.9 % agreed while 4.7 % strongly agreed.

These results show that products of tea processing firms are packed in a way that minimizes environmental pollution, the products are packed in packaging materials that can be recycled or reused, the products are packed in a way that minimizes wastage of packaging materials and that tea processing firms recover packaging materials where non-biodegradable packaging materials are used. The results also show that transportation methods used by tea processing firms have minimum negative impacts on environment and those transportation modes, means and routes are selected in a way aimed at reducing costs. In addition, the results show that the storage facilities used by the organization are located so as to reduce transportation costs, layout of the storage facilities is aimed at maximum capacity utilization and the storage facilities' layout is aimed at reduced accidents and material damage.

4.2.4 Green Marketing

The respondents (factory managers and environmental representatives) were asked to express their opinions on Green Marketing. The responses were as presented in table 4.2 4.

Table 4.2.4 Green Marketing

No.	Statement on Green Marketing strategies of the organization	Strongly Disagree		Indifferent		Strongly Agree	
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Agree
1.	The organization gives adequate information and directions about products	-	-	23.3 %	74.4 %	2.3 %	
2.	The organization gives true information about their products	-	-	2.3 %	69.8 %	27.1 %	
3.	There are measures to receive clients concerns about quality and environment	-	-	2.3 %	72.1 %	25.6 %	

Table 4.2.4 shows that: 23.3 % of the respondents were indifferent that tea processing firms give adequate information and directions about the products and uses, 74.4 % agreed while 2.3 % strongly agreed. 2.3 % of the respondents were indifferent that tea processing firms give true information about their products, 69.8 % agreed while 27.1 % strongly agreed. Lastly, 2.3 % of the respondents were indifferent that there are measures in place to receive clients concerns about quality and environmental issues, 72.1 % agreed while 25.6 strongly agreed. These results show that tea processing firms give adequate information and directions about the products and uses, tea processing firms give true information about their products and that there are measures in place to receive clients concerns about quality and environmental issues.

4.2.5 Reverse Logistics

The respondents were asked whether there were measures in place to recover harmful materials by the organization. Their responses were as shown in table 4.2.5

Table 4.2.5: Reverse Logistics

No.	Statements on Reverse Logistics of the organization	Strongly Disagree		Indifferent		Strongly Agree	
		Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree	Agree
1.	There are systems in place to recover harmful materials or wastes	-	-	7.0 %	65.1 %	27.9 %	

According to table 4.2.5, 7.0 % of the respondents were indifferent whether tea processing firms has in place measures to recover harmful materials, 65.1 % agreed that such measures are in place while 27.9 % strongly agreed. These results show the tea processing firms have systems in place to recover harmful materials and wastes.

4.3 Descriptive Analysis on Organizational Performance

In this study, environmental performance was studied under three categories; environmental performance, economic performance and social performance. Tables 4.3.1, 4.3.2 and 4.3.3 present the analysis of the responses given by the respondents.

4.3.1 Environmental Performance

The responses obtained from the respondents on environmental performance were as presented in table 4.3.1

Table 4.3.1: Responses on Environmental Performance

No.	Statements on Environmental Performance of the organization	Strongly	Disagree	Disagree	Indifferent	Agree	Strongly	Agree
1	Operations of organization have minimum hazardous effects on stakeholders	-	-	2.3 %	76.7 %	20.9 %		
2.	There is minimum degrading effects on environment caused by energy sources used	-	-	2.3 %	48.8 %	51.2 %		
3.	There is minimum level of solid and liquid wastes discharged into the environment	-	-	30.2 %	65.1 %	4.7 %		
4.	Companies Operations and products have minimum environmental problems	-	-	11.6 %	76.7 %	11.6 %		
5.	There is reduced number of complaints about activities and products	-	-	4.7 %	81.4 %	14.0 %		

According to table 4.3.1, 2.3 % of the respondents were indifferent that the operations of tea processing firms have hazardous effects on employees, community and the environment, 76.7 % agreed while 20.9 % strongly agreed. 2.3 % of the respondents were indifferent that sources of energy used in tea processing firms have minimum degrading effects, 48.8 % agreed while 51.2 % strongly agreed. 30.2 % were indifferent as to whether there is minimum level of solid and liquid waste discharged into the environment, 65.1 % agreed while 4.7 % strongly agreed. 11.6 % were indifferent that there are minimum problems associated with the tea processing firms' operations and products, 76.7 % agreed while 11.6 % strongly agreed 4.7 % of the respondents were indifferent that there are reduced number of complaints about activities and products of tea processing firms, 81.4 % agreed while 14.0 % strongly agreed. These results show that: operations of tea processing firms have minimum hazardous effects on employees, community and the environment, there is minimum degrading effects on the environment caused by sources of energy used by the organization, there is minimum level of solid and liquid wastes discharged into the environment by the factories, there is minimal number of environmental problems associated with the tea processing firms' operations and products. In addition, the results show that there is reduced number of complaints about activities and products of tea processing firms in relation to the environment.

