

**GREEN SUPPLY CHAIN PRACTICES AND
OPERATIONAL PERFORMANCE OF PERSONAL CARE
MANUFACTURING FIRMS IN NAIROBI, KENYA**

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DECLARATION

This Research Project is my original work and has not been presented or published for the award of any degree in this or any other university

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DEDICATION

This research project is lovingly dedicated to my parents Ali Babu and Mwanaisa Hassan Hussein who have been a constant source of inspiration and shown me unconditional love and support throughout my life. They have given me the drive and discipline to tackle any task with enthusiasm and determination. Thank you.

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ABSTRACT

A green strategy provides prudent business processes. Successful green supply chain will feature cross functional collaboration, emphasize innovation, and stay tune to the strategic focus of supply chain and enterprise as a whole.

Such a framework emphasizes network redesign, packaging changes, and business collaboration that promote a smaller carbon footprint and generates cost saving. The most strategic way is also the most fundamental - improves supply chain visibility and tactical knowledge, to help close the gap between the time you learn about something with significant impact and when you can actually do something about it.

If industry is seen as a complex web of buying, making, selling and delivering, then the opportunities for environmental considerations when brought into play in supply chain management could not only provide sustainable environmental measures but also be beneficial to both organisations and individual consumers. Environmental regulations are also changing the way supply chains are designed and managed. The problem is that the sheer number of regulations, other influences such as changing consumer sentiment, and the complexity of global trade, makes it difficult for companies to decide exactly how they should respond to these pressures. Not surprisingly, there are instances in recent history where the performance of manufacturing businesses was drastically affected due to negligence in environment and safety standards. The environment and safety are not just social or political issues; they are vital ingredients contributing to the performance of an organisation. These rising environmental pressures and social expectations can be turned to commercial advantage if a strategic approach is taken to develop a "green" supply chain. The strategic approach of green supply chain involves complex longer term considerations involving not just industry but sustainable environment protection. A supply chain can be complex, with environmental issues occurring at the second and third-tier supplier levels.

Green supply chain concepts manage environmental impacts where they occur, ideally before they occur.

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LIST OF ACRONYMS AND ABBREVIATIONS

GSCM	Green Supply Chain Management
NEMA	National Environmental Management Authority
SCM	Supply Chain Management
ISO	International Standardization Organization
KEBS	Kenya Bureau of Standards
NEMA	National Environmental Management Authority
UNEP	United Nations Environmental Programme
FKE	Federation of Kenya Employers
KAM	Kenya Association of Manufacturers
KEBS	Kenya Bureau of Standards
DOHSS	Department of Occupational Health and Safety Services

CHAPTER ONE: INTRODUCTION

1.1 Background of the study.

The term 'supply chain' was coined in the mid 70's. Banbury (1975) used 'supply chain' as a term of passing on electricity towards the ultimate consumer. It was not until the 1980's, however, that the term 'supply chain management' came into context. Oliver and Webber (1982) discussed the potential benefits of integrating internal business functions of purchasing, manufacturing, sales and distribution into one cohesive framework. Stevens (1989) has defined supply chain management as the integration of business functions involving the flow of materials and information from inbound to outbound ends of the business. Dyadic or party relationships between suppliers are becoming part of the supply chain process Harland (1996).

A Supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Ganesha and Harrison (1995).

1.1.1 Green Supply Chain Management

Environmental supply chain management for a firm is the set of supply chain policies held, action taken, and relationships formed in response to concerns related to the natural environment and with regard to the design, acquisition, production, distribution, use, reuse, and disposal of the firms goods and services. The supply chain of a manufacturing organization has a deep and extraordinarily varied environmental impact. These impacts arise not only from raw materials and component purchases, supplier manufacturing processes or logistics arrangements, but can also include final product disposal and even the sitting of supplier plants. The definition of both the traditional and green supply chains reveals how a green supply chain attempts to "close the loop" by including the reuse, remanufacturing and recycling of products and materials by a common forward supply chain Wells and Seitz (2005).

Given the strategic importance and the scale of organizational buying, a range of possibilities for environmental initiatives exist in the supply chain. These begin with the product, component or raw material to be purchased, where the buying company could stipulate minimum standards that the purchased product has to fulfill. For example, a paper-maker can insist that the wood pulp it buys conforms to recognized standards of forest management rather than being made from clear-cutting an entire forest, or an electronic company can require its supplier to avoid certain harmful heavy metals in the supplied products. Other product based environmental initiatives can aim at by - products of supplied input such as recycling packaging or reducing waste. Krause, Scannell and Calantone (2000).

Greener organizational buying could aim at changing the supplies manufacturing processes, as the buying company can select its suppliers on the basis of how well they are running their production processes. Such measures range from requiring suppliers to have an environmental policy, introducing an environmental award scheme for ones supply base, insisting on supplier accreditation to ISO 14001 or a joint cleaner technology programs with a supplier. There is an element of greening in the scenario, as customers use their influence to reduce the environmental impact of the supplier operations. Hervani, Helms, and Sarkis (2005).

1.1.2 Personal Care Manufacturing Firms in Kenya

Companies in this industry manufacture toiletries and grooming products including perfumes, shampoos, skin lotions and shaving cream as well as lipstick, mascara and other cosmetics. Major companies include Estee Lauder, Johnson & Johnson, Procter & Gamble, L'Oreal, Unilever and locally Haco Tiger Brands, PZ Cussons etc

Drivers of Green Supply Chain Management

Consumers

Becoming clear of environmental hazards that threaten human species, like global warming, leads people to consider environmental effects of what they consume. This preference of consumers affects the firms and therefore the supply chains. Kotler (2004) mentioned that

traditionally companies were judged by customers according to quality of their products, quickness of solving customer problems and degree of fairness but today companies are measured according to (environmental) ethics. Most of studies reveal that, today, people are more sensitive against environment. Beamon (1999) indicates that there has been increasing public attention placed on the overall condition of the natural environment. This attention may be largely attributed to information provided by the media, through growing numbers of environmental and consumer interest groups. As a result of increasing customer expectations, companies have had to manage supply chains more effectively to meet customer expectations and improve their supply chains by taking into consideration of correct and fair use of natural resources in social responsibility idea.

Government

Government as a regulatory agency may force companies and ultimate consumers to different environmental regulations. Unlike the other factors, government doesn't leave freedom of choice to companies. As it is seen, government pressure not affects just individual businesses but can force a whole industry to adapt environmental standards. Environmental Management and Coordination Act No. 8 of 1999 (EMCA).

Supply Chain Members

Another factor that forces companies to go green is supply chain members. If a company wishes to have a green image initially it should evaluate its' suppliers if they are green or not. Green outputs require green inputs. As Paulraj (2006) mentioned, in order to meet challenges of energy conservation, pollution abatement, waste reduction, etc, firms should also consider their supplier's environmental performance.

