GREEN SUPPLY CHAIN MANAGEMENT AND ORGANIZATIONAL PERFORMANCE OF FOOD AND BEVERAGE MANUFACTURING FIRMS IN KENYA

BY

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DECLARATION

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

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This research project has been submitted for examination with my approval as the university supervisor.

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DEDICATION

This research project is dedicated to my daughter Natalie, fiancé Henry Muhoro, my siblings, Simon and Sheila Nderitu and my parents for their support while undertaking my studies. Thank you and God bless.

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I wish to express my utmost gratitude to God for giving me health and wisdom to conduct this study. I appreciate my parents for their encouragement and support. I also appreciate my supervisor, Mr. Lelei for guiding me in conducting the research.

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ABSTRACT

Utilization of green supply chain management has been limited in that a decade ago it was almost non-existent. The study aimed at establishing the extent to which the food and beverage manufacturing industry in Kenya have adopted green supply chain management, come up with challenges faced by the food and beverage manufacturing industry by practicing green supply chain management practices and determining the effect of green supply chain management on performance of and beverage and food manufacturing in the Kenyan industry. The research is guided by the following theories; stakeholder theory, resource dependence theory and the theory of technology diffusion. A descriptive survey research design was employed in the study. Descriptive survey design is utilized to grant researchers to collect, compile, and interpret information. This research centred on large food and beverage manufacturing firms in Kenya which was 46. Collection of primary data was by using of semi-structured questionnaire. The targeted interviewees were procurement managers and quality assurance managers in the beverage and food manufacturing firms in Nairobi, Kenya. Analysis of data was by using tables, frequencies, mean standard deviation and percentages. Relationships between green supply chain management and organizational performance was assessed and explained by conducting a regression analysis. The study concluded that on reverse logistics there exists a positive correlation coefficient with organizational performance of Food and Beverage Manufacturing Industry in Kenya. There is also a positive relationship between reverse logistics and organizational Performance of Food and Beverage Manufacturing Industry in Kenya. On the green technology adoption, the study found out there was strong positive correlation between green technology adoption and organizational performance of Food and Beverage Manufacturing Industry in Kenya. The study further concludes that a strong positive correlation coefficient exists between green supplier assessment and performance in the organization of Food and Beverage Manufacturing Industry in Kenya. The study further concludes a relationship that is positive between Green supplier assessment and organizational performance of Food and Beverage Manufacturing Industry in Kenya. On the corporate social responsibility and organizational performance, the study concludes existence of a strong positive correlation coefficient with organizational performance of Food and Beverage Manufacturing Industry in Kenya. The study recommends that Kenyan Government, through Kenya Environmental Authority should develop policies that make it a requirement for all manufacturing firms to adopt environmentally friendly practices in the entire supply chain.

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CHAPTER ONE: INTRODUCTION

1.1 Background

Increases in energy levels and material consumption due to rapid economic growth, has contributed to the environmental issues and resource depletion problems. Organizations face competitive, regulatory, and community pressures thus it has become increasingly significant to Balancing environmental performance and economic performance. Most organizations nowadays are going green in their business due to concerns on environmental sustainability (Elder, 2010). Individuals and organizations high demand for raw materials has in the years brought about events such as the energy crisis and consumerist behavior. There is focus on preservation and use of materials that are recycled due to diminishing sources of raw materials. Green supply chain management is a well rounded phenomenon in that it includes people, processes, organization and technology. Nagel (2010), observed that Green supply chain management in the nations that are developed like China has become important for enterprises that want to be sustainable in the environmental and boost performance in circumstances where there is increased drivers, market pressure, competition and a lot of regulations.

Consequently to Costa (2014) only some high-profile organizations mainly firms in the consumer goods sectors and chemical firms and those that have been through pressures from consumers who are green directly in order to implement it. In South Africa green supply chain management is a new phenomenon, in public procurement decisions environmental benchmarking are playing a role. In South Africa, all state bodies consider environmental phenomenon through environmental impact assessments for larger development projects that are required by government laws (Public Sector Procurement, 2002).

Performance of the organization has in time been constrained to outcomes in the economy measured by market expansion, performance in stock market, profitability and liquidity. Build up has been broken into sustainable growth rate dimensions of size in terms of assets, sales and employees. An organization growth rate will eventually decrease if it's a rate above the level of its sustainability. Stock (2004) concluded that by reducing disposal and liability costs, green supply chain management improves a firm's economic position and an organization's public image hence conserve resources.

A vast dimension of policies, institutional and legislative that ensure there is protection of the environment (Odhiambo, 2008) that direct all business activities have been put in place by Kenyan government.

1.1.1 Green Supply Chain Management

Green supply chain management is a selection of contractors, purchase of environmentally friendly goods and services, and the setting requirements of the environment in a contract. Green supply chain management may be used in some cases to refer to of bio based or recycled materials or nontoxic chemicals, buying of goods and services with specific characteristics like energy or water efficacy (Russel, 2012).

According to Nagel (2010), it incorporates the health of humans and concerns regarding the environment and into the search for services of excellence and products at cutthroat prices. It also means buying goods and services that have the lowest environmental impacts. Green supply chain management practice the acquiring of products that take into consideration the economic, social, and environmental impact that such acquisition has on communities and people (Walker, 2009).

Challenges that face the application of green supply chain management include; the lack of organizational change, poor regulatory and legal structures, and relatively high cost and the resources required to apply green supply chain management are common in manufacturing sectors (Blome, 2014).

1.1.2 Organizational Performance

The Business Dictionary (2014), performance of an organization is an inquiry of company's goals and objectives in comparison to its performance. There are three primary outcomes in corporate organizations, namely: shareholder value performance, financial performance, production capacity performance and market performance. By organizations measuring their performance, they are able to plan and forecasting demand and supply, to counter competition, comply with regulations like NEMA environmental laws, and international standards like the ISO 14000. Generally, organizational performance can be classified under objective and subjective measures.

It is observed a major paradigm for planning that is green supply chain management has emerged recently (Burke, 2009). A lot of research has been done in management of operations in the internal organizational and performance measurement (Gunasekaranet, 2004).

1.1.3 Green Supply Chain Management and Organizational Performance

The aim of green supply chain management is to minimize the negative effects of purchasing on health of individuals and the environment. By using life-cycle costing and using the techniques and methodologies, green supply chain management is a tool for economic rationalization. Green supply chain management may have an effect on the market of green goods, by generating demand for innovative products and services it can

be a driver of innovation as well (Testa, 2012). On the long run the demand reduces prices and the positive changes towards green economy can be generated (Lin, 2011). The environmental performance of the purchasing organization and other suppliers' environmental performance may be improved with green supply chain management. Green supply chain management implementation can result in positive changes within an organization since it gives a chance for procurement development projects hence can greatly impact the performance of an organization.

1.1.4 Food and Beverage Industry in Kenya

Food processing consists of multiple value chains beginning with agricultural production and reaching into domestic, regional, and global markets. Beverage or drink processing firms are concerned with products ranging from drinking bottle alcohol, non-alcoholic drinks, bottled water, fruit or vegetable juices and soft drinks (carbonated drinks).Apart from forming part of the culture of the society, drinks also fulfill a basic need. In published statistics food processing is grouped with beverages and tobacco, and the combined total in 2008 was Kshs 58.6 billion, or about 2.8% of GDP (Pfitzer, 2008).

Due to the large dependence of the Kenyan economy on agriculture for its manufacturing sector, the food and beverage industry is a very vital industry in Kenya. Agricultural products that have value being added and foods that are processed whose preparation is quick and simple have demand created by the above together with the influx of people in urban areas. The firms have been driven by this demand into vigorous struggle for sustainable competitive advantage. Work is being done by many food and beverage industries to improve their environmental performance and goods and a logical extension of this work has been green supply chain management. The organizations have adopted green supply chain management practices like public buyers for various goods such as

paints, paper used in the office, cleaners and renewable energy. Green supply chain management practices that encompass a large range of goods, services and issues of the environment have also been developed by a few others (Odhiambo, 2008). These efforts become better known as the business grows, green supply chain management is industry advancing (Lucas, 2007).

Food and beverage industry in Kenya is a basic productive sectors singled out for development and expansion of the economy thus it has enormous possibilities for creation of employment, reducing or eradicating poverty and creation of wealth. The sector continues to positively contribute towards accomplishment of Millennium Development Goals in the intermediate and far reaching term especially the aim of goal eradicating hunger and extreme poverty and the goal of Development and Global Partnership. The largest component of the Kenyan manufacturing sector remains to be sector that processes food which is food, beverages and tobacco

So as to supply the domestic and neighboring markets, operations in Nairobi have been established by major multinationals either as companies that are foreign owned or Kenyan shareholding that are joint ventures. An example is Guinness PLC partners with East African Breweries Ltd and Diageo Group to make and supply bottled beer to the South and East Africa markets. The same high standards of products well known around the world are produced by this company. There are other companies such as Coca cola, Del Monte, Kurusu food products etc. that are engaged in beverage production (Okello, 2010).

