

**ASSESSMENT OF ENVIRONMENTAL REQUIREMENTS IN SUPPLIER
SELECTION AS PRE-REQUISITE FOR TOTAL QUALITY MANAGEMENT: A
CASE OF SELECTED MANUFACTURING FIRMS IN NAIROBI, KENYA**

**BY
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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS
ADMINISTRATION IN PROCUREMENT AND SUPPLIES MANAGEMENT
DEGREE IN THE SCHOOL OF BUSINESS, AND PUBLIC MANAGEMENT AT
KCA UNIVERSITY**

OCTOBER 2014

DECLARATION

I affirm that the work contained in this dissertation has not been previously published or submitted elsewhere for award of a degree. I also affirm that this is my own original work and contains no material written or published by other people except where due reference is made and author duly acknowledged.

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ABSTRACT

Reports and awareness by international stakeholders that environmental tragedies like oil spills from manufacturing firms that contaminate our shores leading to the deterioration of the eco-system, the growing ozone “hole” in the atmosphere and the general human activities that are contributing to environmental degradation and depleting limited resources as a result of global warming serve as an eye-opener towards tackling issues afflicting the physical environment. However, reporting and creating awareness alone fall short of articulating the practical issues that need to be put into place in the manufacturing sector especially in developing countries in order to arrest environmental degradation issues. This study sought to investigate whether environmental requirements are being included, in practice, by manufacturing firms in Kenya in the area of supplier selection as the source of raw materials into the supply chain in an effort to ensure total quality management in order to achieve customer satisfaction and achieve sustainable competitive advantage. It also highlighted how the selected manufacturing firms that are ISO 14001 environmentally certified inculcated green issues in their products and production processes so that those firms that are yet to embrace environmental issues can borrow leaf and start going green as well. The study also sought to highlight the benefits to those firms that implement green issues the supplier selection process, and recommend best practices that can be applied by firms in Kenya in order for them to be able to compete successfully in this dynamic global business environment. A descriptive research design was employed focusing on the three certified manufacturing firms on ISO 14001 Environmental Management Systems in Nairobi and its environs (KEBS-2013). Purposive sampling was used to select a sample size of 60 participants. Data was collected by administering questionnaires that mainly consist of rating scales to a selected sample of respondents from Purchasing, Production, and Sales/Marketing departments of the firms. Quantitative method of data analysis that employed descriptive statistics was used to facilitate examination of the situation in the firms in relation to environmental requirements and data was then analysed using SPSS. The study established that consideration of environmental requirements in supplier selection was at the preliminary stages of implementation and there were major gaps that are yet to be filled in. It also emerged that the supplier selection criteria adopted by the firms studied were not adequate to achieve TQM. The study also established that the environmental management systems in the firms were not well integrated and balanced in their implementation in order to achieve TQM. From the study, it also emerged that supplier relationship management was not done in a way that would enable the firms studied to achieve the objectives of TQM. However, the study established that the firms were in the process of inculcating environmental issues in their business processes and the respondents were found to be aware of the benefits of including environmental issues in the supplier selection criteria for example increased customer satisfaction.

Keywords: Environmental Requirements, Supplier Selection Criteria, Total Quality Management, Supplier Relationship Management, Environmental Management Systems.

ACKNOWLEDGEMENT

Though I would not be in a position to exhaustively name all those that have been of help to me during the process of my studies and the ongoing research, I would like to acknowledge with appreciation, the following people who made this journey come this far.

I would like to thank the Almighty God for His Favour guidance and unwavering blessings throughout my studies, and in my entire life. My sincere thanks go to my supervisor Dr. Mary Otieno (PhD) who has selflessly guided me through my coursework and this research project. Her support is highly appreciated.

Finally I wish to express my utmost gratitude to my wife Alice, our children, parents, brothers and sisters, my lecturers (Dr. Okonga Dr. Ongore, Professor Ogao, Dr. Kosimbei, Kariuki, Ochiri, Mose, and Kobuthi) and my colleagues at work.

