GREEN SUPPLY CHAIN MANAGEMENT PRACTICES AND SUPPLY CHAIN PERFORMANCE OF LARGE SCALE FOOD AND BEVERAGE MANUFACTURING FIRMS IN NAIROBI

BY

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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D61/81520/2015

This research report has been submitted for examination on approval as the University Supervisors.

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DEDICATION

This project is dedicated to my supervisor, Ms. Richu Salome (Lecturer, Management Science), moderator, Mr. Akello Ernest (lecturer, management science) for their continuous and tireless commitment to see me through this project. To my beloved parents and family for their moral and financial support and prayers. May Almighty God bless you indeed.

ACKNOWLEDGEMENT

My special thanks to The Almighty God for all he has done to give us an opportunity to come this far.

ABREVIATIONS AND ACRONYMS

BSC   Balance scorecard

GSC   Green Supply Chain

GSCM   Green Supply Chain Management

GSCMP   Green Supply Chain Management Practices

LSFBM   Large Scale Food and Beverage Manufacturing Firms in Nairobi

RBV   Resource Based View

SACCOS   Savings Credit and Cooperative Society

SC   Supply chain

SCM   Supply Chain Management

TCE   Total Cost Economic Theory

NSE   Nairobi Stock Exchange

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Large scale food beverage manufacturing firms are key in our, economy based on their role in provision of food to the Kenyan population, provision of employment and good contributors to the GDP of the country. The study was aimed at establishing the extent of GSCMP in large scale food and beverage manufacturing firms in Nairobi. It was specifically aimed to establish how, green design, green procurement, green packaging and reverse logistics affect performance of large scale food beverage manufacturing firms in Nairobi. Its objectives were to establish the extent of adoption of GSCMP large scale food and beverages firms in Nairobi, to find out impact of GSCMP on supply chain performance in large scale foods and beverages manufacturing enterprises in Nairobi and to find out challenges in adopting GSCMP in large scale foods and beverages manufacturing firms in Nairobi. Various stakeholders in the manufacturing industry will benefit from these study i.e managers in manufacturing firms, policy makers and academicians. The study used descriptive research design in its methodology. The study used resource based view theory and strategic choice theory. Data for this investigation was sourced by structured questionnaires. Procurement managers and their equivalent were the targeted population from the 46 large scale food beverage manufacturing firms in Nairobi. These questionnaires were issued by way of drop and pick method, coded, keyed and analyzed using both descriptive and regression analysis. The investigation outcomes pointed out that GSCMP have a positive bearing on performance of large scale food beverage manufacturing firms. From the findings, green design indicated a mean value of 4.2, green procurement indicated a mean value of 3.9, reverse logistics indicated a mean value of 3.8, and green packaging indicated a mean value of 3.8. It was ascertained that logistics outsourcing bears a positive significance on performance whereby: green design had a positive impact on supply chain performance: 0.540, green 3procurement: 0.577, reverse logistics: 0.531 and green packaging 0.561, hence all the GSCMP activities in the study affect supply chain performance in the large scale food and beverage manufacturing firms in Nairobi Kenya. Resistance to change, which was indicated by a mean value of 3.000, lack of management support and understanding with a mean value of 3.9, lack of training indicated a mean value of 3.9, the challenge of lack of finances indicated by a mean value of 3.8, ineffective leadership with the mean value of 2.8. The major limitation of the study was based on large scale food beverage manufacturing firms in Nairobi. It was established that there was need for adoption of GSCMP in both small and large scale firms in Kenya to improve their focus on core activities. The study recommends that a cross sectional study of large scale food and beverage manufacturing firms in Kenya be carried out. Future academicians should research on GSCMP in other firms other than large scale food beverage manufacturing enterprises in Kenya.

Key words: Green supply chain management practices, supply chain performance, large scale food and beverage manufacturing firms.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In the recent past much emphasis has been put on environment friendly products. The public has become well versed with issues concerning the environmental and global warming (Vachon and Klassen, 2007). Firms have always anticipated enquiries on the level of greenness of their manufacturing processes, together with how they recycle the end products after. The tremendous increase in the levels of emissions from greenhouses coupled with various types of pollution done to the environment by enterprises s has triggered the necessity for firms to readjust their supply chain (SC) operations and incorporate greenness in their SC in to facilitate conservation of scarce resources. Based on this fact there has been an increase in interest by researchers in supply chain management on GSCM.The growth of GSCM has been attributed to by high levels of deterioration of the environment through high levels of pollution (Srivastava, 2007).

According to Boraya, (2012), performance is achieved whenever there is a target of a given activity, which is usually measured against standards of accuracy, completeness, and cost. Supply chain performance measurements are a continuous and formal systematic approach to monitor and evaluate accomplishments as regards to the extent to which they meet or deviate from pre-established levels or standards. The performance of supply chains which deal with food and beverages products is complex and hence measures need to be put in place to enhance effectiveness. This is based on the fact that SC systems tend to be viewed as being dynamic because they have to be frequently adjusted to suit consumer preferences which are ever changing.

Each day we experience expansion in the supply chain systems around the globe each day which makes supply chain to face adverse challenges due to the high level of responsiveness which they have to maintain (Erick, 2012).

The study will be guided by the strategic choice theory and resource based theory. The strategic choice theory expounds on the link between management decisions and the general interaction with the environments. According to this theory firms are impinged on by environments and deliberations by senior administration the resolution to or not implement a certain practice and the resulting impact on performance is made by the top management. The resource based theory ascertains that firms tend to overely on the external environment for resources. To cut on this overdependence, there is need for firms to adopt strategies that will help them avoid overreliance on the external environment (Miles, 1999).

1.1.1 Green Supply Chain Management Practices

As per Zuh and Sarkis (2004), GSCM is termed as the inclusion of the green aspect to SCM and that it entails addressing the influences and correlations that exist between SCM and the natural environment. According to them GSCM practices cut across the supply chain from stretches from green purchasing to integrating green SC, streaming from supplier, to manufactures and finally to customers. According to Zhu (2002) green procurement entails all commitments done by all business units in a firm in their quest to reduce the use of excess materials to minimize cost and enhance the corporate image of the organization.

Martha and Houston (2010), indicated that the objective of GSCMP is to cut out waste, and procurement function will concentrate on value through considering total costs of getting rid of waste in the process. This study agrees with the definition of

Zsidisin and Hendrick (1998) which is broader and addresses aspects of green supply chain practices. Practices are exercises that are performed repeatedly over a period of time and they end up becoming a custom. GSCM practices include, reverse logistics, E-procurement, green packaging, Lean SCM and waste management. Adoption of GSCM facilitates the implementation of quality control. Through adoption of GSCM, firms are able to attain competitiveness in the market, through the various quality programs .Structured mechanisms for continuous improvement are created by firms in their quest to improve environmental performance whenever they receive the certificate for the ISO 14001 environmental management system standard.

1.1.2 Supply Chain Performance

It is the organizations ability to lower cost of logistics by making sure the correct product is supplied at the appropriate time and location (Zhang and Okoroafo, 2015). According to Vogel (2011), supply chain performance is highly influenced by macro factors namely SCM and corporate supply chain. It is on this basis that firms have shifted from individual organizational performance to procurement and supply chain performance to boost bottom line performance within the whole chain. SC performance measurement is also defined as the measures intended to estimate both the competence and capability of the overall SC network, (Kurien & Qureshi, 2011).