The application of green supply chain management practice has a number of challenges that food and beverage industry need to overcome in order to green their organizations.

Some of these challenges are inadequate appropriate technology, the arrangement between green requirement and lean practices; sustainable program implementation, standards, and communications planning (Schluter, 2012). Lack of sustainable energy consumption, management of solid and liquid wastes, and compliance with environmental regulations are some of other challenges encountered.

1.2 Research Problem

According to Buchalcevova and Gala (2012), more serious involvement in designing and implementing green supply chain management is done by procuring organizations and other supply chain partners focusing on aspects which can be included in the activities of procuring such as issues of the environment and other aspects of the pillars of development that are sustainable. According to Archie and Kevin (2014), due to the intricacy, turmoil and changes that are expeditious, More deliberation to their environment is being paid by organizations and hence forming and applying practices and strategies that will boost their continuity and expansion (Hsu & Hu, 2008). Companies have started considering issues of the environment from a competitive view point due to the need to revamp efficiency in the organization, waste reduction.

Over half of the Kenya's exports are made of food and beverages comprising of more than a thousand businesses. Sectors that produce including meat and dairy products, fruits and vegetable processing, edible fats, grain milling, oils, beverages and fish processing comprise this sector. Green supply chain management practice implementation has challenges which are needed to be overcome by the food and beverage industry in order to green their organizations. Some of these challenges are inadequate appropriate technology to sustain companies and their endeavor to go green and processes in the business needed to capture the correct data in the supply chain, sustainability program

application which is sustainable, awareness, standards, communications planning and development of business case (Schulte, 2012).

A number of studies relating to green supply chain management have been conducted. For example; Vashta (2012), studied responsiveness of green supply chain management in the food and beverages manufacturing firms in Nairobi, Kenya. The study found out the gains faced by organizations that applied green supply chain management was development in systems of information; usage of materials that are recycled is encouraged and the experience of firms, cost reductions because of proper utilization of available productive resources. Mwaura (2016) did a research on green distribution practices and competitiveness of food manufacturing firms in Kenya. The research findings indicated that, technology has greatly influenced distribution techniques with more firms using the internet as a distribution channel. Support for green distribution practices is an indicator that firm managers are willing to embrace this form of distribution by taking control of their own distribution patterns.

Nyakundi (2013) did a study on food processing firm's adoption of green manufacturing practices by in Mombasa County, Kenya. The results obtained indicated that green manufacturing practices adoption was at implementation stage as most food processing had considered adoption. The study also established that the major perceived benefits of adopting green manufacturing were; reduction of waste water, reduction of frequency of environmental accidents and reduction in scrap rate. Gatari and Were (2014), did a study on application challenges of green supply chain management in manufacturing sector in Kenya: Unga Limited Kenya, case study. The results showed that, there was inadequate change in the organization and its structures to support implementation of green supply chain management.

Research done with Hussein and Shale (2014), in manufacturing sector in Kenya on effects of procurement practices that are sustainable on performance of organization found that re-usability of products, ethical practices ,Social Corporate Responsibility, and supplier involvement contribute to green supply chain management on these firms. With all this studies it implies that little research has been done of the real impact of green supply chain practice of the overall organization performance. With these knowledge gaps this study therefore tends to examine effect of green supply chain management on performance of the organization of food and beverage manufacturing industry in Kenya.

1.3 Objective of the Study

i. Extent to which the manufacturing industry in Kenya for food and beverage has adopted green supply chain management.
ii. Challenges faced by manufacturing industry in Kenya of food and beverage by practicing green supply chain management practices.
iii. To determine association between green supply chain management on organizational performance of food and beverage manufacturing industry in Kenya.

1.4 Value of the Study

The findings of this research will enable food and beverage industry in Kenya to get a clear picture of the benefits that accrue to organizations that have embraced the concept of green supply chain management practices. This will motivate the organizations to give serious attention to this idea. This study also will aid beverage and food manufacturing companies to better comprehend the challenges they may meet in the course of implementing the green supply chain management concept. Also, manufacturers in the food and beverage industry can make use of knowledge to implement effective eco-

friendly practices and performances that will enhance their competitive advantage and improve their profitability.

This study is also important to the Government of Kenya through the National Environmental Management Authority in the making of policies and regulations ruling the environmental friendly operations in Kenyan industries for a healthy environment. Further, the research will contribute positively to the body of knowledge by providing policy effects for the government of Kenya in supporting green supply chain management practices among different industries. Through the findings of this study, the policy makers may be in a position to know what needs to be done to improve green supply chain management practices in the manufacturing industry.

To the scholar, the study will build up to the current information of green supply chain management practices and performance field. It will also refine and extend the present study especially in Kenya. The study findings will be of great use to academicians and researchers as they will add to the information build up in the area of green supply chain management.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This part shows an analysis of the linked information as brought out by various researchers, authors, scholars and analysts on the effect of green supply chain management on organizational performance. The chapter also provides the theories underpinning the study.

2.2 Theoretical Foundation

The various theories that will inform the research on the consequence of green supply chain management on performance of the organization are examined by this section. The study is guided by the following theories; stakeholder theory, resource dependence theory and the theory of technology diffusion.

2.2.1 Stakeholder Theory

Freeman (1994) stakeholders are described as any person who has an influence the accomplishment of the organizations aims. Stakeholder theory has been presented both as within that of business ethics and within the framework of organization theories. Stepping beyond the neo classical theory where the company's goal is profit maximization and benefiting the shareholders only.

The theory is important to the study because green supply chain management practices strongly depend on the participation of their shareholders, customers, suppliers, and employees. Consumer awareness has led to the demand of industry improvement on their environmental performance. Also due to the emergence of green products, consumers are willing to pay premium prices has increased. Consumers can reject the products of

companies with poor environmental management reputation. Similarly suppliers may stop delivering inputs to protect their own reputation.

2.2.2 Resource Dependence Theory

Salancik and Pfeffer in 1978 have postulated theory of resource dependence in their publication, organizations external control. It basically argues that constraints and effects to organizations by their environments. Resource Dependence Theory (RDT) fundamentally assumes that the organizations behavior and those decisions of the organization and actions are influenced by reliance and useful resources.

Theory of resource dependence firms rely on assets given by others in order to nourish their expansion as well as other firms who are dependent (Pfeffer & Salancik, 1978). The presumption of this theory is the firm cannot be independent with regard to resources for survivors. Hence resources must be depended on from exterior parties to manage and challenge this dependence with other organizations for long term development (Davis, 2010). With unity between partners and resource sharing beneficial for environmental improvement (Boyd, 2009).

Relationship between organizations is critical for managing green manufacturing to achieve good results, where resource sharing and partner coordination are beneficial for environmental improvements the theory is applicable to this study. The argument for the dissemination of practices in environment through the supply chain is presented by the power of the development aspects of resource dependence. It has been found that the larger firm needed sound practices in the environment to adopt by smaller organizations given their power over smaller firms (Hillman, 2009).

2.2.3 Theory of Technology Diffusion

Technological progress was described by Josef Schumpeter as containing of several stages: “invention” – the number one being application of the technical knowhow of an idea; “innovation” – the next being a new product being business introduction of an idea and “diffusion” – the passive use of a new method of doing things by several individuals (Schumpeter, 1962). Thus the benefits of a new technology are vastly enjoyed through the diffusion process

The economics of technology diffusion tries to critically analyze the factors that affect its progress while exploring the reasons why diffusion is not instantaneous. Technology diffusion theory encourages organizations to be specific and to adopt environmental friendly technologies that protect the environment.

The theory is applicable to this study since green production is rapidly growing in importance which requires green technology adoption. Emerging economies expand as populations grow and the resources in the world are going through numerous challenges. In supply chain management, the green technology adoption plays a key role in companies’ systems of production which provide the growing requirement for goods, are linked to adverse environment impacts.

2.3 Green Supply Chain Management

The choosing of goods and services that reduce environmental impacts is environmentally responsible or 'green' procurement. At all the various stages of its life process a firm is required to do an examination of the effects of a product on the environment (Blome, 2014).

The commitment of a firm to contemplate and reduce the environmental results of its actions is demonstrated by practicing green supply chain management demonstrates. It therefore makes both monetary and environmental sense (2012, Sterner). Limited natural resources are consumed or used in a sustainable manner in producing green like sustainable forestry.