TABLE OF CONTENTS

ABSTRACT.....	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS.....	iii
DEDICATION.....	vi
LIST OF TABLES	vii
ACRONYMS AND ABBREVIATIONS	ix
OPERATIONAL DEFINITION OF TERMS	x
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study	1
1.1.1Environmental Requirements.....	2
1.1.2Supplier Relationship Management	3
1.1.3Total Quality Management	4
1.1.4Supplier Selection Criteria.....	5
1.2 Statement of the Problem.....	6
1.3 Objectives of the Study.....	8
1.3.1General Objective	8
1.3.2Specific Objectives	8
1.4 Research Questions.....	8
1.5 Justification of Study	9
1.6 Significance of the Study	10
1.7 Scope of the Study	10
1.8 Delimitations of the study.....	11
1.9 Limitations of the Study.....	11
1.10 Assumptions of the Study	12
CHAPTER TWO	13
LITERATURE REVIEW	13
2.1 Introduction.....	13
2.2 Theoretical Framework.....	13
2.2.1 Value Chain Analysis (VCA)	13
2.2.2 Resource-Based View Theory	14
2.2.3 Stakeholder Theory	14
2.2.4 Sustainable Supply Chain Management (SSCM).....	15
2.3 Empirical Literature	15
2.3.1Environmental Requirements.....	15
2.3.2Environmental Management Systems (EMS) and Strategies	17

2.3.3	Supplier Relationship Management	18
2.3.4	Total Quality Management	20
2.3.5	Supplier Selection Criteria	21
2.4	The Gap.....	23
2.5	Conceptual Framework.....	24
2.5.1	Environmental Requirements.....	24
2.5.2	Environmental Management System and Strategies	25
2.5.3	Supplier Selection Criteria	26
2.5.4	Supplier Relationship Management	27
2.5.5	Total Quality Management	28
CHAPTER THREE	31
RESEARCH METHODOLOGY	31
3.1	Introduction.....	31
3.3	Study Population	32
3.4	Sampling Procedures and Sample Size.....	33
3.5	Data Collection Instruments	34
3.6	Instrument Validity and Instrument Reliability	35
3.7	Data Collection Procedure	36
3.8	Data Analysis and Presentation Methods	36
CHAPTER FOUR	38
FINDINGS AND INTERPRETATIONS	38
4.1	Introduction.....	38
4.2	Response Rate.....	39
4.3	Profile of Respondents.....	39
4.3.1	Distribution of Respondents by Companies	39
4.3.2	Type of Manufacturing Organization	40
4.3.6	Employee Position in Organization	42
4.4	Incorporation of Environmental Requirements in the Supplier Selection Criteria.....	43
4.4.2	Supplier’s Policy on the Use of Renewable Energy	44
4.4.3	Supplier’s Policy on Reduction, Reuse and Recycling of Solid Industrial Waste..	45
4.4.4	Supplier’s Capacity to Manage Reverse Flows of Rejected Goods	46
4.4.5	Supplier’s Policy on the Use of Environmentally Friendly Materials.....	47
4.4.6	Supplier’s Capacity to Manage Waste Disposal.....	48
4.5	Effect of Including Environmental Issues in the Supplier Selection Criteria on TQM.	49
4.5.1	Enhanced Customer Satisfaction	49
4.5.2	Market Share Improves when Environmental Issues are Incorporated	50
4.5.3	Profitability and Returns on Investment as a Result of Adopting Green Issues.....	51