Rivals

When international trade conditions are challenging and insecurity about the future widespread, going green may seem a particularly daunting move. But some of today's most successful organizations have made the decision to reshape themselves from the bottom up, improving their environmental profile and their public image, making financial savings and safeguarding against future environmental hazards. Competitive

advantage that competitors have already obtained or possible to obtain by implementing green approach, create pressure on companies not to be oblivious about green initiatives. Majumder, and Groenevelt (2001)

The need for differentiation from competitors

Some companies obtained large gains by GSCM applications. The developments that cause an increase in brand value in addition to cost savings push the rivals to do similar practices. According to a research results by Interbrand 2012, Toyota's brand value has increased by 47 percent and reached 28 billion dollars by producing environmental friendly car, Prius.

Environmental Organizations

Another factor that forces companies to comply with the environmental standards is environmental organizations. Environmentalists, as individuals and organizations, have important contributions to reach current level of environmental protection policy. Especially national and international activities of non-governmental organizations have a big affect in this result. The growing membership of environmental pressure groups reflects a more fundamental concern with environmental issues. Environmental Management and Coordination Act No. 8 of 1999 (EMCA).

1.1.3 Operational Performance

This is the firm's performance measured against standard or prescribed indicators of effectiveness, efficiency, and environmental responsibility such as, cycle time, productivity, waste reduction, and regulatory compliance.

Greening of the global product chain forms a challenging business to business shortcut for creating fairer trading relationships, avoiding the long and slow route of negotiating nations. This implies that greening the supply chain ensures closer relationships between trading members in a supply chain. In fact, poor environmental standards of small suppliers often affect the performance and image of large firms in the same supply chain (Cousins et al, 2004)

Reverse Logistics is the task of recovering discarded products (cores), and may also include packaging and shipping materials and backhauling them to a central collection point for either recycling or remanufacturing (Jayaraman and Luo, 2007).

This performance can be subdivided into three categories: financial performance (profit), internal non-financial performance (productivity) and external non-financial performance (customer satisfaction).

1.1.4 Green Supply Chain Practices

Green Purchasing ensures that purchased items possess desirable ecological attributes such as reusability, recyclability and non – toxic materials (Rao, 2006). Additionally, Green Purchasing can also address issues of waste reduction, material substitution through proper sourcing of raw materials and waste minimization of hazardous materials. Supplier involvement is crucial to achieving environmental goals.

Green design aims at reducing environmental impacts of products during their life cycle (Sarkis, 2006). While the emphasis was initially on technical improvements that can be undertaken to both products and processes with an aim of reducing environmental costs, environmentally proactive organizations have now recognized that it is critical to develop a healthy working relationship with consumers, suppliers and government authorities in order for design for environment to truly become an integral part of Green Supply Chain initiatives (Walton et al, 1998)

Reverse Logistics is the task of recovering discarded products and may also include packaging and shipping materials and backhauling them to a central collection point for either recycling or remanufacturing (Jayaraman and Luo, 2007). Handling the mechanics of reverse logistics require significant attention by logistics professionals.

1.2 Statement of the Problem

Owing to environmental and ecological responsibility, enterprises are encouraged to reuse, remanufacture and recycle used products to reduce harmful effects to the environment, especially manufacturers of electrical consumer products (Chunga and Wee, 2010). However, this is not yet the case in Kenyan manufacturing firms' supply chain at present. Hart (1997) indicates that today many companies have accepted their

responsibility to do no harm to the environment. Environmental issues, resource re-usage and information technology applications are gaining interest in supply chain management researches (Chun-Jen Chunga and Hui-Ming Wee, 2010).

Green Supply Chain Management practices by manufacturing firms in Kenya', in an unpublished thesis by (Mukiri, 2007) studied the way the practices and the challenges faced by manufacturing firms. The findings obtained indicated that the practice that received the least consideration was reverse logistics and that the multinationals were more aware of the practice than the locals.

'Green Supply Chain Management and the performance of manufacturing firms in Mombasa, Kenya' in another unpublished thesis by (Mohamed Khatra, 2012) sought to identify the Green Supply Chain practices and the challenges faced by manufacturing firms. The findings indicated that the practices have a positive impact on manufacturing firms in Mombasa. The study also highlighted the relevance of Green Supply Chain in overcoming environmental challenges was highly appreciated.

A lot of research work has been conducted on the inception of Green Supply Chain Management in Kenya however; there has not been a sufficient documented finding on the effects of the implementation of Green Supply Chain practices on the operational performance of manufacturing firms in Nairobi especially those dealing with Personal Care Products.

The way to foster environmental sanity is through the practice of environmentally sound practices in the supply chain. A green supply chain aims at confining the wastes within the industrial system in order to conserve energy and prevent the dissipation of dangerous materials into the environment. It recognizes the disproportionate environmental impact of supply chain processes within an organization (Ho et al, 2009).

This research specifically answers the following questions: What are the Green Supply Chain practices that are adopted by Personal Care Manufacturing firms in Nairobi? To what extent have these practices been employed? What are the effects on the Personal Care Manufacturing firms after implementing GSCM practices?

1.3 Research Objectives

- i. To establish the extent of Green Supply Chain practices employed by Personal Care Manufacturing firms in Nairobi, Kenya.
- ii. To establish the relationship between Green Supply Chain Practices and the operational performance of Personal Care Manufacturing firms in Nairobi, Kenya.

1.4 Value of the Study.

This study is expected to contribute in the following ways:

This study offers some practical suggestions on a firm's Green Supply Chain practices impact on a Personal Care Manufacturing firms' operational performance and to be replicated in other sectors which are facing high competition from the international players. Policy makers will obtain knowledge of the dynamics faced by Personal Care Manufacturing firms' and the Green Supply Chain Practices; guidance obtained from this study assisted in designing appropriate policies regulates the sector.

The results from this study are to be used as a source of reference, the findings to be compared with the Supply Chain Management in other sectors to draw conclusions on various ways an organization can incorporate and implement Green Supply Chain Practices in their operations to be at a better capacity to respond to competitive forces in the environment.

The management of Personal Care Manufacturing firms' in Nairobi is able to know the importance and impact of having an effective Green Supply Chain and the role it plays in their operational performance. The findings of this study assist the firms to gain competitive advantage over their competitors through green practices.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides information from publications on topics related to the research problem. It examines what various scholars and authors have said about the concept of Green Supply Chain Practices. The chapter covers: concept of Green Supply Chain practices, operational performance and the effects of Green Supply Chain Practices on operational performance.