The classification of green supply chain management is a necessary first step in the process of discussing them. Shrivastava (1995) proposed classifying green supply chain management practices into five topics based on their management general inclination: environment. Most studies support a more straightforward typology for characterizing green supply chain management as belonging to categories such as reverse logistics, green technology adoption, green supplier assessment and corporate social responsibility.

2.3.1 Reverse logistics

This deals with issues such as reclaiming, reconditioning or discarding to utilize resources. The practice of reverse logistics is one in which a producer consistently accepts products that have been formerly shipped from the utilization point for possible disposal, remanufacturing or recycling, (Fleischmann 2009). Reverse logistics embodies logistics including: rehabilitate, source reduction, returning products, disposal of waste, reuse of material, material distribution, mending and remanufacturing according to reverse logistics by Rogers (2007).

Pishvaee, and more (2009) states that “most of the logistics networks are not equipped to handle the return products in reverse channels.”

2.3.2 Green Technology Adoption

Green technology is a term mostly used alternatively to clean technology. Other terms like as “mitigation and adaptation technologies,” and “environmental technologies,” “climate related technologies,” or deviations thereof. (Feder, 2013). Sustainability is promoted using green technology while greenhouse gas emissions are reduced, or help in the climate change solution. A variety of products and systems can be included in green technology. “Environmentally Sound Technologies” was developed by the International Patent Classification Committee. The following general categories of such technologies are included in the Green Inventory: alternative energy production, agriculture/forestry, energy nuclear power generation, transportation, conservation, waste management, and administrative, regulatory or design aspects (Gollin, 2011).

Green technology which facilitates clean and renewable energy is the most significant. Burning of fossil fuels is the core giver to the release of man-made carbon dioxide. Due to combustion of gas, coal and oil eighty percent of such CO2 arises (Sunding, 2012). It should also be noted these resources that cannot be renewed are evaluated to last only sixty years besides emissions of carbon arising from the use of energy sources. Combustion of fossil fuels as energy alternatives require to be taken accordingly.

Consumption technologies and manufacture is an expansive area of covered by green technology. Involved in the choosing and utilization of green technologies is the utilization of technologies of environment for assessing and overseeing, remediation and restoration and pollution prevention and control (Adesina, 2011). This minimization can be in consumption such as efficient appliances or hybrid cars or in production like SO2 windmills or scrubbers.

2.3.3 Green Supplier Assessment

Screening of suppliers on the basis of their performance of the environment and conducting business with only those that achieve certain standards of the environment or is what green supply chain management is understood to comprise.

A "green" efficiency between suppliers that has an intrinsic value and is in high favor of companies has been there in the recent years. Current aspects are taken into account to be more precious and also the ancient selection criteria such as lead time, flexibility, costs and quality (Handfield, 2012). Disappearing in nature rapidly without having any damage is its main characteristic.

The existence of differentiated management of supplier approaches in GSC projects is recognized by the information of supplier management in green supplier change (Green, 2010).

2.2.4 Corporate Social Responsibility

The core "responsibility" historically for companies has been money making and increasing value of the shareholder within the business world (Navi, 2012). Company monetary responsibility has been the bottom line driving force this new driving force is referred to as corporate social responsibility. Corporate social responsibility is sometimes defined as the company "triple bottom line" the inclusivity of the company's financial, environmental and social performance in conducting its business (Crane, 2007).

2.5 Empirical Literature

Kipkorir (2015) did a study on factors influencing implementation of green supply chain management in multinational tea companies in Kericho County. As a survey for the study three multinational companies were used. Employees from the department of stores and

procurement were targeted by the study in all the three companies. The total number of staff working in the procurement department a census of 35 employees from the three companies was used. Financial support is the most constraint that affects the implementation of green supply chain management as revealed by the study.

Nderitu (2014) did a case study of East African breweries limited on the effects of green supply chain management practices on an organization performance in manufacturing industry. The sample size was 37 which stood for 30% of the target population, the findings showed that results of the manufacturing industry were an input many factors. Performance excellence is contributed to by green supply chain management attributes.

Makkonen (2014), studied on the role of company's sustainable procurement practices in conscious consumer buying behavior. Conducting primary and secondary research composed the empirical part. The research method was a customer survey, and the approach of primary research was quantitative. All customers of Ekotin were targeted by the questionnaire. Customers required environmentally friendly products, organic products and no toxic chemicals as indicated by the findings.

Nyakundi (2013) did a study on adoption of green manufacturing practices by food processing firms in Mombasa County, Kenya. A series of food processing firms in Mombasa County listed by Kenya Association of Manufacturers (KAM) were targeted. A sample of 66 firms was taken. The results obtained indicated that green manufacturing practices adoption was at implementation stage as most food processing had considered adoption. The study also established that the major perceived benefits of adopting green manufacturing were; reduction of waste water, reduction of frequency of environmental accidents and reduction in scrap rate.

2.6 Conceptual Framework

A set of expansive philosophy and arguments which assist a researcher to correctly know the problem at hand and questions framing and find appropriate information to help structure conceptual frameworks according to Smyth (2004). The independent variables include reverse logistics, corporate social responsibility and green technology.

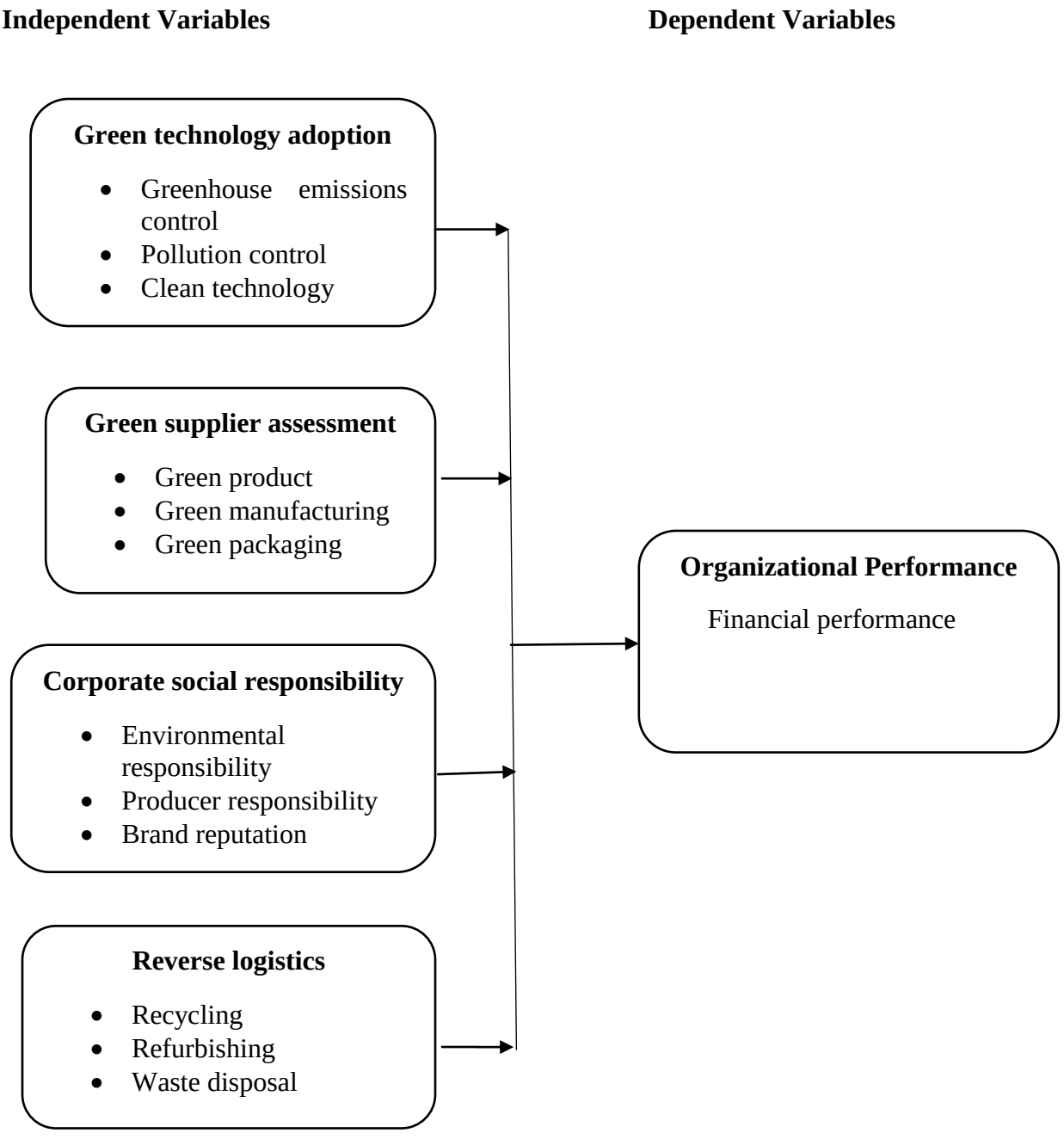

Figure 2.6: Conceptual framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1Introduction

This chapter gives an analysis of the outline of the methods used in this research It centers on data collection methods, research design and concludes with data analysis and methods of data presentation that were used in this study.