4.5.4 Adoption of Environmental Issues Leads to Reduced Waste	52
4.5.5 Quality of Goods Improves when Green Issues are adopted in Supplier Selection	53
4.6 Environmental Management Systems (EMS) Adopted by the Manufacturing Firms ..	54
4.6.1 EMS is endorsed by Top Management in Manufacturing Firms.....	54
4.6.2 EMS Forms Part of the Overall Corporate Strategy	56
4.6.3 EMS Emphasizes Training on Environment.....	57
4.6.4 EMS is well communicated to Suppliers to Aid Implementation.....	58
4.6.5 There is Continuous Environmental Audit and Improvement	58
4.6.6 EMS Addresses Disposal in an Eco- friendly Way	59
4.7 How Firms Improve Supplier Relation Management (SRM) in order Achieve TQM ..	60
4.7.1 Supplier Involvements in New Products and Processes Design to Reduce Waste .	60
4.7.2 Supplier Involvements in Re-designing of Products and Processes to Reduce Waste.....	61
4.7.3 Exchange of Information between the Manufacturing Firms and its Suppliers	62
4.7.4 Manufacturing Firms Supporting Suppliers on EMS through Training	63
4.7.5 If the Manufacturing Facilitate a Total Cost of Ownership Approach with Suppliers	64
4.8 How the Supplier Evaluation Criteria is Configured in the Manufacturing Firms.....	65
4.8.1 Supplier's Cost Structure as a Determinant of Supplier of Goods	65
4.8.2 Financial Stability of Suppliers as a Determinant of Supplier of Goods.....	66
4.8.3 Supplier ISO 14001 EMS Certification as a Factor when Selecting Suppliers	67
4.8.4 E-Systems Capability of Suppliers as a Factor in Supplier Selection	68
4.8.5 Quality of Products of Suppliers as a Determinant of which Supplier gets Business	69
4.8.6 Price Charged by Suppliers as a Factor when Selecting Suppliers.....	70
4.8.7 Delivery Service Levels of Suppliers as a Determinant of a Supplier of Goods....	71
4.9 Adoption of Environmental Practices in the Manufacturing firms.....	72
4.9.1 Whether the Manufacturing Firms had an Environmental Policy	72
4.9.2 Duration Environmental Management Policy has been in Place in Organisation ..	73
4.9.3 The Level of Checking Energy Consumption and Avoidance of Energy Wastes..	74
4.9.4 The Use of Renewable Energy and Green Power in the organizations	75
4.9.5 Reduction, Reuse and Recycling of Industrial Wastes and Water in the Organizations	76
CHAPTER FIVE	78
CONCLUSIONS AND RECOMMENDATIONS	78
5.1 Introduction.....	78
5.2 Discussion of Findings.....	78
5.2.1 Adoption of Environmental Requirements in Supplier Selection Criteria	78
5.2.2 Areas of Concern in the Supplier Selection Criteria in the Firms	79

5.2.3 Specific Areas that the Firm’s EMS Satisfies.....	80
5.2.4 Areas on which the Firms Involved Suppliers in order to Improve SRM	81
5.2.5 Impact of environmental requirements on TQM	82
5.2 Conclusions.....	83
5.3 Recommendations	86
5.4 Recommendations for Further Research.....	88
REFERENCES	89
APPENDICES	94
APPENDIX I	94
APPENDIX II	99

DEDICATION

I would like to dedicate this research project to my Supervisor for the selfless support accorded to me, my wife and friends for their encouragement and support, and my colleagues at work and my former classmates.

LIST OF TABLES

TABLE 139

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

CSR	Corporate Social Responsibility
EIA	Environmental Impact Assessment
EMS	Environmental Management Systems

EPA	Environmental Protection Agency
GHG	Green House Gases
GSCM	Green Supply Chain Management
ISO	International Organization of Standardization
NEMA	National Environment Management Authority
QMS	Quality Management Systems
RBV	Resource Based Value
SCM	Supply Chain Management
SSCM	Sustainable Supply Chain Management
SCPA	Supply Chain Pollution Avoidance
SQM	Supplier Quality Management
TQM	Total Quality Management
VCA	Value Chain Analysis

OPERATIONAL DEFINITION OF TERMS

Environmental Requirements This refers to guidelines on environmental policies and in the contemporary business environment; suppliers are

expected to have an environmental policy, strategies, systems and procedures for the implementation of such a policy. A number of legislations and directives are now available pertaining to air, water, packaging and waste (pollution) management (Cousins et al., 2008).

Manufacturing Firms

Manufacturing firms involve those entities that are engaged in transforming inputs into outputs in the most efficient and effective way in order to achieve customer satisfaction while attaining their organizational goals (Pycraft et al., 2010).

Supplier Selection Criteria

This involves choosing from a pool, the right supplier for a firm's requirements and various assessment parameters that are appropriate and relevant to the firm are considered. To qualify as a potential supplier, the set parameters have to be met (Handfield et al., 2009).

Supply Chain Management

SCM refers to an integrative process of efficiently and effectively managing the flows of goods, services, funds, and information from the ultimate supplier to the ultimate consumer. The management of the same goes beyond the boundaries of the focal firm and the objective is to achieve customer satisfaction as efficiently as possible (Handfield et al., 2009). Firms that can be part of the supply chain include: ultimate supplier, immediate suppliers, the focal firm, ultimate customer, immediate customer, financial services

providers, third-party logistics services providers, and markets research firms.