4.3.2 Economic Performance

The respondents were asked to express their opinions on economic performance. They responded as presented in table 4.3.2

Table 4.3.2: Responses on Economic Performance

No.	Statements on Economic Performance of the organization				Agree	Strongly	
		Strongly Disagree	Disagree	Indifferent		Agree	Strongly Agree
1.	Organization incurs minimum costs in complying with environmental standards	-	-	7.0 %	81.4 %	11.6 %	
2.	Cost incurred in sourcing and delivering inputs is at minimum possible level	-	-	7.0 %	79.1 %	14.0 %	

3.	Cost incurred in availing the products to consumers is at the minimum level	-	-	20.9 %	65.1 %	14.0 %
4.	Cost of energy is at minimum level	-	-	18.6 %	60.5 %	20.9 %
5.	Production system adapts to market	-	-	14.0 %	74.4 %	11.6 %
6.	The current capacity of the company is used to the maximum	-	-	20.9 %	72.1 %	7.0 %
7.	Cost associated with treatment and disposal of wastes is at minimum	-	-	20.9 %	53.5 %	25.6 %
8.	Customers are satisfied with the quality and safety of the company's products	-	-	4.7 %	81.4 %	14.0 %

From table 4.3.2, 7.0 % of the respondents were indifferent that tea processing firms incur minimum costs in complying with environmental standards and regulations, 81.4 % agreed while 11.6 % strongly agreed. 7.0 % of the respondents were indifferent that the cost incurred in sourcing for and delivery of the firms' inputs is at minimum levels, 79.1 % agreed while 14.0 % strongly agreed. 20.9 % were indifferent that costs incurred in making the products available to customers is at minimum, 65.1 % agreed while 14.0 strongly agreed. 18.6 % of the respondents were indifferent that the cost of energy is at minimum, 60.5 % agreed while 20.9 strongly agreed. 20.9 % of the respondents had an indifferent opinion that cost associated with treatment and disposal of wastes is at minimum, 53.5 % agreed while 25.6 % strongly agreed. As to whether customers were satisfied with quality and safety of the company's products, 4.7 % of the respondents had an indifferent opinion, 53.5 % agreed while 14.0 % strongly agreed.

These results show that tea processing firms incur minimum costs in complying with environmental standards and regulations, cost incurred by the tea processing firms in sourcing for and delivery of inputs is at minimum possible level and that cost incurred in making the products available to consumers is at the minimum possible level. Similarly, the results show that cost of energy used by tea processing firms is at minimum possible level, production system used in tea processing firms are flexible and adapt to fluctuations in market demand at minimum cost

and that the current capacity of the company is used to the maximum. In addition, the results show that cost associated with treatment and disposal of wastes is at minimum and that customers are satisfied with the quality and safety of the firms' products.

4.3.3 Social Performance

The researcher sought the respondents (factory managers and environmental representatives)'s opinion on social performance. Their responses were as presented in table 4.3.3

Table 4.3.3: Responses on social performance

No.	Statements on Social Performance	Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree
1.	Customers are satisfied that their interests are taken care of by the company	-	2.3 %	16.3 %	69.8 %	11.6 %
2.	Customers get true and adequate information about products and features	-	-	11.6 %	69.8 %	18.6 %
3.	Public satisfied that organization is concerned about environment	-	-	11.6 %	51.2 %	37.2 %
4.	The company management is dedicated to environmental control and management.	-	-	18.6 %	58.1 %	23.3 %
5.	The firm management is dedicated to employees' welfare.	-	-	32.6 %	44.2 %	23.3 %
6.	The firm enjoys a positive relationship with the government	-	-	4.7 %	72.6 %	23.3 %
7.	Company is committed to continuous quality and environmental management	-	-	14.0 %	62.8 %	23.3 %

From table 4.3.3, 2.3 % of the respondents disagreed that customers were satisfied that their interests are taken care of in tea processing firms' products and operations, 16.3 % were

indifferent, 69.8 % agreed while 11.6 % strongly agreed. 11.6 % were indifferent that customers get true and adequate information about the products, 51.2 % agreed while 37.2 % strongly agreed. 18.6 % of the respondents were indifferent as to whether management was dedicated to employees welfare, 44.2 % agreed that management was dedicated while 23.3 % strongly agreed. 4.7 % of the respondents were indifferent whether tea processing firms enjoyed a positive relationship with the government, 32.6 % agreed such relationships existed while 23.3 % strongly agreed. Lastly, 14.0 % of the respondents were indifferent that tea processing firms were committed to continuous quality and environmental management, 62.8 % agreed while 23.3 % strongly agreed.