3.2 Research Design

The research used the descriptive survey research design. Descriptive survey research design allows researchers to collect, shorten and analyse information with the aim of interpretation (Orodho, 2002). It also enables the researcher to show the features of the variables of interest due to its suitability in data collection to give feedback on the research questions, Mugenda and Mugenda (2003). Thus there is justification for descriptive design being most fit and justifiably used in the study.

3.3 Population of the Study

The research was a census targeting the big beverage and food firms that manufacture in Nairobi, Kenya. The food and beverage manufacturing firms in Nairobi Kenya are forty six (46) showed in the attached appendix (KAM, 2013).

3.4 Data Collection

The data that is primary was collected using semi-structured questionnaire.

The questionnaire targets procurement managers and quality assurance managers from the food and beverage manufacturing firms in Nairobi, Kenya. The questionnaires were emailed, drop and pick later method to to all respondents. The questionnaires were broken down to four sections:

Section demographic information, Section B - adoption of green supply chain management, Section C- challenges of green supply chain management and Section D- green supply chain management and organizational performance.

3.5 Data analysis

The filled questionnaires were tested for completeness, reliability and validity and were then subjected to analysis.

So as to evaluate and discern the relationships between the dependent and independent variables of the study regression analysis was performed. Linear regression and multiple regressions are the two key classes of regression. One independent variable is used linear regression uses to foretell the solution of Y, whilst two or more independent variables use multiple regressions to foretell the solution.

The common form of regression is:

Linear Regression: $Y = \beta_0 + \beta X + \varepsilon$ (1)

Multiple Regression: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Where;

Y = Organizational Performance – (measured by financial performance, production capacity and market performance)

X_1 = Reverse logistics – (measured by recycling, refurbishing and waste disposal)

X_2 = Green technology adoption – (measured by pollution control, clean technology and greenhouse emissions control)

X_3 = Green supplier assessment – (measured by green product, green manufacturing and green packaging)

X_4 = Corporate social responsibility - (measured by environmental responsibility, producer responsibility and brand reputation)

Constant Term ……. $\beta 0$

$B_{1,} \beta_2, \beta_{3,} \beta_4$ = Beta coefficients;

Error Term…….. ε

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This discussion in this part is the explanation and showing of field findings. The chapter shows the information on the background of the interviewees, analysis of the findings on the basis on the aims of the study.

4.1.1 Response Rate

The study focused on a size of the sample of 92 interviewees whilst 74 completed and presented the questionnaires giving a rate of response of 80.43%. This rate of response was adequate to conclude that the research the way it is, acted as a representation. Mugenda and Mugenda (2003), a rate of response of fifty percent is enough for analysis and reporting.

4.2 Demographic Information

This sub-section critically analyses on respondent's information in the background; mainly it includes gender distribution, age distribution, education level, respondent's position, period worked with the firm, period of operation, number of employees and ownership of the firm.

4.2.1 Gender Distribution

The research needed to find how the respondents were distributed according to gender. After the state analysis was done the results are shown in table 4.2.1

Table 4.2.1: Gender Distribution.

Gender	Frequency	Percentage
Male	50	67.47
Female	24	32.43
Total	**74**	**100**

The study research findings revealed that majority of the respondents as shown by 67.47% were males while 32.43% of the interviewed were females. This shows that respondents were fairly distributed in terms of their gender.

4.2.2 Age Distribution

This study wanted to establish the age distribution of the interviewed. After the state analysis was done the results are shown in table 4.2.2

Table 4.2.2: Age Distribution

Age	Frequency	Percentage
18-25	5	6.70
26-30	9	12.16
31-40	21	28.38
41-50	24	20.28
Above 50	15	23.65
Total	**148**	**100**

The study research findings revealed that most of the respondents as shown by 32.43% were from age bracket 41-50 years whereas 28.38% of the respondents were from age bracket 41-50 years. 20.28% of the respondents were above 50 years, 12.16% of the respondents were from age bracket 26-30 years and only 6.70% of the respondents were

from age bracket 18-25 years . Thus this shows that interviewees were fairly distributed in accordance with their age.

4.2.3 Education Level

The study needed to know the respondents' education level. After the state analysis was done the results are shown in table 4.2.3

Table 4.2.3: Education Level

Education Level	Frequency	Percentage
College Diploma	24	32.4
Undergraduate	38	51.5
Master	12	16.22
Total	**74**	**100**

The study unfolds that most of those interviewed as shown by 51.35% had attained, undergraduate degrees or whereas 32.4% of the respondents had attained college diploma and 16.22% of the respondents had attained master's degree. This showed that respondents were well educated and therefore they had the capability to respond to the presented questions with easily.

4.2.4 Period of Service

The research wanted to know the length of period that the respondents had served for in the industry. After the state analysis was done the results are shown in table 4.2.4

Table 4.2.4: Period of Service

Period of Service	Frequency	Percentage
Below 2 years	9	12.16
3 to 5 years	14	18.91
6 to 8 years	15	20.27
9 years and above	36	48.64

Total	**74**	**100**

The study research findings, revealed that most of the respondents as illustrated by 48.64% had served the industry for more than 9 years whereas 20.27% of the respondents had worked in the industry for a duration of 6 to 8 years, 18.91% had served the industry for 3 to 5 years and only 12.16% of the interviewees had worked in the industry for less than 2years. Therefore this shows that majority of the interviewees had worked in the industry for a substantial time and therefore had the capability to give valid information regarding this research

4.2.5 Position in the Organization

The study wanted to comprehend the position of the respondents in the organization. After the state analysis was done the results are shown in table 4.2.5

Table 4.2.5: Position in the Organization

Education Level	Frequency	Percentage
Procurement manager	40	54.05
Quality assurance manager	34	45.95
Total	**74**	**100**

The study revealed that many of the interviewees as shown by 54.05% were procurement managers and 45.95% of the respondents were quality assurance manager.

4.2.6 Period of Operation in Kenya

The study seeks to comprehend the period the firm has been in operation in Kenya. After the state analysis was done the results are shown in table 4.2.6

Table 4.2.6: Period of Operation in Kenya.

Period of Operation	Frequency	Percentage
Below 2 years	7	9.46
3 to 5 years	12	16.22
6 to 8 years	17	22.97
9 years and above	38	51.35
Total	**74**	**100**

The study research findings, showed that majority of the interviewed signifies that the firms as shown by 51.35% had operated in Kenya for more than 9 years whereas 22.97% of the respondents signifies that the firms had operated for a period of 6 to 8 years, 16.22% of the respondents signifies that the firms had operated for a period of 3 to 5 years and only 9.46% of the respondents signifies that the firm had operated for less than 2 years. Hence this shows that majority of the industries had operated for a substantial period of time and thus they had the capability to offer reliable information.

4.3 Adoption of Green Supply Chain Management

4.3.1 Environmental Management Department

The study wanted to show if the industry had environmental management department. Results are analyzed in table 4.3.1

Table 4.3.1: Environmental Management Department

Opinion	Frequency	Percentage
Yes	50	67.57
No	24	32.43
Total	**74**	**100**

The results illustrate that most of the respondents as shown by 67.57% agreed that the food and beverage manufacturing industry in Kenya had environmental management department, whereas 32.43% were of the contrary opinion. This implies that environmental management department has an impact on food and beverage manufacturing industry in Kenya. This indicates that industries ensure necessary changes are conducted; environmental problems are identified and resolved.

4.3.2 Environmental Management Policy

The study sought to establish whether the industry had environmental management policy. Findings are analyzed in table 4.3.2

Table 4. 3.2: Environmental Management Policy

Opinion	**Frequency**	**Percentage**
Yes	52	70.27
No	22	29.72
Total	**74**	**100**

The results show that most of the respondents as shown by 70.27% agreed that the food and beverage manufacturing industry in Kenya had environmental management policy, whereas 29.72% were of the contrary opinion. This implies that environmental management policy has an impact on food and beverage manufacturing industry in Kenya.