Total Quality Management

This entails a business management strategy aimed at embedding awareness in regard to quality in all organizational processes, especially when addressing aspects concerning suppliers (Baddehorst-Weiss, Fourie, and Nel, 2009).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The world is abound with near insurmountable environmental challenges and of particular concern is the issue of global warming that if left to continue unabated can lead to potentially catastrophic effects not only to humanity but also to the entire ecological system (Cousins, Lamming, Lawson and Squire, 2008). It is against this ambiance that stakeholders from diverse quarters have collectively and severally started articulating their concerns on the same and this has resulted in increased pressure on organizations as the primary targets regarding their environmental management practices and contributions throughout the supply chain (Jabbour and Jabbour, 2009).

A number of theories exist that attempt to highlight how value is added along in order to achieve customer satisfaction and how manufacturing firms are expected to factor in the ever-changing and expanding customer needs criteria. One of the theories is Value Chain Analysis (VCA) and this focuses on the value creation process right from the suppliers' side to the customers' side (Lazenby and Ehlers, 2010). Another theory that gives precedence to an organization's resources over the industry structure in achieving and sustaining competitive advantage is Resource Based View (RBV). According to Barney and Clark (2007) RBV focuses on costly-to-copy attributes and is a theory that is fundamental in strategic alliances and theorists argue that human capital is crucial in terms of sustainable competitive alliances and is difficult to imitate. This therefore contributes to the bottom line of any supply chain. Stakeholder theory is centered on how a firm functions in relation to its internal and external influences in the environment (Jensen MC, 2010). Lazenby (2010) indicates that it is the relationships with stakeholders and not the transactions that can lead to

competitive advantage. Carter and Rogers (2008) and Jabbour and Jabbour (2009) made a deliberate stab to introduce sustainability in SCM. This is based on a satisfied customer that appreciates a firm's efforts to minimize the impact of their inputs, processes, and outputs on economic, social, and environment areas both locally and globally.

Nairobi County is the business and financial centre of Kenya and East Africa. This is evidenced by the number of manufacturing firms and organizations headquartered in Nairobi. Among the manufacturing firms within the county that are ISO 14001 EMS certified is Bidco Oil Refineries that produces edible and hygiene products and this has been serving the East and Central African region. Under the East African Breweries Ltd (EABL) is the Central Glass Industries that deals with glass containers and labeling of bottles, Kenya Breweries Ltd that deals with alcoholic drinks, and East African Maltings Ltd (EAML) that is involved in the supply of brewing materials like barley, malt and Sorghum, and other agribusiness. It is important to note that KBL, EAML and Central Glass Industries have centralized functions like procurement that are done at the head office and most of the functions like logistics are outsourced and therefore for the purposes of this study the three were treated as one manufacturing firm. On the soft drinks market is Coca Cola Juice Ltd that falls under the armpit of the giant Coca Cola Company and its specialty is the bottling of juices.

1.1.1 Environmental Requirements

It should, however, be noted that business firms that operate globally are subject to more risks and top on the list is contamination at source. This concern calls for effective integrated environmental management systems (EMS) that transcend the entire business network (Chopra and Meindl, 2010; Darnall, 2006). In the contemporary business world, manufacturing firms have a responsibility to initiate mitigation strategies aimed at controlling environmental degradation and some are animated to environmental issues implicitly and / or

explicitly. It is therefore important to examine and evaluate the various business processes involved in value addition, and supply management is one of those key processes.

Supply chain management is defined by Handfield, Monczka, Giunipero, and Patterson (2009) as the integration of business activities involved in value addition from the source of materials to the end customers as well as the related information in order to meet customer satisfaction in order to achieve competitive advantage. Environmental considerations task the buying and supplying organizations with responsibilities pertaining to how a firm should come up with strategies that promote sustainable supply chain. One of the challenges facing manufacturing firms in Kenya is how to ensure that suppliers of their raw materials are environmentally accountable, products in the supply chain are designed in a way that supports green practices, and issues to do with pollution, disposal of waste, and obsolescence are adequately addressed in their quest for Total Quality Management (TQM).

1.1.2 Supplier Relationship Management

Why then the attention on supply chain management (SCM) and particularly the supplier selection criteria? According to Cousins et al. (2008) positive relationship with the buying organizations is a step forward to delivering desired outcome in this complex environment. Modern practice is to maintain good, mutual long-term relationships with reliable suppliers as they play a strategic role in order to achieve competitive advantage. Effective supplier-buyer relationship management present organizations with an excellent opportunity to examine the role of the supply chain in environmental management since organizations that make up the supply chain contribute to environmental problems in the process of value addition.