The results in table 4.3.3 shows that customers are satisfied that their interests are taken care of in tea processing firms' products and operations, customers get true and adequate information about products and features, including side. The results also show that general public is satisfied that tea processing firms are concerned about environment and its stakeholders and that management is dedicated to environmental control. In addition, the results show that tea processing firms enjoy a positive relationship with the government and that the company is committed to continuous quality and environmental management through employees' development involvement of stakeholders. Generally, the results show that tea processing firms enjoy good social performance.

4. 4 Hypotheses Testing

4.4.1 Green Purchasing and Organizational Performance

The first hypothesis in this study was that Green Purchasing has negative effect on Organizational Performance among Tea Processing Firms in Kericho and Bomet Counties. A correlation analysis with single tailed Pearson's test was conducted to establish the effect of green purchasing on organizational performance. The results were as shown in table 4.4.1

Table 4.4.1: Correlation analysis on Green Purchasing and Organizational Performance

		Green Purchasing	Organizational Performance
Green Purchasing	Pearson Correlation(r)	1	.274*
	Sig. (1-tailed)		.038
	N	43	43
Organizational Performance	Pearson Correlation	.274*	1
	Sig. (1-tailed)	.038	
	N	43	43

*. Correlation is significant at the 0.05 level (1-tailed).

Pearson's correlation (r) indicates the correlation between green purchasing and dependent Organizational Performance. The r value of 0.274 indicates a positive correlation between Green Purchasing and Organizational Performance. The first hypothesis was thus rejected. The significance value of 0.038 which is less than 0.05 indicates that the relationship is statistically significant. Therefore, it was concluded that green purchasing has statistically significant positive effect on organizational performance.

4.4.2 Green Manufacturing and Organization Performance

The second hypothesis for this study was that Green manufacturing has negative effect on Organizational Performance among Tea Processing Firms in Kericho and Bomet Counties. A correlation analysis with single tailed significance level produced the values shown in table 4.4.2

Table 4.4.2: Correlation analysis on Green Manufacturing and Organization Performance

		Green Manufacturing	Organizational Performance
Green Manufacturing	Pearson Correlation n(r)	1	.320*
	Sig. (1-tailed)		.018
	N	43	43
Organizational Performance	Pearson Correlation	.320*	1
	Sig. (1-tailed)	.018	
	N	43	43

*. Correlation is significant at the 0.05 level (1-tailed).

The r value of 0.320 indicates a positive correlation between green manufacturing and organizational performance. This means that green manufacturing has positive effect on organizational performance. The second hypothesis was therefore rejected. The significance value of 0.018 which is less than 0.05 showed a statistically significant positive correlation between green manufacturing and organizational performance. It was therefore concluded that green manufacturing has statistically significant positive effect on organizational performance.

4.4.3 Green Distribution and Organization Performance

The third hypothesis was that green distribution negatively affects organizational performance among Tea Processing Firms in Kericho and Bomet Counties. The results of the correlation analysis were as shown in figure 4.4.3

Table 4.4.3: Correlation analysis on green distribution and organizational performance

		Green Distribution	Organizational Performance
Green Distribution	Pearson Correlation	1	.107
	Sig. (1-tailed)		.247
	N	43	43
Organizational Performance	Pearson Correlation	.107	1
	Sig. (1-tailed)	.247	
	N	43	43

The Pearson correlation value of 0.107 indicates a positive correlation between green distribution and organizational performance and thus the third objective was rejected. The significance value of 0.247 (greater than 0.05) shows that the effect is statistically insignificant. It was therefore concluded that green distribution has statistically insignificant positive effect on organizational performance.

4.4.4 Green Marketing and Organizational Performance

The fourth hypothesis of the study was that Green Marketing negatively affects Organizational Performance among Tea Processing Firms in Kericho and Bomet Counties. The results of a correlation analysis were as shown in table 4.4.4

Table 4.4.4: Correlation analysis on green marketing and organizational performance

		Green Marketing	Organizational Performance
Green Marketing	Pearson Correlation	1	.142
	Sig. (1-tailed)		.183
	N	43	43
Organizational Performance	Pearson Correlation	.142	1
	Sig. (1-tailed)	.183	
	N	43	43

The r value of 0.142 indicates a positive correlation between green marketing and organizational performance. The fourth hypothesis was thus rejected. The significance value of 0.183 (greater than 0.05) shows statistically insignificant effect of green marketing on organizational performance. It is therefore concluded that there is statistically insignificant positive effect of green marketing on organizational performance.