4.3.3 Green Supply Chain Management

The study needed to know the responses on the following statements relating to extent of adoption of green supply chain management in the organization Mean and standard deviation were determined. Areas are according to scale (likert). Findings are illustrated in table 4.3.3

Table 4.3.3: Extent of Adoption of Green Supply Chain Management

Adoption of Green Supply Chain Management	**Mean**	**Std deviation**
Recycling of materials is done in the organization.	4.23	0.32
Purchasing of commodities is done with keen attention to quality of supplies	4.18	0.37
Our organization frequently participates in award winning environmental programmes.	3.91	0.33
Transportation operations are done in a way to reduce carbon footprint.	3.97	0.29
There are responsible and ethical tendering procedures.	4.01	0.38
The organization has a procedure to re-using used materials.	4.00	0.35
Proper returns management is done	3.89	0.33
There is collection of expired goods from customers for proper disposal	3.84	0.27
Reverse logistics is done in the organization.	4.11	0.31
Implementation of green technology reduces CO2 emissions.	4.15	0.28
There is waste management in the organization by use of green technology.	4.27	0.38
Green technology has been adopted.	3.80	0.35
Through green technology our organization has waste management measures	3.99	0.33
Organization uses renewable energy	3.91	0.28
Suppliers are assessed based on their ability to control pollution	4.13	0.29
Organizations deals with green raw materials.	3.95	0.30
Suppliers are compared by taking into account the characteristic of environmental performance	4.16	0.34
Our organization carries out green packaging.	3.90	0.37
Through corporate social responsibility our organization complies with environmental requirements.	4.00	0.26

From the research results most of the respondents agreed that; recycling of materials is done in the organization (M=4.23, SD =0.32), purchasing of commodities is done with keen attention to quality of supplies (M=4.18, SD =0.37), the organization frequently participates in award winning environmental programmes (M=3.91, SD =0.33), transportation operations are done in a way to reduce carbon footprint (M=3.97, SD =0.29), there is responsible and ethical tendering procedures (M=4.01, SD =0.38).

The study findings concur with Handfield (2012), expertise between dealers and suppliers, which have an intrinsic value and have high standing in companies view. Green product is not a usually applied agent. Green packaging is a packaging method that wants to protect the environment with friendly material.

The study established that the organization has a procedure to re-using used materials (M=4.00, SD =0.35),proper returns management is done (M=3.89, SD =0.33),there is collection of expired goods from customers for proper disposal (M=3.84, SD =0.27),reverse logistics is done in the organization (M=4.11, SD =0.31),implementation of green technology reduces CO2 emissions (M=4.15, SD =0.28),there is waste management in the organization by use of green technology (M=4.27, SD =0.38),green technology has been adopted (M=3.80, SD =0.35),through green technology our organization has waste management measures (M=3.99, SD =0.33),organization uses renewable energy (M=3.91, SD =0.28),suppliers are assessed based on their ability to control pollution (M=4.13, SD =0.29). The findings confirm Sunding, (2012), argument that the important green technology is one which upholds renewable and clean energy. The largest share of sources of greenhouse emissions of gas globally is made up by energy supply. 80% of such CO2 comes up as a result of burning coal, gas and oil.

The study further revealed that the organization does business only with businesses that meet environmental expectations and standards (M=4.20, SD =0.36),organizations deals with green raw materials (M=3.95, SD =0.30),suppliers are compared by considering the characteristic of performance of environment (M=4.16, SD =0.34),our organization carries out green packaging (M=3.90, SD =0.37),through corporate social responsibility our organization comply with environmental requirements (M=4.00, SD =0.26). The findings are in line with Feder (2013), green technology is used to promote reduction of greenhouse gas emissions and being sustainable.

4.4 Challenges of Green Supply Chain Management

The study seeks to know the challenges faced by the organizations in adoption of green supply chain management on each of the following. Mean and standard deviation were determined. Areas are according to scale (likert). Results are shown in table 4.4

Table 4.4: Challenges of Green Supply Chain Management

Challenges of Green Supply Chain Management	Mean	Std deviation
Adoption of green practices is costly thus becomes an impediment.	4.51	0.21
Lack of green supply chain management knowledge hinders adoption.	4.03	0.17
The organization has not implemented structural and organization changes to support green Supply chain management	4.41	0.26
There is lack of management support in the organization.	4.12	0.22
Business processes and inappropriate technology and needed affects adoption.	4.33	0.21
Perception that green products cost more hence affecting demand.	3.96	0.19
Lack of understanding of the concept	4.22	0.25
There is conflict with authority due to waste management issues.	4.00	0.30
Organization has lost business due to environmental requirements	4.16	0.28
Lack of technical expertise by regulators who impose it	4.31	0.20
Existence of other techniques or initiatives	4.08	0.27
Miscommunication between environmental professionals and business leads to conflicts	4.12	0.26

Lack of enforceable government policies and regulations	3.81	0.28
Lack of training of staff on the environmental practices	4.34	0.27
Lack of public awareness leading to low demand for organization products.	4.09	0.17
Resistance to change by the organization employees.	3.86	0.19

Many of the respondents are in agreement that from the research findings; high cost has been an impediment to adoption of green practices (M=4.51, SD =0.21),lack of green supply chain management knowledge hinders adoption (M=4.03, SD =0.17),the organization has not implemented structural and organization changes to support green Supply chain management (M=4.41, SD =0.26),there is lack of management support in the organization (M=4.12, SD =0.22), lack of business processes and appropriate technology and needed affects adoption (M=4.33, SD =0.21), perception that green products cost more hence affecting demand (M=3.96, SD =0.19), lack of understanding of the concept (M=4.22, SD =0.25), there is conflict with authority due to waste management issues (M=4.00, SD =0.30).The findings concur with Adesina (2011}. The study established that the organization has lost business due to environmental requirements (M=4.16, SD =0.28),lack of technical expertise by regulators who impose it (M=4.31, SD =0.20),existence of other techniques or initiatives (M=4.08, SD =0.27), miscommunication between environmental professionals and business managers (M=4.12, SD =0.26),lack of enforceable government policies and regulations (M=3.81, SD =0.28),lack of training of staff on the environmental practices (M=4.34, SD =0.27),lack of public awareness leading to low demand for organization products (M=4.09, SD =0.17), resistance to change by the organization employees (M=3.86, SD =0.19). The findings are in line with Nagel (2010), that green supply chain management is used to define to buying of services and products with unique characteristics example

like water or energy efficiency, or use of nontoxic chemicals, bio based or recycled materials.. It includes environmental concerns health of humans and into the looking for quality services and products at fair prices.

4.5 Green Supply Chain Management and Organizational Performance

The study strived to establish the level to which the adoption of green supply chain management has influenced the organizational performance for each of the following organization performance indicators. Mean and standard deviation were determined. Areas are according to scale (likert). Results are shown in table 4.5.1

Table 4.5.1: Organizational performance

Organizational performance	**Mean**	**Std deviation**
Goods are produced at the least cost possible in the organization	4.52	0.28
The organization maximizes profits in its operation	4.50	0.20
There is increased customer satisfaction	4.12	0.17
Demand for the organization products and services are high	4.23	0.29
Organization market share for its products has increased	4.31	0.25
Staff members are aware of goals and objectives on organizational level	4.48	0.23
Organization maximizes the use of its resources	4.53	0.30
Organization produces products that are of high quality	4.49	0.18
Organization uses its production capacity optimally	4.54	0.15
Organization minimizes rejects or scrap materials in production	4.47	0.27

The study wanted to know to the level at which those interviewed agreed on the statements relating to organizational performance**,** from the results many of the interviewees agree that; organization uses its production capacity optimally (M=4.54, SD =0.15), the organization maximizes profits in its operation (M=4.50, SD =0.20), there is increased customer satisfaction (M=4.12, SD =0.17), demand for the organization products and services are high (M=4.23, SD =0.29), organization market share for its

products has increased (M=4.31, SD =0.25). The findings are in line with Gunasekaran et al., (2004), that a lot of research has been done on management of organizational internal operations and measurement of performance.

The study established that staff members are aware of goals and objectives on organizational level (M=4.48, SD =0.23), organization produces products that are of high quality (M=4.49, SD =0.18), organization minimizes rejects or scrap materials in production (M=4.47, SD =0.27), organization maximizes the use of its resources (M=4.53, SD =0.30), goods are produced at the least cost possible in the organization (M=4.52, SD =0.28).