2.2 Green Supply Chain Management

Effective supplier management in substantial projects like Green Supply Chain (GSC) development is an important field, meriting attention and research. Green supply chain “close the loop” of a typical traditional or forward supply chain by including re - use, re - manufacturing, and recycling of products and materials into the traditional forward supply chain (Wells & Seitz, 2005).

Green supply chain management (GSCM) is an emerging field that strands out of the traditional supply chain perspective. The “quality revolution in the late 1980’s and the supply chain revolution in the early 1990’s” have sparked businesses to become environmentally conscious (Srivastava, 2007).

GSCM has gained popularity with both academics and practitioners to aim in reducing waste and preserving the quality of product-life and the natural resources. Eco-efficiency and remanufacturing processes are now important assets to achieve best practice (Ashley, 1993; Srivastava, 2007). Global market demands and governmental pressures are pushing businesses to become more sustainable (Guide & Srivastava, 1998; Gungor & Gupta, 1999).

Walton, Handfield and Melynyk (1998) even claim that “increasing government regulation and stronger public mandates for environmental accountability have brought these issues into the executive suites, and onto strategic planning agendas.”

The key themes that came out in the literature over the last twenty years are the concepts of: green design, green operations, reverse logistics, waste management and green manufacturing (Guide & Srivastava, 1998; Srivastava, 2007).

The very first green supply chain came into context in 1989. Kelle and Silver's (1989) article was the first of this literature that developed an optimal forecasting system for organizations to use to forecast products that can be potentially be reused. This forecasting system, however, was highly contentious because returning individual containers is not usually known with certainty, so therefore, their findings may somewhat be incoherent.

The first green design literature came into context in 1991. Navin Chandra's (1991) article was the first of the literature to consider the need for a green design to reduce the impact of product waste. Works of Ashley (1993); Allenby and Richards (1994) and Zhang, Kuo, Lu and Huang (1997) came into context and expanded the framework of green design. Life-cycle analysis was an example of a framework that came out of green design.

2.3 Green Supply Chain Practices

Rao and Holt (2005) argue that environmentally proactive companies are increasingly managing their suppliers' environmental performance to ensure that purchased materials are environmentally friendly and have been produced by environmentally conscious processes. Green purchasing revolves around evaluation of suppliers' environmental performance and providing advice to suppliers to improve their performance. Environmentally proactive organizations often encourage their suppliers to obtain environmental management certification such as the ISO 14001. Hines and Jones (2001) suggest that the mentoring role within green supply chain management in an emerging concept that can provide a significant relationship between the customer and supplier.

A key aspect to recognize in the reverse flows is that collection of goods from the market place is a "supply driven flow", rather than a demand – driven flow as seen in a forward

flow logistics system. This supply – driven flow creates a great deal of uncertainty with respect to the quality, timing and condition of items (Lonton and Jayaraman, 2005).

2.4 Global and Kenyan Examples of Green Supply Chains

Some examples to show the impact on supply chains:

Wal-Mart, which in 2005 launched a sweeping business sustainability strategy, recently set the goal of a 5% reduction in packaging by 2013. The retail giant expects the cut in packaging will save 667,000 metric tons of carbon dioxide from entering the atmosphere. Moreover, the company anticipates \$3.4 billion in direct savings and roughly \$11 billion in savings across the supply chain.

Nestlé employs an ongoing, company-wide sustainability program that has generated significant environmental and financial benefits. The company has applied the strategy to its use of product packaging by initiating an integrated approach that favors source reduction, re-use, recycling, and energy recovery. In particular, the company’s packaging material savings between 1991 and 2006 led to \$510 million in savings, worldwide, according to Nestlé’s corporate website.

Heineken committed to reduce fuel and electricity use through its “Aware of Energy” program. The company said in its 2006 sustainability report that it aimed to reduce fuel and electricity costs by 15% between 2002 and 2010. At the time of the Diamond report, Heineken had achieved savings of 6%—even after the acquisition of new breweries.

Mumias Sugar Company is generating power from sugar bagasse for own use and selling surplus to the distributor Kenya Power and Lighting Company (KPLC).

The United Nations Environment Programme (UNEP) unveiled a green building, entirely powered by solar energy, has water harvesting, recycling and purification facilities and uses natural light technology to minimise power consumption.

At a sisal and dairy firm Kilifi Plantations, proprietor Chris Wilson runs processing and packaging using electricity generated by biogas from sisal waste and cow dung. These projects and others are done on large scale, including the tapping of geothermal sources,

wind, and planned solar project by KenGen indicated that Kenya has potential to balance between renewable and non-renewable sources.

Kenya's energy supply mix consists of biomass at 68 per cent, petroleum at 22 per cent, electricity at nine per cent and coal and coke at one per cent according to data from electricity distributor KPLC.

Kenya's sector regulator Energy Regulatory Commission (ERC) is working on energy management regulations for industrial, commercial and institutional organisations that should also come in handy for groups planning a switch.

2.5 Green Supply Chain Practices and its effects on Operational Performance

Regulatory Measures are official mechanisms that take the form of standards, laws, procedures and incentives set by regulatory institutions to inspire firms to become environmentally responsible. It is true that requirements imposed by government and regulatory bodies provide ultimate incentives for firms to adopt Green Supply Chain (Bansal and Roth, 2000).

Sarkis et al (2011) discuss how in developed countries such as the USA, coercive pressures through laws and regulations improved awareness and thus drove environmental management practices. Large and successful firms in an industry usually face intense scrutiny from competitors and external environmental activists (Zhu and Sarkis, 2007). Hence, many organizations work in an environment that includes pressures from their competitors that induce organizations to adopt green initiatives to combat competition and gain competitive advantages (Canning and Hammer – Lloyd, 2001).

Consumers are beginning to question the environmental effect of the goods that they buy and expect firms to pursue a minimum green standard in their product and product designs (Tate et al, 2010). Socio - cultural responsibility - A firm may perceive a voluntary obligation to society in order to achieve harmony with social expectations, norms and codes of conduct that dictate acceptable business behaviors (Jones, 1999).