4.4.5 Reverse Logistics and Organizational Performance

The last hypothesis of this study was that Reverse Logistics has negative effect on Organizational Performance among Tea Processing Firms in Kericho and Bomet Counties. The results of correlation analysis were as shown in table 4.4.5

Table 4.4.5: Correlation analysis on reverse logistics and organizational performance

		Reverse Logistics	Organizational Performance
Reverse Logistics	Pearson Correlation	1	.245
	Sig. (1-tailed)		.056
	N	43	43
Organizational Performance	Pearson Correlation	.245	1
	Sig. (1-tailed)	.056	
	N	43	43

The value of r (0.245) shows existence of a positive correlation between reverse logistics and organizational performance. This shows that reverse logistics has positive effect on organizational performance and thus the fifth hypothesis was rejected. The significance value of

0.056 (greater than 0.05) shows existence of statistically insignificant positive effect of reverse logistics on organizational performance.

4.5 Overall Effect of GSCM on Organizational Performance

A regression analysis was conducted to establish the effect of GSCM on organizational performance. The results were as shown in table 4.5.1

Table 4.5.1: Multiple regression analysis for GSCM and Organizational Performance

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	.469 ^a	.220	.114	.11321	1.875

a. Predictors: (Constant), Reverse Logistics, Green Purchasing, Green Distribution, Green Manufacturing, Green Marketing

b. Dependent Variable: Organizational Performance

From table 4.5.1, the R square value indicates the explanatory power of the regression model. It is the percentage of variance of the dependent variable (organizational performance) explained by the independent variables (green supply chain management). The value of 0.220 indicates that green supply chain management explains (affects) organizational performance to 22.0 %. The Durbin-Watson value of 1.875 (between 1.5 to 2.5) shows there was no auto correlation between the variable. This table shows that GSCM has effect on Organizational Performance

Table 4.5.2: ANOVA Table

Model		Sum of Squares	Df	Mean Square	F	Sig. (p)
1	Regression	.134	5	.027	2.083	.089 ^b
	Residual	.474	37	.013		
	Total	.608	42			

a. Dependent Variable: Organizational Performance

b. Predictors: (Constant), Reverse Logistics, Green Purchasing, Green Distribution, Green Manufacturing, Green Marketing

From table 4.5.2, the significance value (p) of 0.089 gives the test on the entire model. Since the value of $p > 0.05$, This implies that GSCM does not have statistically significant effect on organizational performance.

Table 4.5.1: Table of Coefficients

Model	Unstandardized		Standardized	T	Sig. (p)	
	Coefficients		Coefficients			
	B	Std. Error	Beta			
	(Constant)	0.786	1.014		.778	.441
1	Green Purchasing	.174	.167	.171	1.044	.303
	Green Manufacturing	.354	.202	.291	1.752	.088
	Green Distribution	-.029	.127	-.042	-.230	.819
	Green Marketing	.102	.188	.100	.454	.064
	Reverse Logistics	.201	.105	.286	1.912	.064

a. Dependent Variable: Organizational Performance

Table 4.5.2 shows the significance (p) values for each independent variable (green supply chain management practice). If $p < 0.05$, the conclusion is that the independent variable is a predictor of the dependent variable. In testing the effect of green purchasing on organizational performance, significance value (p) of 0.303 which is more than 0.05 shows that green purchasing does not have statistically significant effect on organizational performance. The effect of green manufacturing on organizational performance, significance value (p) of 0.088 which is more than 0.05 shows that green manufacturing does not have a statistically significant effect on organizational performance. Testing the effect of green distribution on organizational performance showed a significance value (p) of 0.819 which is more than 0.05. This shows that green distribution does not have statistically significant effect on organizational performance. The test on effect of green marketing on organizational performance produced significance value (p) of 0.589 which is more than 0.05. This shows that green marketing does not have statistically significant effect on organizational performance. Similarly, the tests on the effect reverse logistics on organizational performance had a significance value (p) of 0.064 which is more than 0.05 shows that reverse does not have significant effect on organizational performance.

Therefore, the equation for the regression model can be given by;

$$Y = 0.789 + 0.171X_1 + 0.291X_2 - 0.042X_3 + 0.100X_4 + 0.286X_5$$

Where; Y - Organizational Performance

β_0 - Constant

$\beta_1 - \beta_5$ - Regression coefficients

X_1 - Green Purchasing

X_2 - Green Manufacturing

X_3 - Green Distribution

X_4 - Green Marketing

X_5 - Reverse logistics

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Results

5.1.1 Descriptive Results

From the analysis, majority of the tea factories had production managers in charge of production and environmental issues.