Several standards have been formulated to assess the supply chain activities and the determination of the appropriate type of assessment is not easy since focusing on one aspect such as cost reduction may improve cost effectiveness at the expense of the performance of the entire supply chain system (Arrowsmith, 2013). Common performance indicators of the SC performance according to time, quality, flexibility as well as cost, (Arun & Ozdamar, 2005). Supply Chain Operations Reference (SCOR

is a balanced performance measurement system that measures at several levels, and it has five core processes namely planning, sourcing, making, delivery and return (Lockamy & McCormack, 2004).

According to Lee and Billington (2012), discrete sites in any supply chain fail to improve efficiency and effectiveness if they pursue goals independently. All Supply Chain members should understand the measurements and offer minimum chances for manipulation (Schroeder, Anderson & Cleveland, 2010). In this respect, performance models and studies should be devised to attain enterprise targets and ways of measuring the attainment of those targets. This will allow for the effectiveness of the techniques or strategies used to be easily accessed.

1.1.3 Large Scale Food and Beverages Firms in Nairobi Kenya

Manufacturing involves conversion of raw materials to finished products. 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 (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 GSCM (Pfitzer, 2008).

Food and beverage business 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, (Lucas, 2007).

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) According to the Kenya Association of manufacturers, there are 46 large scale foods and beverages manufacturing enterprises in Nairobi.

1.2 Statement of the Problem

Over the past decade, GSCM is very important element of the environmental and SC approaches. Firms have objectives of ensuring that they improve their brand image and incorporate the environmental sustainability in their SC. This includes adoption of green initiatives of which GSCP is part of (Dyllick and Hockerts, 2002).The food and beverages manufacturing industry is an important sector in Kenya based on the fact that it contributes to substantial contribution to the country's economic development.

Unfortunately, it has been causing environmental deterioration. Deterioration of environment is highly contributed to by manufacturing activities. Based on that GSCM concept is now gaining importance based to help minimize negative impact of the industrial processes while enhancing the competitive advantage of the firms (Rao, 2006).

Many previous researches have been done on the GSCMP and   performance. Globally, Green (2013) undertook an investigation on the bearing of GSCM practices on performance. The study findings indicated that GSCMP improves performance in manufacturing firms. Diane (2016) in her study on GSCMP amongst UK manufacturers. The study established that adoption of GSCMP facilitates improved performance of UK manufacturers. The study was solely focused on the UK manufacturers and hence cannot be applied to the large scale food and beverages firms in Nairobi. Logeshe (2017) carried out a study on GSCMP and performance based on the role that size of the firms play in the emerging economies. The study established that to a large extent Indian firms have implemented most of the GSCMP. The study was however focused on Indian firms and hence the results cannot be applicable on the African countries.

Locally, Nyabate (2014) in his investigation on the bearing of GSCMP and performance of mobile phones enterprises in Nairobi established that there exists a positive impact of GSCM and performance. However, the study was solely focused on mobile phones firms in Nairobi. Pembere (2016) studied on GSCP and supply chain performance of companies listed at the Nairobi securities exchange. It was verified that there exists a positive impact between application of green procurement management procedures and performance in enterprises registered at the NSE. The

investigation was however focused on green procurement management practices and performance and not GSCMP as a whole. Chege (2012) carried out a study on GSCMP and SC performance of private clinics in Nairobi, Kenya. The findings of the study established that there exists a positive impact on performance by adoption of GSCMP in large manufacturing firms in Nairobi, Kenya. The study ascertained that a positive bearing on supply chain performance was established by the adoption of GSCMP. The study was however focused on all large scale manufacturing firms as a whole and not large scale food and beverage firms in Kenya.

Based on the previous studies carried out both locally and globally, it is clear that there exists a research gap in knowledge since, no research has been carried out on GSCMP and performance of LSFBM firms in Nairobi. This investigation hence, intends to brigde this gap by answering the following research questions: What is the extent of adoption of GSCMP in LSFBM firms in Nairobi? What is the impact of adoption of GSCMP on SC performance LSFBM firms in Kenya? What challenges are faced in the implementation of GSCMP in LSFBM firms in Nairobi?

1.3 Research Objectives

This study was steered by these general objectives:

i.   To verify the extent of application of GSCM practices in large scale food and beverages enterprises in Nairobi

ii. To find out the bearing of GSCM practices on SC performance in large scale foods and beverages manufacturing firms in Nairobi.

iii. To find out challenges in adopting GSCM practices in large scale foods and beverages producing firms in Nairobi.

1.4 Value of the Study

Various stakeholders in the manufacturing industry will gain from the results of this research on various ways that they can minimize on costs at the same time produce quality products through adoption of GSCMP. The supply chain managers will understand the benefits of adopting GSCMP. By understanding what impact that adoption of GSCMP has on performance, this will help management in the planning for future. This will in the long run facilitate their competitiveness in the market. This will increase the levels of profitability of firms and cut on operational costs.

Future studies will be made with the use of this study as the reference material. Academicians and other scholars will also benefit from this study since they will use it a reference for future studies in the GSCMP and SC performance. Policy makers will also benefit from this study on the areas GSCMP which need policy interventions for the purpose of providing an efficient SC.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The theoretical review, existing works on GSCMP and SCP of LSFBM firms in Nairobi Kenya plus conceptual framework is what makes up this chapter.

2.2 Theoretical Framework

Various theories that make up a basis of this research are what form the theoretical framework. It is made of not only principles, theories but also the various findings that were obtained. This study will be guided by: resource based theory and strategic choice theory.

2.2.1 Strategic Choice Theory

According to Rond and Thietart (2007), strategic choice theory "expounds on the link between an enterprise's actions and events (De Rond and Thietart, 2007)." This theory expounds on the correlation between management choices and performance and the general link with the settings. According to this theory firms are impinged on by settings and resolution of senior administration (Miles, 1978). The resolution to or not implement a specific practice and the resulting impact on performance is made by the top management. Create or acquire ought to maintain equilibrium on reliance compared to benefit to meet the aims of the enterprise. As per adoption of GSCMP resolution, it recommends on the lessening of environmental effect and overall costs incurred. The resolution whether to team up with dealers is subject to the benefit inherent in the partnership (Nollet, 2005).

In this study, large scale food and beverages firms have to come up strategies to adopt GSCMP that will facilitate their improvement in the levels of performance. The top management together with the supply chain managers has to device strategies like implementation of GSCM practices that will facilitate their improved performance. In addition, this theory brings out a basis on which adoption of GSCMP facilitates improved performance of the firm and its improved competitive advantage over their competitors.

2.2.2 Resource based View Theory

Developed in the 1978 by Pfeffer and Salancik, this theory states that firms are affected and constrained by environments and based on this fact, firms act in order to control dependencies on resources by setting various forms of inter-organizational arrangements. This theory clearly brings out how the availability and the amount of resources firms have effect on the behavior of the firm. The sourcing of external resources is an important aspect for not only the strategic management but also the tactical management of any firm (Sanderson, Lonsdale & Mannion 2015).

This theory is important as it explains ways that firms strategize themselves and adopt various actions like adopting GSCMP, in all attempts to overcome dependencies in terms of resource acquisition and improve an organizational performance. Most organizations are not self-sufficient hence the need to come up with proper GSCMP practices in order to facilitate good performance to meet the market demand which results to customer satisfaction.

2.3 Green Supply Chain Management Practices

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 GSCM is a first step in discussing them, and Shrivastava (1995) proposed classifying green supply chain.

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).