4.5.2 Regression

The study conducted Pearson analysis of correlation to show a linear association between the explanatory and predicted variables. Therefore it assists in knowing the intensity of association in the model, which variable best explained the relationship between organizational performance and green supply chain management of food and beverage manufacturing industry in Kenya

Table 4.5.2.1:

		Organizational Performance	Reverse logistics	Green technology adoption	Green supplier assessment	Corporate social responsibility
Organizational Performance	Pearson Correlation	1	.502	.513**	.481*	.421**
	Sig. (2-tailed)		.001	.000	.014	.000
	N	39	39	39	39	39
Reverse logistics	Pearson Correlation	.502	1	.016	.005	.103

	Sig. (2-tailed)	.001		.898	.965	.406
	N	39	39	39	39	39
Green technology adoption	Pearson Correlation	.513**	.016	1	.746**	.021
	Sig. (2-tailed)	.000	.898		.000	.863
	N	39	39	39	39	39
Green supplier assessment	Pearson Correlation	481*	.005	.746**	1	.052
	Sig. (2-tailed)	.014	.965	.000		.676
	N	39	39	39	39	39
Corporate social responsibility	Pearson Correlation	.421**	.103	.021	.052	1
	Sig. (2-tailed)	.000	.406	.863	.676	
	N	39	39	39	39	39

The research found that there was positive correlation coefficient between Reverse logistics and Organizational Performance, as demonstrated by 0.502 correlation factor this relationship is strong and was found to be statistically significant as the significant value was 0.001 which is less than 0.05, the study found that there was positive correlation coefficient between green technology adoption and Organizational Performance, as demonstrated by correlation factor of 0.513 this relationship is strong and was shown to be statistically significant as the criticalt value was 0.000 which is less than 0.05,

Discussion of findings is done below.

Table 4.5.2.2 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.899[a]	0.808	0.720	0.01

The four independent variables that were researched on point out to 80.8% of the green supply chain management influencing organizational Performance as illustrated by R Squared (Coefficient of determinant).

This shows that variables not in the study in this add up to 19.2% in influencing organizational Performance.

Table 4.5.2.3 ANOVA of green supply chain management Influence on organizational Performance

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	317.64	4	79.410	30.23	.001[a]
Residual	375.661	143	2.627		
Total	693.301	147			

The study utilized ANOVA to know the significance of the regression model from which an f-significance value of p less than 0.05 was established ($p=0.001 <0.05$). The model is significantly statistical in forecasting how Reverse logistics, Green technology adoption, Green supplier assessment and Corporate social responsibility affect organizational performance. This indicates that the regression model is significantly statistical since $30.23>2.39$.

Table 4.5.2.4 Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.159	0.135	.174	1.177	.001
Reverse logistics (X_1)	.514	.016	.423	3.212	.002
Green technology adoption ($X_{2)}$	.520	.133	.262	3.909	.003
Green supplier assessment (X_3)	.498	.021	.218	23.714	.004

Corporate social responsibility (X_4)	.445	.129	.123	3.449	.003

a) Predictors: (Constant), reverse logistics, green technology adoption, green supplier assessment and corporate social responsibility.

b) Dependent Variable: organizational performance.

The regression equation was

$$\mathbf{Y= 0.159+ 0.\ 514X_1 + 0.\ 520X_2 + 0.498X_3 + 0.\ 445X_4 + \varepsilon}$$

The regression equation above has identified that holding all green supply chain management (reverse logistics, green technology adoption, green supplier assessment and corporate social responsibility) constant, other factors influencing organizational performance will be 0.159 ($p = 0.001 < 0.05$). The results indicate that using all independent variables at 0, a quantity increase in Reverse logistics will lead to a 0. .514 ($p = 0.002 < 0.05$) increase in the organizational Performance. The results also show that using all other independent variables at 0, a unit increase in Green technology adoption will lead to a 0.520 ($p = 0.003 < 0.05$) increase in the organizational Performance. On the other hand, the findings also show that taking all other independent variables at zero, a unit increase in Green supplier assessment will lead to a 0.498 ($p = 0.003 < 0.05$) increase in the organizational performance and that taking all other independent variables at zero, a unit increase in Corporate social responsibility will lead to a 0.477 ($p = 0.004 < 0.05$) increase in the organizational performance.

4.6 Discussion of the Findings

The study revealed that reverse logistics has a positive correlation coefficient with Organizational Performance, as indicated by correlation factor of 0.502 this strong

relationship was found to be statistically significant as the critical value was 0.001 which is less than 0.05, The study further realized that taking all other independent variables at zero, a unit increase in Reverse logistics will lead to a 0. .514 increase in the organizational Performance. The findings are in line with Carter (2008), reverse logistics is more than recycling packaging materials and reusing containers.

The study further established that purchasing of commodities is done with keen attention to quality of supplies, the organization frequently participates in award winning environmental programmes, transportation operations are done in a way to reduce carbon footprint, and there is responsible and ethical tendering procedures. The study established that the organization has a procedure to re-using used materials ,proper returns management is done ,there is collection of expired goods from customers for proper disposal ,reverse logistics is done in the organization ,implementation of green technology reduces CO2 emissions ,there is waste management in the organization by use of green technology ,green technology has been adopted through green technology our organization has waste management measures and organization uses renewable energy

The study further established that high cost has been an impediment to adoption of green practices ,lack of green supply chain management knowledge hinders adoption ,the organization has not implemented structural and organization changes to support green Supply chain management ,there is no management support in the organization, lack of appropriate technology and business processes needed affects adoption, perception that green products cost more hence affecting demand , lack of understanding of the concept, there is conflict with authority due to waste management issues .The findings concur with

On the other hand, the study found that green supplier assessment has positive correlation coefficient with organizational performance.

The study established that the organization has lost business due to environmental requirements ,lack of technical expertise by regulators who impose it ,existence of other techniques or initiatives ,lack of communication between business managers and environmental professionals to gain knowledge ,lack of enforceable government policies and regulations ,lack of training of staff on the environmental practices and lack of public awareness.

CHAPTER FIVE

SUMMARY OF FINDINGS CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter shows the outline of the results of the scrutiny of green supply chain management and organizational performance of Beverage and food Manufacturing Industry in Kenya, finalization and recommendations are drawn there to. The chapter is structured into summary of findings, conclusions, recommendations, study limitations and areas of further studies.

5.2 Summary of Findings

The study shows a positive correlation coefficient between reverse logistics and Organizational Performance of Food and Beverage Manufacturing Industry in Kenya. The study further found a positive influence of reverse logistics the organizational Performance of Food and Beverage Manufacturing Industry in Kenya which increases organizational Performance in terms of green supply chain management. The study further established that purchasing of commodities is done with keen attention to quality of supplies; the organization frequently participates in award winning environmental programmes.

On the green technology adoption, the study found that there was strong positive correlation between green technology adoption and organizational performance of beverage and food Manufacturing Industry in Kenya. This shows that an increased green technology adoption leads to increased organizational performance of Food and Beverage Manufacturing Industry in Kenya. The findings also revealed that taking all other independent variables constant, increase in green technology adoption leads to an

increase in the organizational performance. The findings concur with Gollin (2011), Green technology is important in promoting sustainability and reducing of greenhouse gas emissions.

On the other hand, the study established a strong positive correlation coefficient between green supplier assessment and organizational performance of Beverage and food Manufacturing Industry in Kenya. The findings also show a positive relationship between Green supplier assessment and organizational performance of Beverage and food Manufacturing Industry in Kenya. The study further found that inadequate communication between professionals of environment and business managers to gain knowledge, influence organizational performance of Food and Beverage Manufacturing Industry in Kenya.

The study established a strong positive correlation coefficient between organizational performance and social corporate responsibility and of Food and Beverage Manufacturing Industry in Kenya. The study also revealed a positive relationship between corporate social responsibility and the organizational performance of Food and Beverage Manufacturing Industry in Kenya.

5.3 Conclusion

This study has provided a comprehensive review of green supply chain management and organizational performance of Beverage and food Manufacturing Industry in Kenya. Basing on the results of this research, the conclusion is that there exists positive correlation coefficient among reverse logistics and Organizational Performance of Food and Beverage Manufacturing Industry in Kenya. There is also a relationship that is positive between reverse logistics and organizational Performance of Food and Beverage

Manufacturing Industry in Kenya. On the green technology adoption, the study found that there was strong positive correlation between green technology adoption and organizational performance of Food and Beverage Manufacturing Industry in Kenya. The study also concluded there is a positive relation of green technology adoption on organizational performance of Food and Beverage Manufacturing Industry in Kenya.

The study further concludes that a strong positive correlation coefficient and positive relationship exists between green supplier assessment and organizational performance of Food and Beverage Manufacturing Industry in Kenya. On the corporate social responsibility and organizational performance, the study concludes existence of a strong positive correlation coefficient with organizational performance of Food and Beverage Manufacturing Industry in Kenya.