The results on green purchasing showed that tea processing firms are generally environmentally conscious in their purchasing operations; the firms have collaborations with their suppliers aimed at developing cleaner technology and processes for their inputs, the firms only purchase from a few suppliers with strong relationship to avoid wastes. However, it is not clear whether the tea processing firms purchase only from suppliers who follow environmental regulations and meet environmental quality standards as shown by high level of indifference. Generally, tea processing firms reuse and recycle materials where possible. As to whether they use just in time purchasing approach to avoid wastages associated with excess stock was not clear as shown by high level of indifference among respondents.

On green manufacturing, the results showed that the energy sources used in manufacturing in tea processing firms are generally environmentally friendly, manufacturing technology used in manufacturing in tea processing firms reduce material wastages and increase productivity and that the production technology used in manufacturing in the organization has minimal environmental pollution on the environment. The results show that inputs used in tea processing firms are associated with little wastes and pollution, products offered by tea processing firms are designed such that they can be used over a long time, reused or recycled and that there are in place long term waste management strategies to ensure the product and its components are safe to the users throughout its lifespan. However, it was not clear everyone in tea processing firms is involved in quality and environmental management in tea processing firms. Lastly, the results show that measures are in place to ensure any expenditure that does not add value to customers is eliminated

Similarly, results on green distribution showed that products of the organization are packed in a way that minimizes environmental pollution, tea processing firms pack their products in packaging materials that can be recycled or reused and that the products are packed in a way that

minimizes wastage of packaging materials. The results show that tea processing firms recover packaging materials where non-biodegradable packaging materials are used, transportation methods used by the organization have minimum negative impacts on environment and that transportation modes, means and routes are selected in a way aimed at reducing costs. In addition, the results show that storage facilities used by the organization are located so as to reduce transportation costs and that layout of the storage facilities is aimed at maximum capacity utilization and the storage facilities' layout is aimed at reduced accidents and material damage. It was evident that tea processing firms give true and adequate information and directions about their products and uses, and that there are measures in place to receive clients concerns about quality and environmental issues.

The results also showed that operations of tea processing firms have minimum hazardous effects on employees, community and the environment, there is minimum degrading effects on the environment caused by sources of energy used by the tea processing firms and that there is minimum level of solid and liquid wastes discharged into the environment by tea processing firms. The results also show that there is minimal number of environmental problems associated with the tea processing firms and their products and that there is reduced number of complaints about activities and products of your organization in relation to the environment.

Analysis on organizational performance showed that tea processing firms incur minimum costs in complying with environmental standards and regulations, the firms incur minimum cost in sourcing for and delivery of firms' inputs is at minimum possible level, the firms incur minimum cost in making the products available to consumers and that the firms incur minimum cost of energy. In addition, the results show that production system used in tea processing firms is flexible and adapts to fluctuations in market demand at minimum cost, the current capacity of the company is used to the maximum and that the cost associated with treatment and disposal of wastes is at minimum and customers are satisfied with the quality and safety of the company products. It could be seen that customers are satisfied that their interests are taken care of in firms' products and operations, customers get true and adequate information about products and features, including side effects and that the general public is satisfied that tea processing firms are concerned about environment and their stakeholders. The findings also reveal that tea processing firms' managements are dedicated to environmental control and management and to

employees' welfare and that tea processing firms enjoy positive relationship with the government. In addition, the findings show that tea processing firms are committed to continuous quality and environmental management through employees' development and involvement of stakeholders.

5.1.2 Hypothesis Testing Results

On hypotheses testing; test on the first hypothesis showed existence of a positive correlation between green purchasing and organizational performance. The significant test revealed statistically significant positive effect of green purchasing on organizational performance. The first hypothesis was thus rejected. It was then concluded that green purchasing has statistically significant positive effect on organizational performance.

Test on the second hypothesis showed a positive correlation between green manufacturing and organizational performance. This showed a positive effect of green manufacturing on organizational performance. The significance test revealed a statistically significant positive effect of green manufacturing on organizational performance. The third objective was rejected and conclusion made that green manufacturing has statistically significant effect on organizational performance.

Test on the third hypothesis revealed that green distribution has positive correlation with organizational performance. This shows that green distribution positively affects organizational performance. Significance test however revealed statistically insignificant effect. The third hypothesis was thus rejected and conclusion made that green distribution has statistically insignificant positive effect on organizational performance.