2.3.2 Green Procurement

Screening of suppliers based on their contributions of improving 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 (Handfield, 2012). It entails integrating the concept of environmental issues in the

process of procuring goods and services (Green, 2010). Eco-labeled product purchase, implementation of environmental standards into the supplier are the various initiatives put in place by a firm to minimize the impact an environment has on the SC (Colicchia et al, 2011). Green Procurement facilitates improved facilitates improvement in the compliance levels of set norms and improves brand image of the firm due to improved financial performance and environmental awareness. Buyers most at times prefer choosing suppliers with certified processes ISO 14001 to attain a balance in green procurement. Firms are encouraged to select suppliers who have low levels of raw material consumption and controlled emissions. In addition, most firms choose supplies that are made from of materials that are recyclable or can be recycled, which are later on stamped by reliable eco-labels (Loebich & Donval, 2011).

2.3.3 Green design

Green design involves situations whereby the firms work hand in hand with suppliers in the designing of various products that are needed by the firm and by so doing incorporate environmental issues in them and projects they want to undertake (Geffen & Rothenberg, 2000). It entails provision of specification on design of goods intended to be purchased to suppliers which entails, collaboration with suppliers for eco-design, collaboration with suppliers for green packaging. This requires organizations to set aside funds for activities that handle the environmental problems in the SC.

In eco-design manufacturers are required to originate commodities that lower the levels of supplies and energy consumption, which will simplify the component materials to be reused, recycled, and also enhance retrieval of materials and parts. This will help avoid and lower the levels of use of harmful products in the transformation of manufacturing goods (Zhu et al., 2007).

2.3.4 Green Packaging

Green packaging is defined as environmentally sound packaging practice that takes to account the impact of packaging materials and minimizes their impact to the lowest possible standard (Johnsson 2008). Green marketing is a crucial aspect in the efficiency of any GSCM scheme as marketing by use of various packaging takes the role of creating the connection with the customers and suppliers and more so it is a customer and demand focused (Walker et al 2008). Johnsson (2008) cites that simple concepts such as packaging and use of environmental chemistry to produce less harmful chemicals e.g. to the Ozone and communicating that to the customers is of prime importance when they are purchasing various goods. Johnsson (2008) emphasizes the need to have an all-inclusive approach in the marketing function so as to continually communicate the green strategy in the entire logistics process and value chain. In Kenya however very few companies seem to communicate their green philosophy to customers. Green packaging has however been put into emphasis by NEEMA through ban of plastic bags in order to conserve the environment.

2.4 Supply Chain Performance

Strategies adopted in the organization to safeguard the processes of purchasing commodities are done in an environmentally friendly way. In the supply network the purchasing perspective in GSCM practices will bring about cost reduction through integrating suppliers in the SC. Green et al., (2008) argue that environmental performance can be improved by GSCM procedures. Green purchasing, collaboration with various stakeholders together with investment returns are the various types of GSCMP that are intended to positively impact environmental awareness of firms.

Based on purchasing perspectives of the supply network GSCM practices have several benefits which include: cost reduction and integration of suppliers to form a decision-making process which is participative which in the long run improves innovations in the environment, (Bowen et al., 2001; Rao, 2002). SCOR model is a performance measurement system that measures at multiple levels, covering five core supply chain processes namely planning, sourcing, making, delivery and return, (Lockamy and McCormack, 2004). To measure SCP, this study is going to focus on: cost and reliability.

2.5 Empirical Literature

Globally Green 2013 researched on effect of GSCMP on performance. The aim of the study was to ascertain the effect of adoption of GSCMP on performance .The study adopted use of descriptive statics where material was sourced through structured questionnaires from 159 manufacturing firms. The study findings indicated that GSCMP improves performance in manufacturing firms. Diane (2016) carried out a study on GSCMP amongst UK manufacturers. The investigation was aimed to verify the impact that adoption of GSCMP has on SC performance of UK manufacturers. The study adopted use of descriptive statistics whereby questionnaire and interviews were used in data collection. The study established that adoption of GSCMP facilitates improved performance of UK manufacturers. The study was solely focused on the UK manufacturers and hence cannot be applied to the large scale food and beverages firms in Nairobi.

Logeshe (2017) studied on GSCMP and performance. The investigation intended to to establish the impact that adoption of GSCMP has on performance. The study adopted use of questionnaires in data collection. The study ascertained that to large extent

Indian firms have GSCP. Locally Nyabate (2014) in his investigation on the bearing of green SCMP and performance of mobile phones enterprises in Nairobi established that there exists a positive impact of GSCMP and performance. The study objective was to ascertain the effect of GSCMP and performance of Kenyan mobile phones enterprises. The investigation adopted a descriptive research design where data was collected by use of questionnaires.

Pembere (2016) studied on green procurement practices and supply chain performance of companies registered at the NSE. The study was aimed at establishing the impact of GSCMP and performance. The purpose of the research was to establish the impact of GSCMP and performance of enterprises registered at the NSE. The investigation verified that a positive bearing exists between use of green procurement management practices and performance in companies listed at the NSE. The investigation was however focused on green procurement management practices and performance and not GSCMP as a whole. It however augmented the present literature through the use of the study findings on the impact that GSCMP has on SC performance.

Chege (2012) GSCMP and SC performance of private hospitals in Nairobi, Kenya. The investigation sought to ascertain the various GSCMP and performance in private hospitals in Nairobi Kenya. The study adopted use of descriptive statics where material was sourced through questionnaires. The the outcomes investigation established that there exists a positive impact on performance by adoption of GSCMP.

Mogina (2015) carried out a study on green SC performance management practices in large manufacturing enterprises in Nairobi, Kenya. The purpose of the investigation was to establish the extent of adoption of GSCMP. The study ascertained that there

was a positive bearing on supply chain performance by the adoption of GSCMP. The investigation was however focused on all large scale manufacturing firms as a whole and not large scale food and beverage firms in Kenya. The investigation verified that there exists a positive link between adoption of GSCMP and performance.

2.6 The Conceptual Framework

It entails the effect that GSCMP has on supply chain performance. GSCM practices include: Reverse logistics, green design, green procurement and green packaging while SC performance was measured by quality, cost, flexibility and responsiveness.

Figure 2.1: Conceptual Model

Independent variables   **Dependent variable**

Green Supply Chain Management Practices	**Supply Chain Performance**
o Reverse Logistics o Green procurement o Green Design o Green packaging	o Quality o Flexibity o Cost o Responsiveness

Source: Author, (2018)
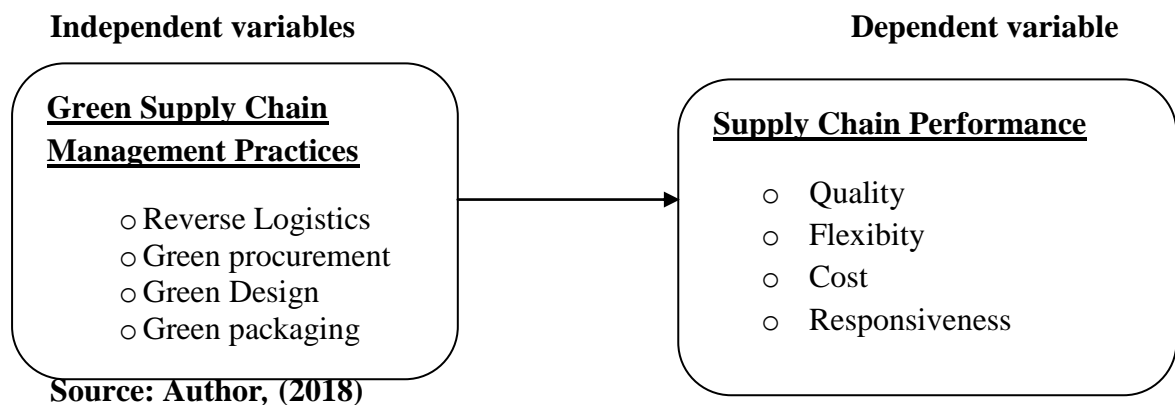
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The part contains information about the design of the research and population that was used for the study. The techniques that were implemented in data collection and analysis and presentation are similarly highlighted in this part.