The management of suppliers that includes environmental issues as one of the quality dimensions demanded by modern customers has propelled environmental requirements as one of the leading business practices in the recent past. It is for this reason that world-class

manufacturers like Boeing are investing astronomical amounts of money to improve supplier quality (Darnall, 2006). This can happen where there is a mutual buyer-supplier relationship that is based on trust. Businesses are now required to integrate, comply, and demonstrate to the stakeholders that indeed they are part of the environmental preservation champions' network and this has a profound impact on the supply chain management process (Buyukozkan and Cifci, 2011).

1.1.3 Total Quality Management

Quality is defined as the total multi-factorial product and service features of marketing, engineering, manufacturing, and maintenance through which the product or service in use will meet or exceed the expectations of the customers (Handfield et al., 2009). The last part of this definition denotes quality as a dynamic concept since customers' expectations are diverse and changing over time. Therefore quality is conformance to requirements, the system of quality is based on prevention with the performance metric being zero defects, and its measurement is the price that firms pay for nonconformance notably when goods are rejected and customers shift loyalty to a firm's competitors.

Among the emerging issues pertaining to customer needs is the impact of our products and associated processes on the physical environment like accumulation of solid waste (Handfield et al., 2009). In order to address issues like pollution manufacturing firms in Kenya require a comprehensive quality management system (QMS) that includes the diverse customer needs like environmentally friendly products and processes that is well documented, and well engrained in the minds of all the people involved in the total value addition process. A quality management system that is agile to emerging stakeholders' needs while focusing on supply partners' integration is essential for firms seeking to achieve total quality management (TQM).

Badenhorst-Weiss et al. (2009) observe that TQM is a management philosophy that applies to the whole enterprise and it simply means inputs, processes and outputs in each area are well within the best quality management framework and practices. One way of achieving this is through a supplier quality management (SQM) that emphasizes green procurement. Therefore, SCM is tasked with the responsibility of ensuring that a SQM that can stand the test of time is in place by ensuring a comprehensive supplier selection criteria is used. However, the most ignored yardsticks in SQM are environmental requirements (Hanfland, 2008). Pursuing quality at source by manufacturing firms requires suppliers who meet all the needs of the end customer since any mistake by the supplier will definitely impact negatively on the buying firm's market offering and sales revenue (Handfield et al., 2009, Wolf and Seuring, 2010).

1.1.4 Supplier Selection Criteria

Early surveys by re-known authors like Dickson (1996) identified quality, cost, and performance history as the most commonly used supplier selection criteria. This time-honoured approach to supplier selection, though still applied in manufacturing firms in Kenya, does not appreciate the reality that anticipating in the area of green issues, mitigating as well as learning from supply chain volatility is a critical business sphere where modern procurement practices can add real value to manufacturing firms' risk management strategy (Chopra and Meindl, 2010).

A research by Jabbour and Jabbour (2009) on manufacturing firms in Brazil found out that some companies studied do not include environmental requirements in the supplier selection criteria. This, unfortunately, is not being done by most firms though it is recognized as a key requirement as some do not have adequate resources and personnel to comprehensively investigate all the suppliers within the supply chain (Handfield et al, 2009). Whilst there is quite a lot of literature regarding the incorporation of environmental

requirements in the supplier selection process, in practice, the more sophisticated and important environment criteria are not used by firms, which opt for criteria that provide a simplified analysis (Handfield et al.2009).

1.2 Statement of the Problem

The international market for Fast Moving Consumer Goods (FMCG) is characterized with unique challenges and particularly the issue of ever-shrinking products life-cycles. Reduced products life-cycles imply that the level of waste increases and new resources to produce required goods have to be found (Darnall, 2006, and Hanfland, 2008). This trend has the potential to lead to environmental degradation and depletion of resources. The spill-over effects of environmental degradation and depletion has huge environmental challenges like global warming (Jabbour and Jabbour 2009, and Hanfland, 2008). Humpreys, et al. (2003) emphasize that the changes required to rescue the environment include suppliers who have the capacity to become environmentally watertight.