Test on the fourth hypothesis revealed a positive correlation between green marketing and organizational performance. Significance test however revealed statistically insignificant level. The fourth hypothesis was thus rejected. It is therefore concluded that there is statistically insignificant positive effect of green marketing on organizational performance.

Lastly, the test on the last hypothesis revealed a positive effect of reverse logistics on organizational performance. The existence test however revealed statistically insignificant level.

The last hypothesis was therefore rejected and conclusion made that there is statistically significant positive effect of reverse logistics on organizational performance

5.1.3 Overall Effect of GSCM on Organizational Performance

A regression analysis was conducted to establish the overall effect of GSCM on organizational performance. The results revealed that green supply chain management affects organizational performance to 22.0 %. ANOVA test was conducted to test the significance of the effect of GSCM on organizational performance. The results revealed statistically insignificant effect of GSCM on organizational performance. It was therefore concluded that GSCM has statistically insignificant effect on organizational performance.

5.2 Conclusions

The aim of this study was to establish the effect of GSCM on Organizational Performance. GSCM was studied in terms of Green Purchasing, Green Manufacturing, Green Distribution, Green Marketing and Reverse Logistics. The study was guided by five objectives. Based on results from data analysis and findings in relation to the study objectives, the following conclusions were made.

First; green purchasing has statistically significant positive effect on organizational performance. This shows that organizations that implement of green purchasing are likely to enjoy significant improved organizational performance. Adoption of green practices in vendor selection, material selection, outsourcing, negotiation, buying, delivery, scheduling and materials management leads to enhanced environmental sustainability. It also leads reduction of costs associated with sourcing and managing inventory. Lastly, these practices enhance the organizations' ability to care of lead times and meet customer orders.

Second; green manufacturing has statistically significant positive effect on organizational performance. Therefore, organizations that implement green manufacturing are expected to experience significant enhanced organizational performance. Green manufacturing leads to reduced environmental pollution, reduced raw materials and other inputs' wastages and reduced costs associated with manufacturing activities. It also leads to production of quality products at affordable cost thereby leading to efficiency and sustainability in organizational operations.

Third; green distribution has positive effect on organizational performance. This implies that organizations that adopt green distributing practices such as green packaging and green distribution experience improved organizational performance. Adoption of appropriate distribution systems and use of packaging materials that can be recovered, recycled or reused significantly reduce wastages and negative impact on the environment thereby leading to enhanced sustainability and performance. In addition, green distribution reduces inventory costs and wastages thereby enhancing economic and environmental aspects of organizational performance.

Fourthly; green marketing positively affect organizational performance. This implies that organizations that implement green marketing enjoy improved organizational performance. While some organizations adopt green marketing to respond to pressure from the government and consumer organizations, green marketing has a number of positive contributions to the organizations that practice it: Green marketing ensures consumers' needs are addressed in the most sustainable manner leading to improved satisfaction, increased social acceptance and improved sustainability. Green marketing also enhances the relationship between the organization with its customers, suppliers and other stakeholders

Lastly, reverse logistics has positive effect on organizational performance. This implies that organizations that implement reverses logistics are likely to experience improved performance. Organizations practice reverse logistics majorly due to the increased attention to the environment, the public perception attached to reverse logistics and the benefits associated with the practice such as improved efficiency and effectiveness in management of returned materials.

The overall conclusion for this study was that GSCM positively affect organizational performance. Organizations that implement GSCM are therefore likely to experience improved organizational performance.

5.3 Recommendations of the Study

The findings of this study revealed that adoption of GSCM leads to improved organizational performance. The study therefore recommends the following:

Tea processing firms and other manufacturing firms should consider adopting green purchasing and inbound logistics. The management of the firms should develop supplier-buyer partnerships regular supplier evaluation to enhance long term green purchasing. Organizations must be ready to spend on developing expertise and put into place organizational practices and policies aimed at greening purchasing operations.

Tea processing firms and other processing firms should embrace green strategies in their manufacturing systems. Management of these organizations must be cost conscious and strategic in adopting these practices as some of them may be costly. However, the cost aspect must not compromise on the quality of the end product.

Tea processing firms and other manufacturing firms should embrace green marketing by developing adequate information dissemination and customer management systems. Suppliers must be involved in this process as they are better placed in identifying customer needs. Where possible, customers should be involved so as to correctly identify their needs and expectations and respond to them.

Tea processing firms and other processing firms that are already embracing green marketing should continue greening their marketing practices by ensuring systems are in place to ensure long term relationship with customers as well as other stakeholders. Firms that have not adopted these practices should consider adopting them. Firms ensure wastages and costs are at minimum level in all the marketing operations.