3.2 Research Design

This study used descriptive research design in meeting the study objectives. A research design is the data collection process which helps in answering the research objectives of the study (Mugenda & Mugenda, 2008). This design was adopted as the researcher has interest in the state of affairs in a particular field and the variables should not be manipulated. It facilitated the researcher's ability to meet the research objectives.

3.3 Target Population

It entailed the large scale food and beverages firms in Nairobi Kenya. Thus the population of this investigation was made up of the 46 the large scale food and beverages manufacturing firms in Nairobi (appendix II). A census was adopted for this investigation since study population was relatively small. The respondents were supply chain managers, heads of supply chain departments, procurement managers or their equivalent.

3.5 Data Collection

Data collection of primary data was by use of structured questionnaires. The questions were constructed in a manner that they were able to address specific objectives and

offer a variety of possible responses. The questionnaires were disseminated to the heads of the various supply chain departments of the large scale food and beverage firms in Nairobi. Section A embroiled the background information of the respondents, section B embroiled material on the extent of adoption of GSCMP, section C contained information on the bearing of GSCMP on performance of LSFBM firms and D was based on the challenges.

3.6 Data Analysis

Data sourced was screened for correctness, consistency, consistency and comprehensiveness in preparation for analysis. The data was summarized and tabulated using descriptive measures. Regression analysis was used to establish what the GSCMP on SCP. Descriptive statistics was used in analyzing data on challenges of adopting GSCMP in large scale food and beverage manufacturing firms in Nairobi. GSCMP was used as independent variables and the SC performance as the dependent variable.

$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Where;

Y = Supply chain performance

α – This is a constant

β_1, β_2, β_3, β_4 and β_5– Are constants regression coefficients

X_1 – Reverse logistics,

X_2 – Green procurement,

X_3 – Green design

X_4– Green packaging,

ε - Error term explaining the variability of the factors that are not mentioned.

CHAPTER FOUR

DATA ANALYSIS, RESULTS, AND DISCUSSION

4.1 Introduction

This part is made up of data analysis, outcomes and explanation. It entails the findings on the study sought on GSCMP and SCP in LSFBM firms in Nairobi. The investigation target population was the procurement heads and their corresponding in the procurement division.

4.2 Response Rate

The response rate for this investigation, out of 46 questionnaires which were disseminated, 35 were dully filled and returned giving a response rate of 76%. This was sufficient for data analysis (Mugenda & Mugenda, 2003). Thus this was deemed effective and will offer considerable evidence to be utilized in overview of the different facets of the research under investigation.

4.3 Biographic Information

To carry out this study effectively respondents were asked to specify their years of experience in working at the large scale food and manufacturing firms in Nairobi. Background checks were carried out to establish the relationship between the information gathered on their experience, education level and the knowledge sought.

4.3.1 Gender

The respondents were required to show their gender; the outcomes are as summarized in the table 4.1 below:

Table 4.1: Gender

	Frequency	Percent
Male	18	51
Female	17	49
Total	35	100.0

Source, *Authors*, 2018

From the table above: 51% of the respondents constituted male whereas 49% constituted female. This indicates that there is equal distribution of staff in terms of gender in large scale food and beverage manufacturing firms in Nairobi.

4.2.3 Education

The respondents were asked to provide their education background. The table 4.3 below shows the findings.

Table 4.2: Education

Education level	Frequency	Percent
College	3	8.6
Undergraduate	29	82.9
Masters	3	8.6
Total	35	100.0

Source: *Authors,* 2018

As indicated in the table above, 9% of the respondents had college level education,83% had degree level education while 9% of the respondents has a master's level education. This was an indication that the respondents had adequate education background and they had a thorough comprehension of the material sought on GSCMP.

4.3.4 Experience

The section shows experience the respondents had the table 4.3 points out the outcomes.

Table 4.3: Experience

Experience Distribution	Frequency	Percent
Less than 5 years	4	11
6-10 years	26	74
over 10 years	5	14
Total	35	100.0

Source: *Authors,* 2018

From the table above it could be seen that 11% of the had worked for below 5 years, 74% had working experience of 6-10 years and 14% had over 10 years' experience. These findings indicated that the respondents had adequate working experience in the data sought and they are in a position to provide data that will facilitate meeting of the study objectives.

4.4 Implementation of Green Supply Chain Management Practices

The first objective of the study was to ascertain the extent of adoption of green SCM practices in large scale food and beverages manufacturing firms in Nairobi. To determine this, statistical descriptive analysis was implemented in the examination of the material sourced on the green supply chain management practices.

4.4.1 Green Design

The respondents were requested to show to what level green design as a GSCMP had been implemented in large scale food and beverage manufacturing enterprises in Nairobi. The outcomes are as shown in the table 4.7 below:

21

Table 4.4: Green Design

	Mean	Std. Deviation
The firm incorporates greenness in the design of its products	4.1	.78
Your firm provides specifications about environmental requirements to suppliers when buying an item	3.9	.76
You have collaboration with suppliers for environmental goals	3.6	.74
You have collaboration with suppliers for eco-design of the raw materials supplied	3.4	.65
You have cooperation with suppliers for green packaging when transporting raw materials to the firm	3.4	.65

From the results in the table above, it can be seen that the firms have incorporated greenness in the design of its products to a great extent (M=4.1, SD= 0.78), also the firm provided specification about environmental requirements to suppliers when acquiring an item to a reasonable extent (M=3.9, SD=0.76) the firm had teamwork with suppliers for environmental objectives to a reasonable extent, (M=3.6, SD=0.74), the firm showed teamwork with suppliers for eco-design of the raw materials supplied to a reasonable extent (M=3.4, SD=0.65) and cooperated with suppliers for green packaging when transporting raw materials to the firm to a moderate extent (M=3.5, SD =0.65). This findings hence indicated to a moderate extent green design has been adopted in the production of products in large scale food and beverage manufacturing firms.

4.4.2 Green Procurement

The respondents were requested to specify to what extent green procurement as a green supply chain management practices had been implemented in large scale food and beverage manufacturing enterprises in Nairobi. The outcomes are as shown in the table 4.7 below:

Table 4.5: Green Procurement

	Mean	Std. Deviation
Your firm conducts environmental audit for suppliers 'internal management Suppliers'	3.97	.86
Your firm puts in environmental requirements during supplier evaluation	3.91	.70
Your firm organizes green supply chain seminars and workshops	3.71	.89
The suppliers have to show compliance with qualification such as emissions caps, dangerous materials labeling, product specification and having necessary documents	3.66	.54
Your firm incorporates environmental requirements in sourcing for goods and services	3.49	.56
Your firm adopts use of environmental requirements in setting specifications for goods	3.43	.70
Your firm conducts environmental audit for suppliers 'internal management Suppliers'		

The findings indicated that to a moderate extent green procurement as a GSCM practice in large scale food and beverage manufacturing firms in Nairobi. From the responses: The firm conducted environmental audit for suppliers 'internal management suppliers indicated a mean of 3.95, also the firm put in environmental requirements during supplier evaluation (M=3.91, SD=0.70), the firm organized green supply chain seminars and workshops (M=3.71, SD=0.86), The suppliers had to show compliance with qualification such as emissions caps, dangerous materials labeling, product specification and necessary documents (M=3.66, SD=0.89), the firm adopted use of environmental requirements in setting specifications for goods (M=3.43, SD=54) and also incorporated environmental requirements in sourcing for goods and services (M=3.49, SD=0.56). This is an indication that large scale food and beverages manufacturing firms in Nairobi.