Implementing greener supply initiatives can lead to an array of benefits for the company itself, for the purchasing and supply process, and for society at large. Benefits for the

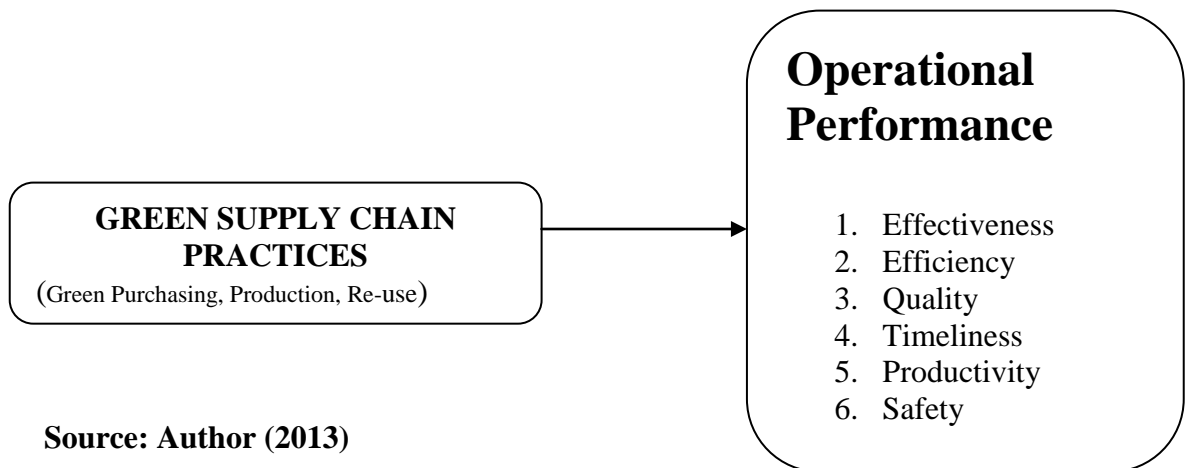
buying company include cost reduction and improved efficiency, as the environmental initiatives take out waste and excess material, as well as an improved image among regulators and the general public. Greener supply can contribute to a more holistic approach to managerial decision-making.

The purchasing and supply process can be improved to the extent that greener supply facilitates information sharing and co-operative relationships in the supply chain. Benefits of greener supply to society begin with environmental improvements, the reduction of hazardous materials, the more efficient use of scarce resources, and the avoidance of waste. Greener supply also aids the diffusion of environmental know-how and best practices. Environmental initiatives in the manufacturing supply chain should focus on the product and manufacturing processes used by the supplier.

2.6 Conceptual Framework

INDEPENDENT VARIABLES

DEPENDANT VARIABLE



Source: Author (2013)

Effectiveness: A process characteristic indicating the degree to which the process output (work product) conforms to requirements.

Efficiency: A process characteristic indicating the degree to which the process produces the required output at minimum resource cost.

Quality: The degree to which a product or service meets customer requirements and expectations.

Timeliness: Measures whether a unit of work was done correctly and on time. Criteria must be established to define what constitutes timeliness for a given unit of work. The criterion is usually based on customer requirements.

Productivity: The value added by the process divided by the value of the labor and capital consumed.

Safety: Measures the overall health of the organization and the working environment of its employees.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology that was applied in conducting the study. It covers the research design, target population, sampling design, and data collection methods and data analysis techniques.

3.2 Research Design

The study involves a descriptive survey design. This design is the most appropriate since it ensures that the data obtained gives appropriate answers to the research questions. Descriptive study is used to describe characteristics of a population or phenomenon under study. The survey data collection was done by asking the target representative population structured and pre – determined questions. The descriptive research methods can only describe a set of observations or the data collected.

3.3 Population and Sampling

The population of the study comprises of Personal Care Manufacturing firms in Nairobi, Kenya. Kenya Association of Manufacturers Directory list attached (Appendix I). The researcher will involve four respondents from each organization, namely: The Procurement Manager, the Quality Assurance Manager, and the Production Manager, Logistics Manager in the aforementioned organizations.

3.4 Data Collection

This study uses primary data that was collected by the use of a questionnaire (Appendix III). The researcher targeted the aforementioned managers from the supply chain units who are actively engaged in making supply chain decisions for the organization responded to the questionnaire. The questionnaire is divided into three sections; Section I constitutes of the respondents bio data, while Section II the effects of the adoption of Green Supply Chain practices to the organizations and Section III the perception of sustainable Green Supply Chain.

The questionnaire was administered through email and/or by drop and pick later. Respondents were required to rate their responses using a 1 – 5 point Lickert scale designed questionnaire.

3.5 Data Analysis

The data collected was reviewed for completeness and accuracy upon completion of the data collection process. Quantitative data collected was analyzed by the use of descriptive statistics to generate percentages, means and frequencies. This was done by tallying up responses, computing percentages of variations to the responses as well as describing and interpreting the data in line with the study objectives and assumptions.

A descriptive analysis was used to establish the extent of the adoption of Green Supply Chain Management, the effects of Green Supply Chain practices on operational performance of Personal Care Manufacturing firms and the challenges that are faced while administering Green Supply Chain Management practices.

Tables and other graphical presentations as appropriate were used to present the data collected for ease of understanding and analysis. The information generated was interpreted and explained.

Table 3.1: Summary of the Methodology used.

Objectives	Data/Information	Purpose	Analyses/ Technique	Display
To establish the extent of the adoption of Green Supply Chain practices	Primary data	To establish the extent of the adoption of Green Supply Chain practices	Questionnaire	Summary table of the responses
To establish the impact of Green Supply Chain Management on operational performance	Primary data	To establish the impact of Green Supply Chain Management on operational performance	Questionnaire	Summary table of the responses
To establish the challenges faced while administering Green Supply Chain Management practices.	Primary data	To establish the challenges faced while administering Green Supply Chain Management practices.	Questionnaire	Summary table of the responses

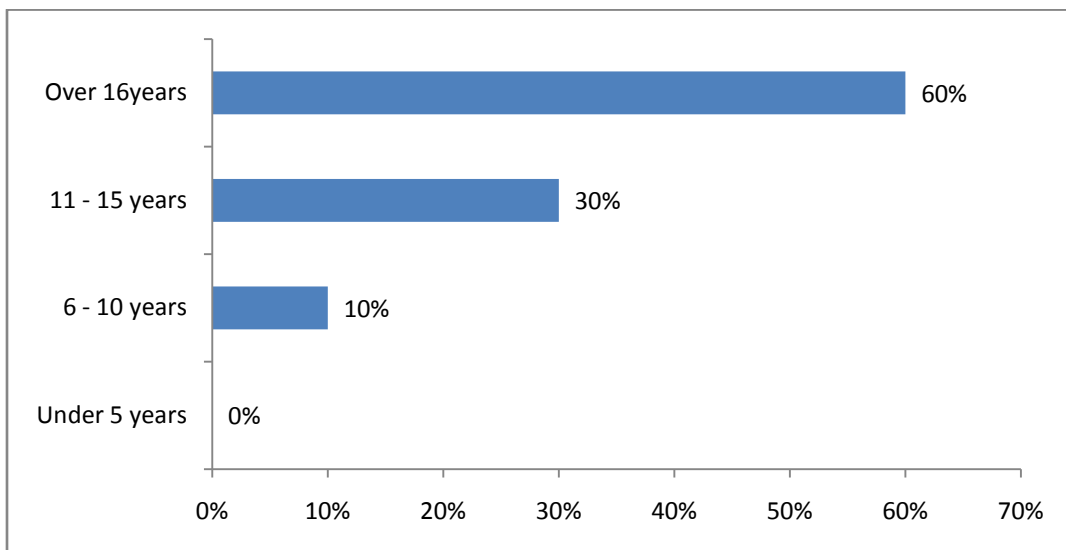
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter discusses the interpretation and presentation of the findings obtained from the field. It displays the general information of the respondents and findings of the analysis based on the objectives of the study. Descriptive statistics was used to discuss the findings of the study. The study targeted a sample size of 70 respondents from which 63 filled in and returned the questionnaires making a response rate of 90%. This response rate was satisfactory to make conclusions for the study.