5.4 Recommendations

The study recommends that that Food and Beverage Manufacturing Industry in Kenya and also organizations that are non-manufacturing should adopt green supply chain practices in all their processes. This is because there are economic benefits in green supply chain management.

The study recommends that Kenyan Government, through NEMA should develop rules and regulations that make it a requirement for all manufacturing firms to adopt environmentally friendly practices in the entire supply chain.

5.5 Limitations of the Study

The research results were applicable to Food and Beverage Manufacturing Industry in Kenya only. The findings can therefore not be generalized to all organizations. Most of

the respondents were very busy and therefore were not in a position to provide all the necessary information.

5.6 Suggestions for Further Studies

The research focused on green supply chain management and performance of the organization in Beverage and food Manufacturing Industry in Kenya. Similar research should be done on Green Supply Chain Management and Economic Performance of Beverage and food manufacturing Industry in Kenya

REFERENCES

Adesina, A. A., & Zinnah, M. M. (2011). Technology characteristics, farmers' perceptions and adoption decisions: A Tobit model application in Sierra Leone. Agricultural economics, 9(4), 297-311.

Blome, C,Hollos,D.& Paulraj, A. (2014). Green procurement and green supplier development: antecedents and effects on supplier performance. International Journal of Production Research, 52(1), 32-49.

Blome, M. J. (2013). Encouraging green procurement practices in business: a Canadian case study in programme development. Greener Purchasing: Opportunities and Innovations, 108-117.

Boyd, B. (2009). Corporate linkages and organizational environment: A test of the resource dependence model. Strategic Management Journal, 11(6), 419-430.

Carter, C. R., & Ellram, L. M. (2008). Reverse logistics: a review of the literature and framework for future investigation. Journal of business logistics, 19(1), 85.

Cooper, D.R & Schindler, P.S. (2006). Business Research Methods (8th edn) McGraw-Hill: New York.

Costa S.G., Lima E.P, (2014),"Green supply chain management",

Crane, A., & Matten, D. (Eds.). (2007). Corporate social responsibility (Vol. 2). Sage.

Creswell, J.W. & Clark, V.P. (2007). Designing and conducting mixed methods research. Thousand Oaks: Sage Publications Inc

Davis, G. F., & Cobb, J. A. (2010). Resource dependence theory: Past and future. Research in the Sociology of Organizations, 28(1), 21-42.
Donaldson, T., & Preston, L. E. (2010). The stakeholder theory of the corporation: Concepts, evidence, and implications. Academy of management Review, 20(1), 65-91.
Dooley, D. (2007). Social Research Methods. New Delhi: Prentice Hall.

Edler, J., Ruhland, S., Hafner, S., Rigby, J., Georghiou, L., Hommen, L., ...&Papadakou, M. (2010). Innovation and public procurement. Review of issues at stake. ISI Fraunhofer Institute Systems and Innovation Research, Karlsruhe.

Feder, G., &Umali, D. L. (2013). The adoption of agricultural innovations: a review. Technological forecasting and social change, 43(3), 215-239.

Fischer, H. (2010). The research on green purchasing [D], Foreign Economic and Trade University. Implications for integrated product policy (IPP). Journal of Cleaner Production 13, 705-715

Fleischmann, M., Bloemhof-Ruwaard, J. M., Dekker, R., Van der Laan, E., Van Nunen, J. A., & Van Wassenhove, L. N. (2009). Quantitative models for reverse logistics: A review. European journal of operational research, 103(1), 1-17.

Freeman, R. E. (1994). The politics of stakeholder theory: Some future directions. Business ethics quarterly, 4(04), 409-421.

Gatari, N. C., & Were, S. (2014). Challenges Facing Implementation of Green supply chain management.

Gollin, D., Morris, M., &Byerlee, D. (2011). Technology adoption in intensive post-green revolution systems. American Journal of Agricultural Economics, 87(5), 1310-1316.

Green, K., Morton, B., & New, S. (2010). Purchasing and environmental management: interactions, policies and opportunities. Business Strategy and the Environment, 5(3), 188-197.

Hall, C. A. (2006). Integrating Concepts and Models from Development Econoimcs with Land use Change in the Tropics. Environment, Development and Sustainability, 8(1), 19-53.

Handfield, R., Walton, S. V., Sroufe, R., &Melnyk, S. A. (2012). Applying environmental criteria to supplier assessment: A study in the application of the Analytical Hierarchy Process. European Journal of Operational Research, 141(1), 70-87.

Hauschildt①a, V., & Schulze-Ehlers, B. (2014). An Empirical Investigation into the Adoption of green procurement Practices in the German Food Service Industry. International Food and Agribusiness Management Review, 17(3), 1.

Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource dependence theory: A review. Journal of management.

Holme, R., & Watts, P. (2009). Corporate social responsibility. Geneva: World Business Council for Sustainable Development.

Hsu, S. & Hu, H. (2008), Comprehensive and configurable metrics for supplier selection. Int. J. Prod.Econ. 105, 510–523. Journal of Manufacturing Technology Management, Vol. 25 Iss 8 pp. 1105 – 1134

Jensen, M. C. (1999). Value maximization, stakeholder theory, and the corporate objective function. Journal of applied corporate finance, 14(3), 8-21.

Jones, T. M., & Wicks, A. C. (2010). Convergent stakeholder theory. Academy of management review, 24(2), 206-221.

Kipkorir, L. E., &Wanyoike, D. M.(2015).factors influencing implementation of green procurement in multinational tea companies in kericho county.

Kombo, D. K. & Tromp, D. L. A (2006). Proposal and Thesis Writing. Nairobi. Paulines Publications.

Lee, A. H., Kang, H. Y., Hsu, C. F., & Hung, H. C. (2009). A green supplier selection model for high-tech industry. Expert systems with applications, 36(4), 7917-7927.

Lee, D. F., &Kim, D. J. (2008). Use the supply relationship to develop lean and green suppliers. Supply chain management: An international Journal, 10(1), 60-68.

Lin, N. A. S. (2011). A review: the impacts of green practices adoption on green performance in the Malaysian automotive industry. Journal of Sustainable Development Studies, 2(1)

Makkonen, A. (2014). The role of company's sustainable procurement practices in conscious consumer buying behaviour. Case: EkotinOy.

Marron, D. B. (2007). Buying green: government procurement as an instrument of environmental policy. Public Finance Review, 25(3), 285-305.

McWilliams, A. (2011). Corporate social responsibility. Wiley Encyclopedia of Management.

Michelsen, O., & de Boer, L. (2009). Green procurement in Norway; a survey of practices at the municipal and county level. Journal of Environmental Management, 91(1), 160-167.

Michelsen, O., & de Boer, L. (2009). Green procurement in Norway; a survey of practices at the municipal and county level. Journal of Environmental Management, 91(1), 160-167.

Mugenda, O. M., &Mugenda, A. G. (2003). Research Methods: Quantitative and Qualitative Approaches. Nairobi: Acts

Mwaura, A. W., Letting, N., Ithinji, G., &Orwa, B. H. (2016).Green distribution practices and competitiveness of food manufacturing firms in kenya.

Nagel, M. H. (2010). Environmental supply-chain management versus green procurement in the scope of a business and leadership perspective. In Electronics and the Environment, 2000. ISEE 2000. Proceedings of the 2000 IEEE International Symposium on (pp. 219-224). IEEE.

Navi, S. T. (2012). Corporate social responsibility.

Nderitu, K. M., &Ngugi, K. (2014). Effects Of green procurement Practices On An Organization Performance In Manufacturing Industry: Case Study Of East African Breweries Limited. European Journal of Business Management, 2(1), 341-352.

Ngechu. M. (2004). Understanding the research process and methods. An introduction to research methods. Acts Press, Nairobi.

Noci, G. (2007). Designing 'green'vendor rating systems for the assessment of a supplier's environmental performance. European Journal of Purchasing & Supply Management, 3(2), 103-114.

Nyakundi, B. M. (2013). Adoption of green manufacturing practices by food processing firms in Mombasa County, Kenya (Doctoral dissertation, University of Nairobi).

Okello, J. J. (2010). Compliance with international food safety standards: The case of green bean production in Kenyan family farms (Doctoral dissertation, Michigan State University).

Okemba, P. O. (2014). Green supply chain management practices as determinants of supply chain performance in Kenya's manufacturing firms: A case study of Nairobi-based firms in the food and beverage sector. Strategic Journal of Business & Change Management, 1(2).

Ouru, L. M. (2015). Green supply chain performance management practices in large manufacturing firms in Nairobi, Kenya (Doctoral dissertation, University of Nairobi).