4.4.3 Reverse Logistics

The results of the respondents indicating to what extent reverse logistics as a GSCMP had been implemented in large scale food and beverage manufacturing firms in Nairobi on. The outcomes are pointed out in the table 4.7 below:

Table 4.6: Reverse Logistics

Reverse logistics	Mean	Std. Deviation
Your firm practices reuse of wastes and other materials	4.17	.71
Your firm offers warranties to its customers	4.03	.62
Your firm accepts damaged goods from its customers and replaces them with goods in good condition	3.80	.68
Your firm recycles its wastes	3.74	.85
The firm manages reverse flow of material, environment packaging and distribution	3.71	.71
Your firm purchases environmental friendly materials for production	3.51	.65
The firm uses biodegradable materials	3.31	.76

From the table above it can be seen that to a great extent (M=4.17, SD=0.71), the firm offered warranties to customers to a great extent (M=4.2, SD=0.62), the firm accepted damaged goods from its customers and replaced them with goods in good condition to a reasonable extent (M=3.71, SD=0.68), also the firm recycles wastes to a reasonable extent (M=3.74, SD=0.85), it practices reuse of wastes and other materials to a reasonable extent (M=3.71, SD=0.71), it also offers warranties to its customers (M=3.51, SD=0.65) and the firm uses biodegradable materials to a reasonable extent (M=3.32, SD=0.76). This is an indication that reverse logistics to a moderate extent has been adopted in large scale food and beverage manufacturing firms in Nairobi as indicated by a mean value above 3.0.

4.4.3 Green Packaging

The respondents specified their level of agreement to what extent green packaging as a GSCMP had been implemented in LSFBM enterprises in Nairobi. The outcomes are as shown in the table 4.7 below:

Table 4.7: Green Packaging

	Mean	Std. Deviation
Your firm uses recyclable materials for packaging	3.97	.62
Your firm incorporates environmental requirements in the sourcing of packaging materials	3.87	.72
Your firm uses green biodegradable materials for packaging	3.83	.92
Your firm purchases environmental friendly products for packaging purposes	3.73	.57
Your firm uses recyclable materials for packaging	3.87	.72

From the table above, it can be seen that it has been implemented to a reasonable extent (M=3.97, SD=0.72), the firms have incorporated environmental requirements in the sourcing of packaging materials to a reasonable extent (M=3.87, SD=0.72), the firm used green biodegradable materials for packaging to a reasonable extent: (M=3.83, SD=0.58), it also purchased environmental friendly products for packaging purposes to a moderate extent (M=3.73, SD=72), also the firm used recyclable materials for packaging to a reasonable extent (M=3.87, SD=72). This is an indication that reverse logistics to a reasonable extent has been adopted in large scale food and beverage manufacturing firms in Nairobi as indicated by a mean value above 3.0.

4.5 Summary of Descriptive Statistics

The study sought to ascertain to what extent GSCMP had been adopted by large Scale food and beverages food manufacturing enterprises in Nairobi. The summary is as pointed out below:

Table 4.8: Summary of Descriptive Statistics

Logistics activities	Mean	Std. Deviation
Green design	4.26	.60
Green procurement	3.93	.64
Reverse logistics	3.80	.58
Green packaging	3.87	.58

Source: *Author*, 2018

The outcomes of the investigation point out that green design as a GSCMP has been adopted to a large extent (M=4.2, SD=.60) green procurement as a GSCMP has been implemented by large scale food and beverage manufacturing firms to a reasonable extent (M=3.9, SD=.64) green packaging (M=3.8, SD=0.58) while reverse logistics had been employed to a reasonable extent (M=3.8, SD=.58). This is an indication that the GSCMP in large scale food and beverages manufacturing firms have been outsourced to a large extent as indicate by the findings where all logistics activities indicated a mean value above 3.0.This is an indication that large scale food and beverages manufacturing firms have adopted GSCM practices to a moderate extent.

4.6 Green Supply Chain Management Practices and Quality

To ascertain the relationship between GSCMP and quality, in large scale food and beverage manufacturing firms, the study adopted use of regression analysis. The independent variables were: green design, green procurement, green packaging and reverse logistics while the independent variable was: quality of goods.

4.6.1 Model Summary

Table 4.9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.652[a]	.426	.351	.61716

a. Dependent Variable: SCP
a. Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

The results indicate about 43% of variations in supply chain performance is described by the independent variables whereas others which is 57% is described by other variables which are not in the model or appear by pure chances. It is a poor model.

4.6.2 Anova

ANOVA output is shown in table 4.10:

Table 4.10: ANOVA[A]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	8.748	4	2.187	5.742	.001[b]
1	Residual	11.808	31	.381		
	Total	20.556	35			

a. Dependent Variable: SCP
b. Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

From the findings in the ANOVA table the results indicate a significance level of 0.001 which is an evidence that logistics outsourcing which include: transportation, Warehousing, inventory management, distribution management are significant.

4.6.3 Regression Coefficients

The table below summarizes the regression analysis at 5% confidence level indicates that GSCMP has a positive combined effect on quality as a measure of SC performance in large scale food and beverage manufacturing firms in Kenya as indicated by all positive regression coefficients for all independent variables.

Table 4.11: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.869	1.290		3.000	.005
Green design	.116	.175	.095	.664	.511
Green procurement	.620	.194	.448	3.205	.003
Reverse logistics	.727	.227	.454	3.201	.003
Green packaging	.160	.175	.130	.914	.368

a. Dependent Variable: quality
b. Predictors: Green design, green procurement, green packaging, reverse logistics

The results show that green design and quality positively and substantially linked (t=0.664, p=0.511). This points out that an upsurge in the usage level of green design by a single unit, brings about associated upsurge in the quality level as a measure of supply chain performance by 0.116. Besides green design had 0.511 p-value an indication that green design is insignificant at 0.05 critical value since it is more than 0.05.

Green procurement and quality as a measure of SC performance positively and substantially linked (t=3.205, p=0.003). This points out that an upsurge in the usage level of green procurement by a single unit, brings about associated upsurge in the quality level as a measure of supply chain performance by 0.620. Besides inventory management had 0.003 t test value a suggestion that green procurement is substantial at 0.05 critical value as it is below 0.05. Reverse logistics and quality as a measure of SC performance and substantially linked (t=3.201, p=0.003). This points out that an upsurge in the usage level of reverse logistics by a single unit, brings about associated upsurge in the quality level as a measure of supply chain performance by 0.727. Also, reverse logistics bore 0.003 t test value a suggestion that reverse logistics is substantial at 0.05 critical values since it is below 0.05.

Green packaging and quality as a measure of SC performance positively and significantly related (t=0.914, p=0.368). This points out that an upsurge in the usage level of green packaging by a single unit, brings about associated upsurge in the quality level as a measure of supply chain performance by 0.120. Also, Green packaging bore 0.368 t test value a suggestion that green packaging is statically insignificant at 0.05 critical values as it is above 0.05.

Regression equation, $Y = 3.122 + 0.540\ X_1 + 0.577\ X_2 + 0.531\ X_3 + 0.561 X_4$

Y=supply chain performance, (quality)

X1= Green design

X 2= Green procurement

X3 = Reverse Logistics

X4= Green packaging

€=error term

β_{ij} =Regression Coefficients

4.7 Green Supply Chain Management Practices and Flexibility

To ascertain the relationship between GSCMP and flexibility, in large scale food and beverage manufacturing firms, the study adopted use of regression analysis. The independent variables were: green design, green procurement, green packaging and reverse logistics while the independent variable was: quality of goods.