4.2 General Information

Figure 4.1: Duration of the organizations' existence.

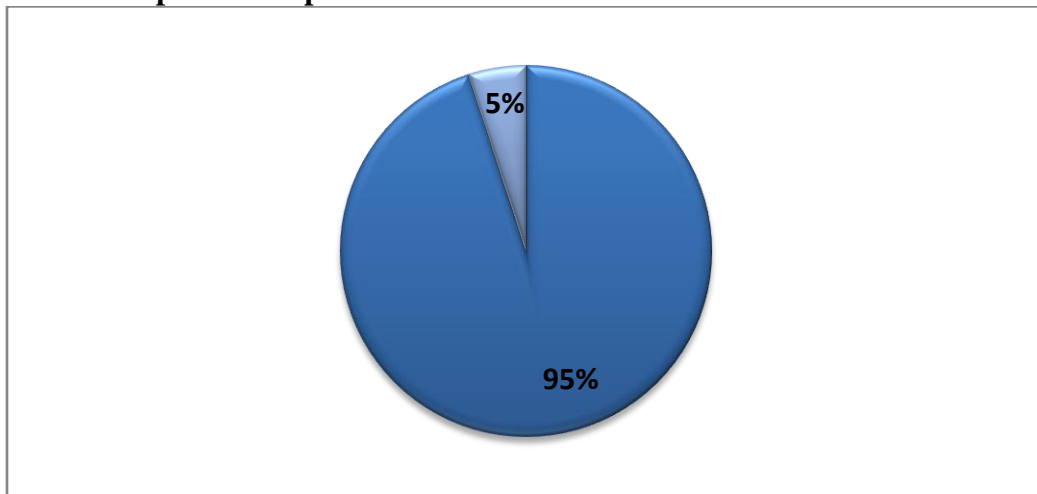


The study requested the respondents to indicate the duration of existence of their organizations from the findings 60% indicated over 16 years, 30% indicated 11 – 15 years, whereas 10% indicated 6 – 10 years this is an indication that the study consulted

different stake holders within the Personal Care Manufacturing Industry in Nairobi forming the majority in this study.

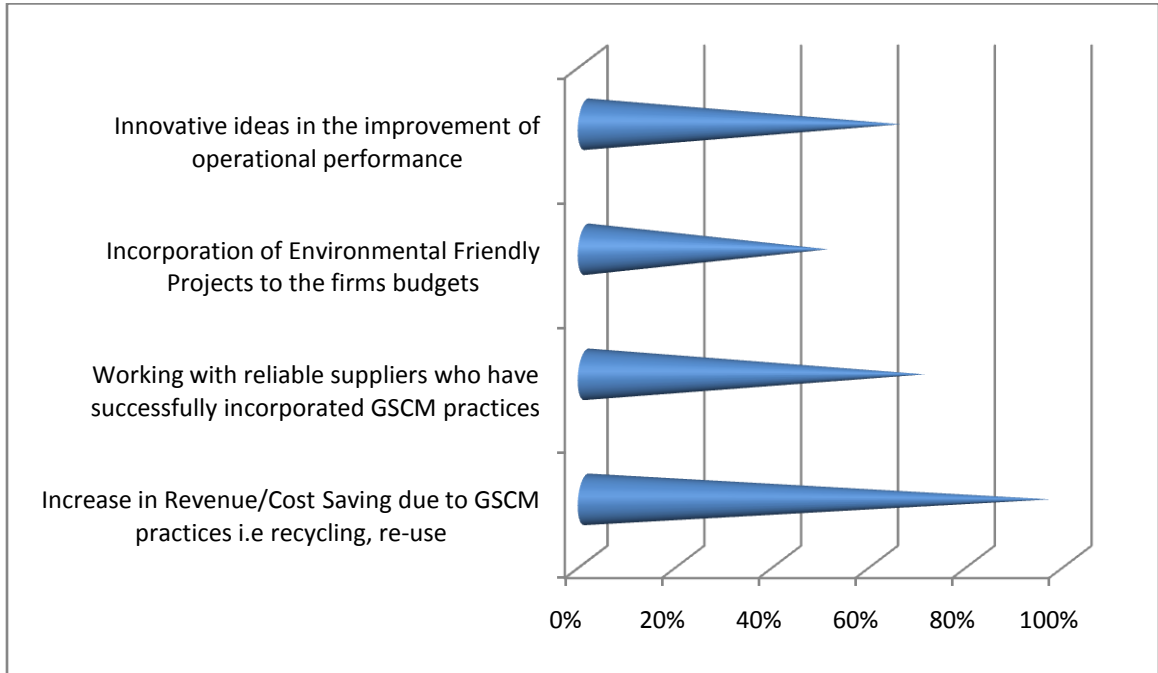
4.3 Green Supply Chain Practices

Figure 4.2: Is Green Supply Chain Management practiced in recognition to its effects on operational performance.



The study sought to establish the whether Green Supply Chain Management practices effect the operational performance of the firms and therefore requested the respondents to indicate appropriately, from the findings 95% of the respondents indicated Yes while 5% of the respondents indicated No, this implies that majority of the Personal Care Manufacturers' operational performance is effected by Green Supply Chain Management practices.

Figure 4.3: Key Success Factors of Personal Care Manufacturing Firms with regards to operational performance and the effects of GSCM practices



The study sought to determine the key success factors for the firms with regards to operational performance and the effects of GSCM practices and therefore requested the respondents to indicate appropriately, from the findings, the study found that, 96% indicated that there is an increase of revenue/cost saving, 70% indicated the consistent working with reliable GSCM suppliers, 50% indicated incorporation of environmentally friendly projects to the firms budgets, whereas 65% indicated Innovative ideas to improve operational performance, this implies that majority of the respondents featured in this study are greatly involved in the formation of decision making within the firms.