The study also recommends that tea processing firms and other processing firms enhance their reverse logistics operations by putting measures and systems in place to enhance recovery of faulty and damaged products from the market. They must also develop sustainable ways of disposing harmful wastes and non-biodegradable materials.

Lastly, the government through National Environmental Management Authority (NEMA) should make it a requirement that all manufacturing firms ensure sustainable used of natural resources.

There should put into place policies and regulations that encourage adoption of green supply chain management practices.

5.4 Suggestion for Further Studies

Areas of further study that were identified in this study include: Studies in other processing firms other than tea processing firms, studies to relate GSCM with other variables such as quality and customer service and studies to explore other GSCM practices other than green purchasing, green manufacturing, green distribution, green marketing and reverse logistics.

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APPENDICES

Appendix 1: Research Questionnaire

Dear respondent,

This questionnaire is meant to collect data for a research paper on **Green Supply Chain Management and Organizational Performance**. You have been identified as one of the respondents for this research. You are kindly requested to be honest and exhaustive in answering the questions. Please note that the information given is purely for research purposes.

Instruction: Please fill in the spaces provided or tick inside the boxes as appropriate

SECTION A: BACKGROUND INFORMATION

1. Gender

Male Female

2. Position held

Production Manager Environmental Representative

SECTION B: GREEN SUPPLY CHAIN MANAGEMENT

The following questions relate to activities of green supply chain management. Using the key (Where: 1-Strongly disagree; 2 – Disagree; 3 – Indifferent; 4 – Agree; 5 – Strongly agree) tick as appropriate to indicate the extent to which you agree with them.

No.	Statements	Rating				
		1	2	3	4	5
a)	Green Purchasing and Inbound Logistics					
1.	My organization is generally environmentally conscious in its purchasing operations					
2.	My organization has collaborations with its suppliers aimed at developing cleaner technology and processes for its					

	inputs					
3.	My organization purchases only from suppliers who follow environmental regulations and meet environmental quality standards.					
4.	My organization reuse and recycle materials where possible					
5.	My organization practices just in time purchasing approach so as to avoid wastages associated with excess stock.					
6.	My organization only purchase from a few suppliers with whom there are strong relationship to avoid wastes associated with market seasonality.					
b)	Green Manufacturing					
1.	Energy sources used in manufacturing in the organization are environmentally friendly					
2.	Manufacturing technology used in manufacturing in the organization reduce material wastages and increase productivity					
3.	The production technology used in manufacturing in the organization has minimal environmental pollution					
4.	Inputs used in the organization are associated with little wastes and pollution					
5.	Products offered by the organization are designed such that they can be used over a long time, reused or recycled.					
6.	There are in place long term waste management strategies to ensure the product and its components are safe to the users throughout its lifespan.					
7.	Everyone in the organization is involved in quality and environmental management in the organization.					
8.	Measures are put into place to ensure any expenditure that does not add value to customers is eliminated.					
c)	Green Distribution					

1.	Products of the organization are packed in a way that minimizes environmental pollution					
2.	The company's products are packed in packaging materials that can be recycled or reused.					
3.	The company's products are packed in a way that minimizes wastage of packaging materials.					
4.	The organization recovers its packaging materials from consumers where non-biodegradable packaging materials have been used.					
5.	Transportation methods used by the organization have minimum negative impacts on the environment.					
6.	Transportation modes, means and routes are selected in a way aimed at reducing costs.					
7.	Storage facilities used by the organization are located so as to reduce transportation costs.					
8.	Layout of the storage facilities is aimed at maximum capacity utilization.					
9.	The storage facilities' layout is aimed at reduced accidents and material damage.					
d)	Green Marketing					
1.	The organization gives adequate information and directions about the products and uses.					
2.	The organization gives true information about their products					
3.	There are measures put into place to receive clients concerns about quality and environmental issues associated with their products and respond appropriately.					
e)	Reverse Logistics					
1.	There are systems put into place measures to recover materials or wastes that may be harmful to the environment.					

SECTION C: ORGANIZATIONAL PERFORMANCE

The following statements relate to Organizational Performance. Using the key (Where: 1- Strongly disagree; 2 – Disagree; 3 – Indifferent; 4 – Agree; 5 – Strongly agree), tick as appropriate the extent to which you agree with them.