4.7.1 Model Summary

Table 4.12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.722[a]	.521	.457	.47944

a. Dependent Variable: SCP (flexibility)

b. Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

From the results in the table above: 52% of variations in flexibility as a supply chain performance measure is described by the independent variables whereas others which is 38 % is described by other variables which are not in the model or appear by pure chances. It is a fairly good model.

4.7.2 Anova

Table 4.13: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.504	4	1.876	8.162	.000[b]
	Residual	6.89	30	.230		
	Total	14.400	34			

c. Dependent Variable: SCP (flexibility)

d. Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

From the findings in the anova table the results indicate a significance level of 0.000 which is an evidence that logistics outsourcing which include: transportation, Warehousing, inventory management, distribution management are significant.

4.7.3 Coefficients

Table 4.14: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.761	.731		5.146	.000
Green design	.344	.080	.560	4.314	.000
Green procurement	.024	.118	.027	.202	.842
Reverse logistics	.255	.096	.350	2.661	.012
Green packaging	.168	.123	.181	1.364	.183

a. Dependent Variable: Flexibility

b. Predictors: Green design, green procurement, green packaging, reverse logistics

The results show that green design and flexibility as a SC performance measure are positively and substantially linked (t=4.314, p=0.000). This points out that an upsurge in the usage level of green design by a single unit, brings about associated upsurge in the flexibility level as a SC performance measure by 0.344. Besides green design bore 0.000 p-value a suggestion that green design is substantial at 0.05 critical value as it is below 0.05. Green procurement and flexibility as a SC performance measure are positively and insignificantly linked (t=0.202, p=0.842). This points out that an upsurge in the usage level of green procurement by a single unit, brings about associated upsurge in the flexibility level as a SC performance measure by 0.024. Besides inventory management had 0.843 p-value a suggestion that Green procurement is substantial at 0.05 critical value as it is above 0.05.

Reverse logistics and flexibility as a SC performance measure are and significantly related (t=2.661, p=0.012). This points out that an upsurge in the usage level of reverse logistics by a single unit, brings about associated upsurge in the flexibility level as a SC performance measure by 0.255. Besides reverse logistics had 0.012 t test

value a suggestion that reverse logistics is substantial at 0.05 critical values as it is below 0.05. Green packaging and flexibility as a SC performance measure are positively and substantially linked (t=1.364, p=0.182). This points out that an upsurge in the usage level of green packaging by a single unit, brings about associated upsurge in the flexibility level as a SC performance measure are by 0.561. Besides Green packaging bore 0.000 t test value a suggestion that green packaging is statically substantial at 0.05 critical values as it is below 0.05.

Regression equation, $Y = 3.122 + 0.344X_1 + 0.124 X_2 + 0.255 X_3 + 0.168 X_4$

Y=supply chain performance, (flexibility)

X1= Green design

X 2= Green procurement

X3 = Reverse Logistics

X4= Green packaging

€=error term

β_{ij} =Regression Coefficients

4.8 Green Supply Chain Management Practices and Cost

4.8.1 Model summary

The model summary is as indicated below:

Table 4.15: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.773[a]	.597	.555	.57383

a Dependent Variable: SCP (cost)

b Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics.

32

From the table above, 59.7 % of variations in flexibility as a supply chain performance measure is described by the independent variables whereas others which is 38 % is described by other variables which are not in the model or appear by pure chances. It is a fairly good model.

4.8.1 Anova

Table 4.16: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.112	4	1.778	7.320	.000[b]
	Residual	7.288	30	.243		
	Total	14.400	34			

Dependent Variable: SCP (cost)

b Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

From the findings in the anova table the results indicate a significance level of 0.000 which is an evidence that logistics outsourcing which include: transportation, Warehousing, inventory management, distribution management are significant.

4.8.2 Coefficients

Table 4.17: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.761	.731		5.146	.000
Green design	.344	.080	.560	4.314	.000
1 Green procurement	.434	.098	.527	.202	.042
Reverse logistics	.255	.096	.350	2.661	.012
Green packaging	.347	.083	.572	4.364	.002

Dependent Variable: SCP (cost)

b Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

The results show that green design and cost reduction as a measure of SC performance positively and substantially linked (t=4.314, p=0.000). This points out that an upsurge in the usage level of green design by a single unit, brings about associated upsurge in the cost reduction level as a measure of SC performance by 0.344. Also green design bore 0.000 t test value a suggestion that green design is substantial at 0.05 critical value as it is below 0.05. Green procurement and cost reduction as a measure of SC performance is positively and substantially linked (t=0.202, p=0.042). This points out that an upsurge in the usage level of Green procurement by a single unit, brings about associated upsurge in the quality level as a measure of supply chain performance by 0.434. Also, inventory management bore 0.042 t test value a suggestion that green procurement is substantial at 0.05 critical value as it is below 0.05.

Reverse logistics and quality as a measure of SC performance and substantially linked (t=2.661, p=0.012). This points out that an upsurge in the usage level of reverse logistics by a single unit, brings about associated upsurge in the quality level as a measure of supply chain performance by 0.255. Also, reverse logistics bore 0.012 t test value a suggestion that reverse logistics is substantial at 0.05 critical value as it is below 0.05. Green packaging and cost reduction as a measure of SC performance are positively and substantially linked (t=4.364, p=0.002). This points out that an upsurge in the usage level of green packaging by a single unit, brings about associated upsurge in the quality level as a measure of SC performance by 0.347. Also green packaging bore 0.002 t test value a suggestion that green packaging is substantial at 0.05 critical values as it is below 0.05.

Regression equation, $Y = 3.122 + 0.434 X_1 + 0.344 X_2 + 0.255 X_3 + 0.347 X_4$

Y=supply chain performance, (cost)

X1= Green design

X 2= Green procurement

X3 = Reverse Logistics

X4= Green packaging

€=error term

β$_{ij}$ =Regression Coefficients

4.9 Green Supply Chain Management Practices and Responsiveness

4.9.1 Model Summary

Table 4.18: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.717[a]	.514	.449	.48314

Dependent Variable: SCP (Responsiveness)
b Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

From the results 51 % of variations in flexibility as a supply chain performance measure is described by the independent variables whereas others which is 38 % is described by other variables which are not in the model or appear by pure chances. It is a fairly good model.

4.9.2 Anova

Table 4.19: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.397	4	1.849	7.923	.000[b]
	Residual	7.003	30	.233		
	Total	14.400	34			

Dependent Variable: SCP (responsiveness)
b Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

The results above indicate a substantial level of 0.000 suggesting that logistics outsourcing which include: transportation, Warehousing, inventory management, distribution management are significant.

4.9.3 Coefficients

Table 4.20: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	3.827	.820		4.667	.000
Green design	.266	.091	.432	2.929	.006
Green procurement	0.146	0.174	0.126	0.838	.409
Reverse logistics	.286	.119	.377	2.401	.023
Green packaging	.288	.097	.453	0.674	.004

Dependent Variable: SCP (responsiveness)
b Predictors: (Constant), Green design, green procurement, green packaging, reverse logistics

The results show that green design and responsiveness as a SC performance measure are positively and substantially linked (t=2.929, p=0.006). This points out that an upsurge in the usage level of green design by a single unit, brings about associated upsurge in the responsiveness level as a SC performance measure by 0.266. Also, green design bore 0.006 t test value suggesting that green design is substantial at 0.05 critical value as it is below 0.05. Green procurement and quality as a measure of supply chain performance positively and unsubstantially linked (t=0.838, p=0.409) This points out that an upsurge in the usage level of Green procurement by a single unit, brings about associated upsurge in the responsiveness level as a SC performance measure by 0.146. Also, inventory management bore 0.409 t test value suggesting that Green procurement is unsubstantial at 0.05 critical value since it is above 0.05.