Table 4.1: Differentiation of the markets for recycled materials with the markets for virgin materials

MARKET FOR RECYCLED MATERIAL	MARKET FOR VIRGIN MATERIAL	FREQUENCY	PERCENTAGE
Re-using saves costs	New costs emerge	33	52.38
Environment preservation	Some exploit the environment	9	14.29
Priced competitively	Costly	21	33.33
TOTAL		63	100

The study sought to compare and contrast the markets for recycled materials with that of virgin materials, from the findings 52.38% of the respondents indicated cost saving versus new costs emerging, 14.29% of the respondents indicated environmental preservation versus environmental exploitation whereas 21% of the respondents indicated competitive pricing versus high costs this implies that majority of the respondents prefer recycled materials.

Table 4.2: Strategic benefits of GSCM practices on operational performance

Strategic Benefits	Frequency	Percentage
Development of more lean budgets	21	33.33
Extra savings can be used for organizational development	12	19.04
ISO certification can be acquired	4	6.35
Cut on manufacturing costs and lower overhead allocation	14	22.22
Expand customer base	7	11.11
Development of alternatives/substitutes	5	7.93
Total	63	100.00

The study sought to reveal to the strategic benefits of GSCM practices on operational performance, from the findings 33.33% of the respondents indicated the development of more lean budgets, 19.04% of the respondents indicated extra savings can be used for organizational development, 6.35% of the respondents indicated ISO certification to be acquired, 22.22% indicated cuts on manufacturing costs and lower overhead allocation, 11.11% indicated the expansion of customer base and 7.93% of the respondents indicated the development of alternatives/substitutes. This shows that the operational performance of these firms is dependent on GSCM practices.

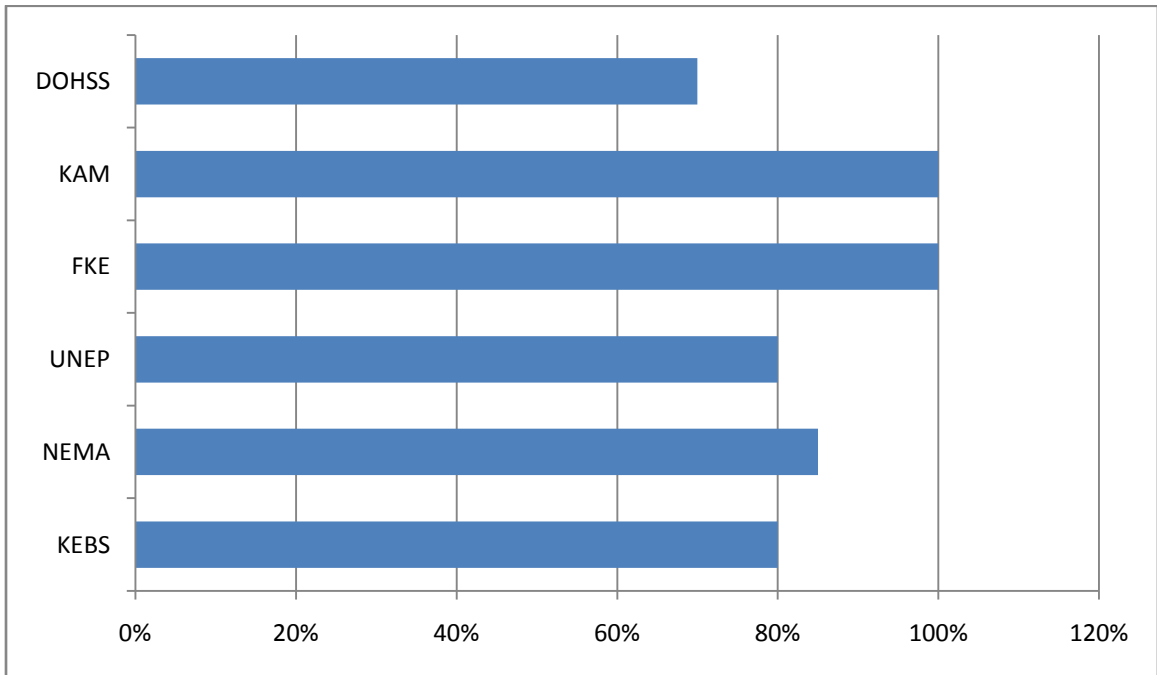
Table 4.3: Tactical benefits of GSCM practices on operational performance

Tactical Benefits	Frequency	Percentage
CSR activities magnifies the firms good image	21	33.33
Increased output against the same amount/cost of material	11	17.46
Brand enhancement	10	15.87
Logistics costs reduce	11	17.46
More manpower can be utilized to increase output thus creating employment	10	15.87
Total	63	100.00

The study sought to reveal to the tactical benefits of GSCM practices on operational performance as well, from the findings 33.33% of the respondents indicated that good image was created by CSR, 17.46% of the respondents indicated an increase in output against the same cost of material, 15.87% of the respondents indicated brand enhancement, 17.46% indicated a reduction on logistics costs, 15.87% indicated that

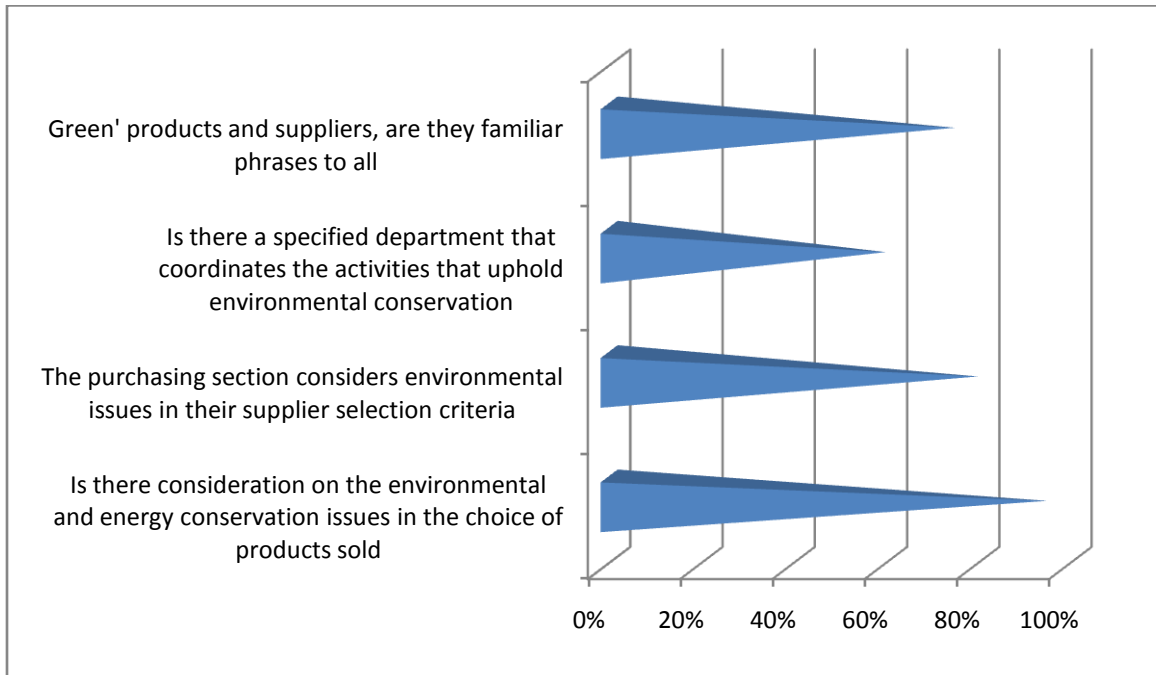
manpower can be utilized to increase output. This shows that the operational performance of these firms is dependent on GSCM practices.