Pfeffer, J., &Salancik, G. R. (1978). The external control of organizations: A resource dependence perspective. Stanford University Press.

Pfitzer, M., &Krishnaswamy, R. (2008). The Role of the Food & Beverage Sector in Expanding Economic Opportunity. CSR Initiative Report, 20, 9.

Pishvae, M. P., & Dekker, R. (2009). A framework for reverse logistics. In Reverse Logistics (pp. 3-27). Springer Berlin Heidelberg.

Rainbird, M. (2014). A framework for operations management: the Supply chain, International Journal of Physical Distribution & Logistics Management, Vol. 34, No. 3/4.
Rha, J. S. (2010). The impact of green supply chain practices on supply chain performance.

Rogers, D. S., &Tibben-Lembke, R. S. (1999). Going backwards: reverse logistics trends and practices (Vol. 2). Pittsburgh, PA: Reverse Logistics Executive Council.

Russel, T. (Ed.). (2012). Greener purchasing: Opportunities and innovations. Greenleaf Publications.
Salam, M. A. (2008, December). Green supply chain management adoption in manufacturing supply chain. In Proceedings of the 9th Asia Pasific Industrial Engineering and Management Systems Conference (pp. 3-5).

Schluter, M. (2012). Constraints on Kenya's food and beverage exports (Vol. 43). Intl Food Policy Res Inst.

Schumpeter, J. A. (1962). The theory of technology diffussion: An inquiry into profits, capital, credit, interest, and the business cycle (Vol. 55). Transaction publishers.

Smith, E. E., & Perks, S. (2010). A perceptual study of the impact of green practice implementation on the business functions. Southern African Business Review, 14(3), 1-29.

Sterner, E. (2012). 'Green procurement of buildings: a study of Swedish clients' considerations. Construction Management & Economics, 20(1), 21-30.

Sunding, D., &Zilberman, D. (2012). The agricultural innovation process: research and technology adoption in a changing agricultural sector. Handbook of agricultural economics, 1, 207-261.

Testa, F., Iraldo, F., Frey, M., &Daddi, T. (2012). What factors influence the uptake of GPP (green public procurement) practices? New evidence from an Italian survey. Ecological Economics, 82, 88-96.

Vashta, J. W. (2012). Green supply chain management and supply chain responsiveness among food and beverages manufacturing firms in Nairobi, Kenya (Doctoral dissertation).

Walker, H., &Brammer, S. (2009). Sustainable procurement in the United Kingdom public sector. Supply Chain Management: An International Journal, 14(2), 128-137.

APPENDIX I: QUESTIONAIRE

Section: A: Demographic Information
Respondents.

1. Gender
   Male [ ] Female [ ]
2. Age group in years
   18-25[ ] 26-30[ ] 31-40 [ ] 41-50 [ ] Above 50 [ ]

3. Please indicate the highest level of education attained? (Tick as applicable)
   College Diploma…… ..……. [ ]
   Undergraduate ...……. [ ]
   Master ……. [ ]
   Others (specify)
   ……...
4. Indicate your period of service in this firm
   2 years or below [ ] 3 to 5 years [ ]
   6 to 8 years [ ] 9 years and above [ ]
5. Indicate your position in this organization
   Procurement manager [ ]
   Quality assurance manager [ ]
   Others (specify)
   ……...

FIRM

6. Indicate how long has the firm been in operation in Kenya. {Years}
   2 years or below [ ] 3 to 5 years [ ]
   6 to 8 years [ ] 9 years and above [ ]

SECTION B: ADOPTION OF GREEN SUPPLY CHAIN MANAGEMENT

7. Does your firm have environmental management department?
   Yes [ ]
   No [ ]
8. Does your firm have an environmental management policy?
   Yes [ ]
   No [ ]

9. Indicate your level of agreement with each the following statements relating to extent of adoption of Green Supply chain management in your organization. Use the scale :
   1- Strongly disagree ; 2-Disagree; 3- Undecided; 4- Agree;
   5- Strongly Agree

PRACTICES	**1**	**2**	**3**	**4**	**5**
Recycling of materials is done in the organization.					

Purchasing of commodities is done with keen attention to quality of supplies.					
Our organization frequently participates in award winning environmental programmes.					
Transportation operations are done in a way to reduce carbon footprint.					
There is a responsible and ethical tendering procedure.					
The organization has a procedure to re-using used materials.					
Proper returns management is done					
There is collection of expired goods from customers for proper disposal					
Reverse logistics is done in the organization.					
Implementation of green technology reduces CO2 emissions.					
There is waste management in the organization by use of green technology.					
Green technology has been adopted.					
Through green technology our organization has waste management measures					
Organization uses renewable energy					
Suppliers are assessed based on their ability to control pollution					
Our organization does business only with those that meet environmental regulations and standards					
Organizations deals with green raw materials.					
Suppliers are compared by considering the qualitative characteristic of environmental performance					
Our organization carries out green packaging.					
Through corporate social responsibility our organization complies with environmental requirements.					

SECTION C: CHALLENGES OF GREEN SUPPLY CHAIN MANAGEMENT

10. Indicate the extent to which the organization has faced each of the following challenges in adoption of green supply chain management. Use the scale :
    1-No extent; 2-Little extent; 3- Moderate extent; 4- Great extent;
    5- Very great Extent;

Challenges	**1**	**2**	**3**	**4**	**5**
High cost has been an impediment to adoption of green practices.					
Lack of green supply chain management knowledge hinders adoption.					
The organization has not implemented structural and organization changes to support green Supply chain management					
There is lack of management support in the organization.					
Lack of appropriate technology and business processes needed affects adoption.					
Perception that green products cost more hence affecting demand.					

Lack of understanding of the concept					
There is conflict with authority due to waste management issues.					
Organization has lost business due to environmental requirements					
Lack of technical expertise by regulators who impose it					
Existence of other techniques or initiatives					
Lack of communication between business managers and environmental professionals to gain knowledge					
Lack of enforceable government policies and regulations					
Lack of training of staff on the environmental practices					
Lack of public awareness leading to low demand for organization products.					
Resistance to change by the organization employees.					

SECTION D: GREEN SUPPLY CHAIN MANAGEMENT AND ORGANIZATIONAL PERFORMANCE

1. Indicate the extent to which adoption of green supply chain management has affected the organizational performance for each of the following organization performance indicators. Use the scale :

   1-No extent; 2-Little extent; 3- Moderate extent 4- Great Extent 5- Very great Extent

2.

Organizational performance	**1**	**2**	**3**	**4**	**5**
Goods are produced at the least cost possible in the organization.					
The organization maximizes profits in its operation.					
There is increased customer satisfaction					
Demand for the organization products and services are high.					
Organization market share for its products has increased					
Staff members are aware of goals and objectives on organizational level.					
Organization maximizes the use of its resources.					
Organization produces products that are of high quality.					
Organization uses its production capacity optimally.					
Organization minimizes rejects or scrap materials in production.					

THANK YOU

APPENDIX II: LIST OF LARGE FOOD AND BEVERAGE MANUFACTURERS IN NAIROBI.

1. Aberdares Water Ltd
2. Kevian Limited
3. Alpine Coolers Ltd
4. Melvin Marsh International
5. Aqual Ltd
6. Mombasa Maize Millers Ltd
7. Aquamist Ltd
8. Nairobi Bottlers Ltd
9. Bio Foods Kenya
10. Nakumatt Healthy Foods ltd
11. Blue Label
12. Nestle Foods Kenya Ltd
13. Breakfast Cereal Company Kenya Ltd
14. New Kenya Cooperative Creameries Ltd
15. Buseki Dairies
16. Pembe Industries Ltd
17. Cardbury Kenya and East Africa Ltd
18. Pepsi Cola
19. Chirag Ltd
20. Premier food Industries Ltd
21. Coca Cola Juices Ltd
22. Pristine Ltd

23. Deepys Industries Ltd

24. Proctor and Allan East Africa Ltd

25. East Africa Sea Foods Ltd

26. Safari Ltd

27. East African Breweries Ltd

28. Sameer Agriculture & Livestock Ltd

29. Energy Foods Ltd

30. Sierra Brewery

31. Excel Industries Ltd

32. The good water company Ltd

33. Farmers Choice Ltd

34. Tropical Heat Industries Ltd

35. House of Manji Ltd

36. Tru foods

37. Kapa oil refineries

38. Unga Ltd

39. Ken chic Ltd

40. Unilever Kenya Ltd

41. Kenafric Industries Ltd

42. Uzuri Foods Ltd

43. Kenya Sweets Ltd

44. W.E Tilly Ltd

45. Kenya Wines Agency Ltd

46. Wrigleys Company