Reverse logistics and quality as a measure of supply chain performance and substantially linked (t=2.404, p=0.023). This points out that an upsurge in the usage level of reverse logistics by a single unit, brings about associated upsurge in the quality level as a measure of supply chain performance by 0.286. Also reverse logistics bore 0.023 t test value suggesting that reverse logistics is substantial at 0.05 critical values as it is below 0.05. Green packaging and quality as a measure of supply chain performance positively and substantially linked (t=0.674, p=0.004). This points out that an upsurge in the usage level of green packaging by a single unit, brings about associated upsurge in the responsiveness level as a SC performance measure by 0.561. Also, Green packaging bore 0.004 t test value suggesting that green packaging is statically substantial at 0.05 critical values as it is below 0.05.

Regression equation, $Y = 3.122 + 0.266 X_1 + 0.146 X_2 + 0.286 X_3 + 0.288 X_4$

Y=supply chain performance, (quality)

X1= Green design

X 2= Green procurement

X3 = Reverse Logistics

X4= Green packaging

€=error term

β_{ij} =Regression Coefficients

4.10 Challenges in Adoption of Logistics Outsourcing in LSFBM

The third objective was to ascertain the challenges experienced in the adoption of logistics outsourcing in large scale food and beverage manufacturing firms in Nairobi.

Table 4.21: Descriptive Statistics

Challenge	Mean	Std. Deviation
Resistance to change	3.91	.61
Lack of management support and understanding	3.68	.47
Lack of training	3.34	.48
Lack of finance	3.86	.71
Ineffective leadership	3.80	.53

From the table above, it can be seen that to a small extent, they faced a challenge of resistance to change has been experienced moderate extent (M=3.9, SD=61), lack of management support and understanding has been experienced moderate extent (3.68, SD=0.47) lack of training has been experienced moderate extent (M=3.48, SD=48), the challenge of lack of finances indicated by a mean value of (M=3.8, SD=74) ineffective leadership as indicated by a mean value of (M=3.8, SD=54) .This is an indication that large scale food and beverage manufacturing firms face various challenges in their quest to adoption of GSCMP.

4.11 Discussion of Findings

This investigation's key purpose was to establish the extent of adoption of GSCMP in large scale food and beverage manufacturing firms in Nairobi and its effect on supply chain performance. The study findings as indicated above ascertained that to a large extent, large scale food and beverages manufacturing firms in Nairobi have adopted GSCP. This was indicated as per the results whereby descriptive analysis carried out on each and every variable, indicated that all the four GSCMP variables had a positive mean value an indication that they had been implemented in the large scale food and beverage manufacturing firms in Nairobi.

From the findings, green design indicated a mean value of 4.2, green procurement indicated a mean value of 3.9, reverse logistics indicated a mean value of 3.8, and

green packaging showed a mean value of 3.8. According to the above findings, it was evident that the GSCMP had been implemented in the large scale food and beverage manufacturing firms in Nairobi Kenya.

The second purpose was to verify the bearing of GSCMP on performance of LSFBM firms in Nairobi Kenya. To get this the investigation utilized multiple regression analysis. From the findings it was ascertained that logistics outsourcing have a substantial bearing on performance whereby: green design had a positive impact on supply chain performance: 0.540, green 3procurement: 0.577, reverse logistics: 0.531 and green packaging 0.561, hence all the GSCMP activities in the study affect SC performance in the LSFBM enterprises in Nairobi Kenya. Furthermore, the regression analysis established that GSCMP affected: 56% of quality, 52% of flexibility 59% of cost reduction measure, and 51% of responsiveness as a SC performance measures of large scale food and beverage manufacturing firms in Nairobi. This indicated that the all the GSCMP had great impact on the SCP of LSFBM enterprises in Nairobi Kenya with highest impact on quality and cost reduction. The Anova analysis showed a significance level of a 0.000 value, which proved that the model used was positive since the value is less than 0.005 at 95% confidence level. Therefore, GSCMP has impact on performance of large scale food and beverage manufacturing enterprises in Nairobi Kenya. This was an indication that adoption of GSCMP facilitates firm's ability to provide quality products, improve flexibility of operations, be responsive to customer needs.

The third objective was on challenges facing large scale food and beverage manufacturing firms in Nairobi. Resistance to change, which was indicated by a mean value of 3.000, lack of management support and understanding with a mean value of 3.9, lack of training indicated a mean value of 3.9, the challenge of lack of finances

indicated by a mean value of 3.8, ineffective leadership as indicated by a mean value of 2.8 were the major challenges LSFBM firms in Nairobi in their efforts to implement GSCMP.

This study is in-line with studies carried out by: Logeshe (2017), Pembere (2016), Chege (2012) and Mogina (2015) who all established that GSCMP had a positive impact on the performance of various enterprises.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This part is about the overview of the investigation, conclusions established by the study, and recommendations. This part also illustrates the study limitations. The investigation objectives were to ascertain the extent to which the GSCMP had been implemented in large scale food and beverage manufacturing enterprises in Nairobi, to establish the link between GSCMP and SC performance of LSFBM firms in Nairobi, challenges faced by large scale food and beverage manufacturing firms in Nairobi, in the adoption of GSCMP.

5.2 Summary

The aim of the investigation was to verify the extent of GSCMP implementation in large food and beverages manufacturing firms in Nairobi and the impact it has on supply chain performance. Questionnaires were used for data collection, and they were administered to respondents i.e. procurement officers and their equivalents in the large scale food and beverage manufacturing firms in Nairobi, to provide information on logistics outsourcing. The biographic information indicated that most of the respondents indicated were male though a substantial number too were female. An indication that large scale food and beverage manufacturing firms in Nairobi had offered employment to both male and female in supply chain departments. Besides, the study further established, all the respondents had adequate education background most having a degree qualification and hence deemed to have adequate knowledge in the data sought for the study. An indication that most of the respondents had adverse education that enabled them to effectively carry out their duties and they had

knowledge on the data sought on GSCMP in large scale food and beverage manufacturing firms in Nairobi. In relation to the experience of the respondents all the respondents had adequate experience in their fields. These results indicated that the study could be well carried out based on the fact that most of the respondents had adequate experience and hence understood the GSCMP in scale food and beverage manufacturing firms in Nairobi.

The main purpose was to establish the extent to which GSCMP had been implemented in large scale food and beverage manufacturing firms in Nairobi. Besides, the other objective was to ascertain the impact of GSCMP on SC performance in large scale food and beverage manufacturing firms in Nairobi. The findings of the investigation pointed out that large scale food and beverage manufacturing enterprises in Nairobi, had adopted GSCMP to a large extent which were green design, green procurement, green packaging and reverse logistics This was shown by the positive mean value for supply chain management practices. Besides, the results of descriptive results indicated that to a large extent, GSCMP had been implemented in large scale food and beverage manufacturing firms in Nairobi, indicated by positive mean value above three.

The second aim of the investigation was to measure the impact of GSCMP on supply chain performance of large scale food and beverage manufacturing enterprises in Nairobi. The results ascertained that GSCMP had a positive impact on SC performance which was measured by quality, flexibility, cost and responsiveness. Besides the regression analysis findings indicated that a GSCMP affected SCP in terms of quality and cost reduction from the multiple regression results of the independent variable which was SC performance measures which were cost, quality,

flexibility and responsiveness, was well explained by the GSCMP implemented in large scale food and beverage manufacturing firms in Nairobi.