Figure 4.4: Environmental management bodies the organizations are subscribed to and adhere to their specified GSCM policies and that they are all subjected to environmental management audits.



The study requested the respondents to indicate their affiliation to any environmental management body and if they are subjected to any environmental management audit, from the findings the study established that 80% of the manufacturers in terms of affiliation to environmental management bodies that is (KEBS, UNEP, NEMA, FKE, KAM, DOHSS) and are subjected to environmental management audits through these bodies they have subscribed to as we. It is a requirement that enables them to acquire a license/permit/certification.

Figure 4.5: GSCM practices by firms that encourage the sustainment of the environment.



The study requested the respondents to indicate in what way do GSCM practices sustain the environment, from the findings the study established that 75% of the respondents in all the scenarios concerning the firms and its operational activities that is, purchasing, green production etc found GSCM practices to be beneficial.

Table 4.4: Legislations by the government to safeguard the environment are in place.

	Frequency	Percentage
Government legislations on the environment are in place	63	100
Adequate awareness of waste in Nairobi	12	19.04

The study requested the respondents to indicate whether the government was doing enough to safeguard the environment, from the findings the study established that yes legislations were in place but there are not enough measures for sensitization and adherence to this cause.

There is also lack of awareness on waste in Nairobi.

4.4 Sustainable Green Supply Chain Management

Table 4.5: Respondents attributes on how GSCM practices could have the following effects on their firms:

Effects of GSCM	FREQUENCY	PERCENTAGE
Reduce Costs	7	11.11
Improve Brand Image	6	9.52
Satisfy customer requirements	6	9.52
Help Staff recruitment, retention and morale	3	5.66
Maintain Supplier Loyalty	5	7.93
Enhance supplier due diligence	9	14.28
Help manage risks	10	15.87
Satisfy government requirements	7	11.11
Drive production innovation	10	15.87
TOTAL	63	100

The study sought to determine the level at which respondents agreed or disagreed with the above statements, from the findings the study established that majority of the respondents agreed that GSCM practices are beneficial to the firms operational performance as shown by 11.11% agree that it reduces costs and satisfies government

requirements, 9.52% believe that GSCM practices both Improves on the brand image and satisfies government requirements respectively, the study also established that 5.66% of the respondents agreed that GSCM practices helps staff recruitment retention and morale, 7.93% and 14.28% of the respondents agreed that GSCM practices maintains supplier loyalty and enhances supplier due diligence respectively, 15.87% of the respondents also indicated that GSCM practices helps manage risks and drives production innovation, therefore all the cases were supported by a low percentage which implies that respondents were of similar opinion.

Table 4.6: Respondents opinions on how their organizations identified sustainable green supply chain management as a means to address the following business risks:

Business risks	FREQUENCY	PERCENTAGE
Resource and material availability	12	19.05
Commodity price volatility	6	9.52
Return on Investment	5	7.93
Extreme weather related events (drought, flood, fire etc) and rising sea/water levels	4	6.35
Geo – political uncertainties	3	4.76
Brand image and reputation	8	12.69
Changes to regulation and government performance standards (e.g. railway levy, carbon tax or reduction in permitted pollution levels)	6	9.52

Changes to customer preferences for more sustainable products	10	15.87
Business continuity	9	14.28
TOTAL	63	100

The study sought to determine the level at which respondents agreed or disagreed with the above statements concerning how their firms viewed how sustainable GSCM could address certain business risks, from the findings the study established that majority of the respondents agreed that GSCM practices are beneficial to the firms operational performance and 19.05% agree that it can address the issues arising from resource and material availability, 9.52% believe that GSCM practices both Improves on price volatility and reflex to changes to regulation and government performance standards respectively, the study also establishes that 7.93% of the respondents agreed that GSCM practices can contribute to the return of investment of the business, 6.35%, 7.46%, 12.69%, 15.87% and 14.28% of the respondents agreed that GSCM practices can successfully tackle extreme weather related events, geo-political uncertainties, customer preference changes and business continuity respectively, therefore all the cases were supported by a low percentage as well which implies that respondents were of similar opinion in relation to the continuity of the business in spite of the emergence of varying business risks.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the discussion of key data findings, conclusions drawn from the findings highlighted and recommendations made focus on addressing the objectives of the study. The research intended to establish the operational performance of Personal Care Manufacturing firms through Green supply chain management practices, to also establish the green supply chain management practices carried out by stakeholders in the Personal Care Manufacturing firms in Nairobi, to establish challenges faced by stakeholders in the Personal Care Manufacturing firms relating to green supply chain practices and to also establish benefits of green supply chain practices.

5.2 Summary of Findings

The study established that respondents were well aware of the threats/ business risks to the operational performance of the firms and to the environment, resulting from supply chain waste. From those interviewed, the study realized that respondents were aware that certain supply chain inefficiencies like; quality issues, production ineffectiveness, poor lead time, loss of production time, poor productivity and poor safety generally affect the operational performance of Personal Care Manufacturing firms resulting from recurring waste in terms of time, financial capacity, equipment and manpower.

The study established that majority of the respondents had subscribed to environmental bodies like NEMA, KEBS etc.

The study further reveals that a significant number of firms are subject to environmental management audits that are: SGS, Alexander Forbes environmental management audits, Nairobi City Council audits etc.

The study revealed that among the products distributed by the respondents included; personal care products like – beauty soaps, body lotions, body creams, petroleum jelly and hair care products like – shampoos, hair oils, moisturizers, hair creams, treatments etc. With regards to sourcing, packaging, production and logistics and transportation the study established that considerable number of firms used un-recyclable and non re-usable raw materials and packaging materials.

The study further established that customers influenced the choice of packaging material adopted by an organization, with most of the customers preferring packaging material which were easy to use and dispose.