Bras et al. (2006) indicate that there is inconsistency by buying organizations in terms of implementation when reviewing mainstream literature for supplier selection, particularly the patterns in environmental management. This is backed up by Jabbour and Jabbour (2009) who conducted a study on five manufacturing firms in Brazil and found out that firms studied still use traditional supplier selection criteria like price, quality and delivery service to select suppliers. According to Preuss (2005) environmental initiatives are not possible as long as supply chain management is omitted from the business transactions equation. Based on their literature review, Seuring and Muller (2008) indicate that one of the emerging issues noted in both the academic and business world is growing interest in green supply chain management. There is, however, scant literature hinging on sustainable/green supply chain management and one of the notable shortcomings of existing research on SSCM is inconsistency in on what constitutes greening across the different entities (Olga, 2012). According to Daniel

(2013), researchers at the Council for Scientific and Industrial Research (CSIR) in South Africa believe that attention to adaptation to climate change, eco-system service delivery, and coming up with solutions to promote a green economy will help address environmental problems.

In Kenya, a research by Okello and Kiringe (2004) indicates that failure by governments to include all stakeholders can have negative consequences in the management of natural resources. Marwa and Zairi (2008) conclude in their research that for Kenyan businesses to keep pace with global competitiveness there is need for a focal TQM approach based on a broad and comprehensive methodology. Farmers face soil erosion and desertification and in northern Kenya, ethnic conflicts between communities is attributable to scarce water resources. This trend of global warming, if not reversed on time and appropriately, may result in escalation of the costs related to production effectively rendering locally produced goods uncompetitive. It is therefore, necessary for Kenyan manufacturing firms to be environmentally innovative by incorporating green requirements in their products and production processes while ensuring that quality products are produced at lower total costs in order to achieve competitive advantage over their competitors in the global business environment.

These studies together with a critical view of NEMA's reporting format for environmental sustainability singling out "domestication of environmental policy at workplace" (NEMA,2012) indicate that adoption of environmental requirements in the entire value stream that transcends firms' and countries' boundaries is still wanting even though it is critical for competitiveness in this era of globalization . They do not, however, investigate how manufacturing firms especially Kenyan ISO 14001 EMS certified firms adopt environmental requirements in the supplier selection criteria as a prerequisite for TQM. This study sought to establish whether environmental requirements are being adopted in the

supplier selection criteria by the selected ISO 14001 EMS certified manufacturing firms in Nairobi, Kenya as a prerequisite for TQM. It is also set to find out how environmental requirements, supplier relationship management, environmental management systems and strategies, and supplier selection criteria affect the realization of TQM.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of this study was to investigate whether environmental requirements are being adopted in the supplier selection process by the selected ISO 14001 EMS certified manufacturing firms in Nairobi, Kenya.

1.3.2 Specific Objectives

1. To find out if environmental requirements are included in the supplier selection criteria by manufacturing firms in Nairobi, Kenya.
2. To investigate what constitutes the supplier selection criteria in manufacturing firms in Nairobi, Kenya.
3. To verify the kind of environmental management system that is being adopted by manufacturing firms in Nairobi, Kenya.
4. To determine what supplier relationship management is in place in manufacturing firms in Nairobi, Kenya.

1.4 Research Questions

1. Are environmental requirements incorporated in the supplier selection criteria by the selected manufacturing firms in Nairobi, Kenya?
2. What constitutes the supplier selection criteria in the selected manufacturing firms in Nairobi, Kenya?

3. What kind of environmental management systems are being adopted by the selected manufacturing firms in Nairobi, Kenya?
4. Which supplier relationship management is used in the selected manufacturing firms in Nairobi, Kenya?

1.5 Justification of Study

Suppliers play strategic roles in organizations in enabling firms to achieve competitive advantage and their actions have profound effect on a firm's performance. The question therefore is: what does the requirement for environmentally friendly products and processes portend to manufacturing firms in Kenya? World-class supply chain partners do not want to be associated with businesses that contribute to environmental degradation as this reflects negatively on a firm's corporate image and can potentially lead to liability (Cousins et al., 2008). Kenyan manufacturing firms need to ensure that the sources of materials are environmentally credible and not harmful to the detriment of their businesses and their social environment. Merely having environmental issues as one of the key considerations in the supplier selection criteria is not sufficient and therefore long-term benefits like competitive advantage are likely to be elusive unless actual implementation is done. There is therefore need for Kenyan manufacturing firms to have an integrated and comprehensive quality management system that cuts through the entire supply chain while taking into consideration green issues, in order to realise any benefits.