No	Statement	Rating				
		1	2	3	4	5
a)	Environmental Performance					
1	Operations of your organization have minimum hazardous effects on employees, the community and the environment.					
2.	There is minimum degrading effects on the environment caused by sources of energy used by the organization					
3.	There is minimum level of solid and liquid wastes discharged into the environment by your organization					
4.	There is minimal number of environmental problems associated with the company’s operations and products					
5.	There is reduced number of complaints about activities and products of your organization in relation to the environment					
b)	Economic Performance					
1.	The organization incurs minimum costs in complying with environmental standards and regulations.					
2.	Cost incurred in sourcing for and delivery of company inputs is at minimum possible level					
3.	Cost incurred in making the products available to consumers is at the minimum possible level					

4.	Cost of energy is at minimum possible level					
5.	Production system used in the organization is flexible and adapts to fluctuations in market demand at minimum cost.					
6.	The current capacity of the company is used to the maximum					
7.	Cost associated with treatment and disposal of wastes is at minimum					
8.	Customers are satisfied with the quality and safety of the company products					
c)	Social Performance					
1.	Customers are satisfied that their interests are taken care of in company products and operations.					
2.	Customers get true and adequate information about its products and features, including side effects if any.					
3.	The general public is satisfied that the organization is concerned about the effects of its operations on environment and its stakeholders					
4.	The company management is dedicated to environmental control and management.					
5.	The firm management is dedicated to employees' welfare.					
6.	The firm enjoys a positive relationship with the government					
7.	The company is committed to continuous quality and environmental management through employees development involvement of stakeholders					

Appendix 2: List of Tea Processing Firms in Kericho County

Ownership	No.	Factory name
K.T.D.A	1.	Kapset Tea Factory
	2.	Kapkatet Tea Factory
	3.	Litein Tea Factory
	4.	Momul Tea Factory
	5.	Tegat Tea Factory
	6.	Toror Tea Factory
	7.	Mogogosiek Tea Factory
	8.	Kapkoros Tea Factory
Unilever	9.	Chagaik Tea Factory
	10.	Kimugu Tea Factory
	11.	Kericho Tea Factory
	12.	Tagabi Tea Factory
	13.	Jamji Tea Factory
	14.	Koruma Tea Factory
	15.	Kimari Tea Factory
James Finlays	16.	Chemogondany Tea Factory
	17.	Tilwet Tea Factory
	18.	Changana Tea Factory

	19.	Kitumbe Tea Factory
	20.	Kimulot Tea Factory
	21.	Mara mara Tea Factory
Sotik tea company ltd	22.	Arrocket Tea Factory
	23.	Sotik Tea factory
George Williamson	24.	Changoi Tea Factory
Private	25.	Kabianga Tea Factory
	26.	Kapchebet Tea Factory
	27.	Kaisugu Tea Factory
	28.	Tilya Tea Factory
	29.	Kipkebe Tea Factory
	30.	Mau Tea Multipurpose society
	31.	Kapcheluch Tea Factory
	32.	Tirgaga Tea Factory

Source: Ministry of Agriculture, Kericho and Bomet Counties.

Appendix 3: Letter of Introduction

EGERTON UNIVERSITY

P.O. BOX 536-20115

EGERTON

Dear Sir/Madam,

RE: PERMISSION TO CARRY OUT ACADEMIC RESEARCH

I am a Master of Business Administration (Operations Management) student at Egerton University conducting a research study entitled “*An evaluation of Green Supply Chain Management practices among Tea processing firms in Kenya: a case study of Kericho County*”.

The purpose of this letter is to request you to kindly fill in the questionnaire with precision and accuracy. The questionnaire is supposed to assist in answering specific objectives of the research which is being undertaken as part of the University requirement. Any information given herein will be treated with utmost confidentiality and only be used for the purpose of research. So kindly feel free to fill the questionnaire.

Thank you.

Yours faithfully,

Muma Benard

Appendix 4: Work Plan

Sept 2013- Dec 2013	J	F	M	A	M	J	J	A	S	O	N	D
Preliminary literature review and topic Identification									■			
Proposal writing										■	■	■
Jan 2014- Oct 2014												
Jan 2014- Oct 2014	J	F	M	A	M	J	J	A	S	O	N	D
Research proposal presentation	■											
Pilot study		■										
Data collection			■	■								
Data entry and analysis					■	■	■					
Submission of thesis report							■					
Faculty Thesis Defense							■					
Thesis Corrections								■				
Graduation												■

Appendix 5: Budget

Item	Unit cost(Kshs)	No. of items	Total cost (Kshs)
Printing of draft proposal	10	50 pages	500
Binding of draft proposal	70	1 copy	70
Printing proposal for defense	10	50 pages	500
Photocopying proposal	2	250 pages	500
Binding final proposal	70	5 copies	350
Internet	-	-	3000
Stationary	-	-	1000
Printing questionnaire	10	5 pages	50
Photocopying questionnaires	2	62 copies	124
Printing draft project	10	70 pages	700
Photocopying draft project	2	425	850
Printing final project	10	85	850
Travelling expenses	-	-	20,000
Total			28,494