5.3 Conclusion

Large scale food and beverage manufacturing firms have a substantial impact in our economy since they contribute to the GDP of the economy and are source of food to the economy, Efficiency in enterprise's operations is greatly subject to usage of GSCMP. Summing up, the investigation intended to verify the level to which GSCMP had been executed in the LSFBM firms in Nairobi, the bearing of GSCMP on performance of large scale food and beverage manufacturing enterprises in Nairobi.

The findings specified that to a large extent, all the logistics outsourcing implemented in the LSFBM firms in Nairobi, as the pointed out by positive mean values beyond three, suggesting that all the activities had been executed to a great level. The findings from the regression analysis pointed out that GSCMP to a reasonable level have effect on performance in LSFBM firms in Nairobi. The outcomes of the investigation verified a positive association between GSCMP and SC performance of LSFBM firms in Nairobi. In addition to that the p-value indicated a 0.000 value which was suggesting that the GSCMP had been executed by large scale food and beverage manufacturing enterprises in Nairobi, are statically significant as the value is below the 0.05 level at 95% confidence level.

5.4 Recommendations to Policy and Practice

From this investigation's outcomes, it was discovered that a number of large scale food and beverage manufacturing firms in Nairobi, had implemented GSCMP. However a few have not implemented it, there is necessity for the administration to integrate the GSCMP into their structure to boost their performance as well as

competiveness. There is necessity for adoption of GSCMP in both small and large scale and firms in Kenya to improve their focus on core activities.

5.5 Limitations of the Study

The investigation aimed at establishing the extent of implementation of GSCMP on SC performance in LSFBM firms in Nairobi. Besides, the study was aimed at establishing the link between GSCMP and performance of LSFBM enterprises in Nairobi. The study was solely based on GSCMP.

The study period was a constrain, and the researcher experienced great challenges in collecting data from the LSFBM firms in Nairobi, since majority of the respondents were operating under stringent procedures of the administration not to provide material to outsiders about any subject or operations of the firm .The study was narrowly focused on the LSFBM firms in Nairobi, and hence the results could not be generalized for a wider population area like for example, the whole country. Besides various respondents failed to take the questionnaires thus becoming a challenge to efficiently undertake the investigation.

5.6 Suggestions for further Research

The objective of the investigation was to verify the level to which GSCMP had been adopted in LSFBM enterprises in Nairobi. Even though the study goals were achieved, the research suggests that this was a cross sectional investigation of large scale food and beverage manufacturing firms in Kenya be done. A further research is needed to be done in other firms excluding LSFBM businesses, an investigation to be undertaken on Kenyan LSFBM enterprises in general instead of in Nairobi only. Further studies need to be done on other firms, education sectors, hospitality industry among others to ascertain the degree to which they affect performance.

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APPENDICES

APPENDIX I: 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 Ltd

Source, *KAM*,(2018)

APPENDIX II: QUESTIONNAIRE

This questionnaire is intended to provide information for the study on green supply chain management practices and Performance of large scale food and beverage manufacturing firms in Nairobi. Please note that the information provided will be used for academic purpose only and will be treated with utmost confidentiality.

Please answer the following questions by ticking ($\sqrt{}$) in the appropriate box or by giving the necessary details in the spaces provided.

SECTION A: GENERAL INFORMATION

1. Kindly indicate your gender: Male [ ] Female [ ]

2. Kindly indicate your age category:

25 - 30 Years [   ]   31 - 34 years [   ]   35 – 40 years [   ]

41 – 44 years [   ]   45 – 50 years [   ]   Over 51 years [   ]

3. Level of Education Attained

      Primary   [   ]

      Secondary   [   ]

      Technical / Vocational   [   ]

      Undergraduate   [   ]

      Postgraduate   [   ]

4. Professional experience (Years)

      Less than 5 years [   ]   5-10 years [   ]   Over 10 years [   ]

PART B: GREEN SUPPLY CHAIN MANAGEMENT PRACTICES (GSCM)

Please indicate the extent your firm has adopted the following green supply chain practices. Tick where appropriate,

1- **Not at all 2-Small extend 3-Moderate extend 4-Great extend 5-Very great extend**

Green Design	1	2	3	4	5
The firm incorporates greenness in the design of its products					
Your firm provides design specification to suppliers that include environmental requirements when purchasing an item					
You have cooperation with suppliers for environmental objectives					
You have cooperation with suppliers for eco-design of the raw materials supplied					
You have cooperation with suppliers for green packaging when transporting raw materials to the firm					
Green procurement					
Your firm conducts environmental audit for suppliers 'internal management Suppliers'					
Your firm puts in environmental requirements					

during supplier evaluation				
Your firm organizes green supply chain seminars and workshops				
The suppliers to the organization have to show compliance with particular regulations such as emissions caps, hazardous materials labeling, product specification and having environment-related documents				
Your firm incorporates environmental requirements in sourcing for goods and services				
Your firm adopts use of environmental requirements in setting specifications for goods				
Reverse Logistics				
Your firm practices reuse of wastes and other materials				
Your firm offers warranties to its customers				
Your firm accepts damaged goods from its customers and replaces them with goods in good condition				
Your firm recycles its wastes				
The firm manages reverse flow of material, environment packaging and distribution				
Your firm purchases eco-design of products for reduced consumption of material/energy				
The firm uses biodegradable materials				

The firm has invested on hazardous disposal equipment					
Green packaging					
Your firm uses recyclable materials for packaging					
Your firm incorporates environmental requirements in the sourcing of packaging materials					
Your firm uses green biodegradable materials for packaging					
Your firm purchases eco-design of products for reduced consumption of material/energy for packaging purposes					

SECTION C: GREEN SUPPLY CHAIN MANAGEMENT PRACTICES AND PERFORMANCE OF LARGE SCALE FOOD AND BEVERAGE MANUFACTURING FIRMS IN NAIROBI

Has green supply chain management practices facilitated improved supply chain performance of your firm?

YES   [   ]   NO [   ]

Indicate to what extent various outsourced activities affect performance using various performance indicators:

Key 1-Not at all 2-Small extent 3-Moderate extent 4-Great extent 5-Very great extent

PRACTICE	1	2	3	4	5
Cost					
Adoption of green packaging helps cut on costs incurred in the purchase of packaging material					
Implementation of reverse logistics helps a firm cut on production costs due to reuse of materials					
Implementation of green designs results to overall low costs of production					
Use of green logistics in transportation of goods results to lower costs					
Use of green procurement results to low costs of sourcing					
Quality					
Use of green designs leads to improved quality of goods					
Implementation of green procurement results to high quality services and goods					
Flexibility					
Implementation of green packaging facilitates the firm's ability to offer variety of products to varying customer needs					
Adoption of green designs helps meet varying customer needs					

Responsiveness					
Implementation of green packaging facilitates a firms' ability to meet varying customer needs					
Use of green logistics facilitates the firm's ability to deliver goods as per the customer needs.					
Use of green designs helps meet customer needs in the market					

SECTION D: CHALLENGES OF ADOPTING GREEN SUPPLY CHAIN MANAGEMENT PRACTICES IN LARGE SCALE FOOD AND BEVERAGE MANUFACTURING FIRMS IN NAIROBI

Please indicate the level of agreeing to which the following challenges of adopting green supply chain management practices are faced by large scale food and beverage manufacturing firms in Nairobi Kenya.

Key:

(1) Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent

No	Challenge	1	2	3	4	5
1.	Resistance to change					
2.	Lack of management support and understanding					
3.	Lack of training					
4.	Lack of finance					
5.	Ineffective leadership					
6.	Organization culture					
7.	Lack of clear communication					
8.	Government regulations					

Thank you for your cooperation