The study revealed that most of the firms despite being aware did not use environmental issues in the criteria for selecting suppliers and that most of the firms did not have professional personnel to coordinate environmental purchasing efforts. The study revealed that most respondents were familiar with “green” products and suppliers but no strict supplier prequalification was made to involve only green suppliers.

The study established that personal care products contribute to a huge portion of manufacturing waste in Kenya and that Green supply chain management practices in the manufacturing supply chain can greatly reduce the amount of waste and poor operational performance, the study also established that majority of personal care product customers in Kenya while buying the products were unaware of any educational information on environmental concern with regards to the products and did not consider them before

buying. The government is not doing enough to promote green supply chain practice implementation in Kenya; there is inadequate awareness on waste in Kenya. There isn't adequate legislation and law enforcement by the Kenyan government to curb waste in Kenya, and finally that the key personal care manufacturing firms aren't doing enough to promote environmental sustainability in the Kenya.

The study revealed that among the challenges the firm face includes: poor lead time, production losses, importation/sourcing barriers, loosing of business due to environmental requirements, and conflicts with the authority due to waste management issue.

5.3 Conclusion

The study concludes that respondents are aware of the effects of GSCM practices but not very conversant on how it efficiently impacts on a firms' operational performance, thus there is no alignment with the practices and performance because they are unaware that the effects are already in place. Most of the firms had subscribed to the environmental bodies, and a significant number of the firms were subject to environmental management audits. GSCM practices influenced efficient operational performance of the firms. Diversification of products influenced the choice of raw materials and packaging materials adopted by the organization, most of the firms did not use environmental issues in the criteria for selecting suppliers though quite a number of the respondents were familiar with "green" products and suppliers. The study also concludes that most firms didn't have a disposal criteria indicated on their product packaging that is; label, boxes etc. These firms have been left to run their businesses independently without close monitoring on their operational efficiency.

5.4 Recommendations

The study recommends that there is need to increase awareness on Green supply chain management practices on the enhancement of operational performance in the Personal care manufacturing industry, this will assist in reducing the disposal of waste through re – use and recycle. There is need to adopt various green supply chain management practices through government legislations for the Personal Care Manufacturing firms in Kenya. There is need to implement measures to reduce the challenges faced by Personal Care Manufacturing firms in Kenya relating to green supply chain practices. Management and other stakeholders like the government and environmental bodies should implement policies and directives through investment so as to further instill Green Supply Chain Management practices within the organizations. KEBS and other standardization institutions should engage stakeholders in the industry in training and seminars that promote awareness and encourage operational performance of these firms through GSCM practices.

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**Appendix I: List of Personal Care Manufacturing Firms in Nairobi,
Kenya**

Beiersdorf East Africa Ltd

Haco Tiger Brands E.A. Ltd

Interconsumer Products Ltd

Kapa Oil Refineries Ltd

L'Oreal East Africa Ltd

PZ Cussons Ea Ltd

Unilever Kenya Ltd

Source: Kenya Association of Manufacturers and Exporters Directory 2013

Appendix II: Introduction Letter

Amina Ali Babu
P.O. Box 5104 – 00100
Nairobi
August, 2013

Dear Respondent,

RE: RESEARCH QUESTIONAIRE.

The questionnaire (attached) is designed to gather information on Green Supply Chain practices and operational performance of Personal Care Manufacturing firms in Nairobi, Kenya. This study is being carried out for a management project paper as a requirement in partial fulfillment for the award of Master of Business Administration (MBA), Procurement and Supply Chain Management, University of Nairobi.

Kindly note that this is strictly an academic exercise towards the attainment of the above purpose. You are hereby assured that the information that you will provide will be treated with the strict confidence. Your cooperation will be highly appreciated.

Thank you for your anticipated response.

Yours Sincerely,

Amina Ali Babu

Appendix III: Research Questionnaire

Section I: General information of the respondents.

- 1. Name (optional):

- 2. Name of your organization:

- 3. For how long has your organization been in existence?
 - a) Under 5 years []
 - b) 6 – 10 years []
 - c) 11 – 15 years []
 - d) Over 16 years []

Section II: The extent to which Green Supply Chain Practices have been adopted.

- 1. Does your organization practice Green Supply Chain Management in recognition of its effects on operational performance?
Yes [] No []

- 2. With that in mind, what are the key success factors for your firm?
.....
.....
.....
.....

- 3. Compare and contrast the markets for recycled materials with the markets for virgin material.
.....
.....
.....

- 4. What are the strategic and tactical benefits of GSCM practices on operational performance?
.....
.....

.....
.....
.....
.....

5. a) Are you aware of any threats to the environment resulting from your organizations operational activities?

Yes [] No []

b) If yes, kindly name any that you know of below:

.....
.....
.....

6. State any environmental management bodies that you subscribe and adhere to their policies:

.....
.....
.....

7. Are you subject to any environmental management audits?

Yes [] No []

8. Below are some Green Supply Chain Management Practices by firms that sustain the environment. Please tick in the appropriate tick box reflecting on your responses.

a) Does your organization consider environmental and energy conservation issues in the choice of products that they sell?

Yes [] No []

b) Does your purchasing section consider environmental issues in their criteria for selecting suppliers?

Yes [] No []

c) Does your organization have a specified department that coordinates the activities that uphold environmental conservation?

Yes [] No []

d) Are you familiar with 'green' products and suppliers?

Yes [] No []

9. Do you think that there are adequate legislations and law enforcement by the Kenyan Government to safeguard the environment?

.....

10. Is there adequate awareness on Waste in Nairobi?

.....

11. The implementation of Green Supply Chain practices in Fast moving consumer goods firms can greatly reduce the amount of waste in Nairobi?

Yes [] No []

Section III: Respondents perception on sustainable Green Supply Chain Management.

1. Developing a sustainable supply chain through green supply chain could have the following effects on our business:

Effects of GSCM	YES	NO
Reduce Costs		
Improve Brand Image		
Satisfy customer requirements		
Help Staff recruitment, retention and morale		
Maintain Supplier Loyalty		
Enhance supplier due diligence		
Help manage risks		
Satisfy government requirements		
Drive production innovation		

2. Has your organization identified sustainable green supply chain management as a means to address the following business risks?

Business risks	YES	NO
Resource and material availability		
Commodity price volatility		
Return on Investment		
Extreme weather related events (drought, flood, fire etc) and rising sea/water levels		
Geo – political uncertainties		
Brand image and reputation		
Changes to regulation and government performance standards (e.g. railway levy, carbon tax or reduction in permitted pollution levels)		
Changes to customer preferences for more sustainable products		
Business continuity		

Thank you for your time and cooperation.