In the contemporary business environment, the main focus should not be short-term profitability but sustainability. For sustainability to be achieved the interests of all the stakeholders, however diverse, need to be factored in when selecting suppliers. According to Lazenby and Ehlers (2010), the challenge posed by the stakeholders' interests presents a unique business opportunity for firms to position themselves and one such way is to embrace greening. Therefore, this specific area should be studied and documented. This study

consequently sought to find out whether the requirements are being adopted by manufacturing firms, the best practices that make implementation possible, and the benefits to those manufacturing firms that apply it. The study was expected to enable the researcher to underline best practices for other manufacturing organizations in Kenya.

1.6 Significance of the Study

Kenyan manufacturing firms operate in an open and competitive environment, and one of the emerging issues is green supply. This study was expected to contribute to the understanding of the benefits of incorporating green requirements in the supplier selection criteria as a precursor to TQM in manufacturing firms in Kenya. It also sought to underscore the best practices in the three ISO 14001 EMS certified firms that are expected to be important to both local and multinational manufacturing firms based in Kenya that would like to excel in this dynamic business environment. The findings of this study are expected to be significant to those Kenyan manufacturing firms that are not practicing green supply to understand the benefits of evaluating suppliers on environmental issues and borrow the best practices from those firms that adopt the same so that they can inculcate them in their quest for TQM as a source of competitive advantage and contribute positively to enhance environmental sustainability. The findings will also be of value to the Kenyan government and other stakeholders as a platform on which they can advocate the case for a green economy.

1.7 Scope of the Study

The study was carried out in the context of goods manufacturing firms thus leaving out other organizations particularly those that are in the service industry. The manufacturing firms were selected from those that have operational bases within Nairobi County. It focused on firms that are engaged in the production of packaging containers like bottles, food processing, and the manufacture of soft and alcoholic drinks. The manufacturing firms

studied were those that are ISO 14001 Environmental Management Systems certified in order to highlight the best practices that make green manufacturing possible in order to enable the researcher to come up with appropriate recommendations that can be used by those firms that are yet to adopt environmental requirements in their products and business processes.

1.8 Delimitations of the study

This study was restricted to finding out whether manufacturing firms in Kenya include green requirements in the supplier selection criteria in an effort to achieving TQM. It specifically focused on selected manufacturing companies within Nairobi County and its environs. Names of organizations were not directly mentioned in the findings as a measure of confidentiality. Nairobi County was chosen because of its strategic position within the East African Community and has a good network and blend of manufacturing firms that can enable the researcher to come up with useful study. A more detailed research would require a more comprehensive approach that covers the whole country.

1.9 Limitations of the Study

There are chances that some respondents were not very open when answering the research questions, due to the intrusive nature of the study. To counter this, however, the researcher obtained advance consent to carry out the study and assure confidentiality. Therefore, the researcher was not able to comprehensively address specific issues related to environmental requirements in the supplier selection process. Further limitations include the level of truthfulness of some answers that may lead to suspicious results especially from some staff that may be reluctant to respond to some questions, and the timeline of returning the answered questionnaires.

1.10 Assumptions of the Study

The researcher assumed that those firms that are ISO 14001 EMS certified incorporate green requirements in the supplier selection criteria, had the necessary physical resources like finance, and qualified personnel to monitor and measure the efficacy of the criteria pertaining to environmental issues and that appropriate systems are in place to ensure compliance and full adoption of green supply.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter a review of literature and articles by scholars on environmental “green” requirements in the supply chain, appropriate mitigating strategies, supplier selection criteria, supplier relationship management and TQM was done. The objective was to obtain knowledge in order to carry out a realistic study. It is crucial to state that there is insufficient documented literature on hand on green requirements with specific reference to the supplier selection criteria on ISO 14001 EMS certified manufacturing firms in Nairobi, Kenya. However, the researcher very much appreciates valuable information on the NEMA website which gives an insight into the dilemma facing the authority and other stakeholders as they champion for a green economy. Therefore, the study makes citation to wide-reaching studies.

2.2 Theoretical Framework

This section reviews some of the supply chain theories with a view to understanding how they relate to supply chain management and TQM. A number of theories exist that attempt to highlight how value is added along the supply chain in order to achieve customer satisfaction and how manufacturing firms are expected to factor in the ever-changing and expanding customer needs criteria. This study will look at four main theories that form the basis of green supply.

2.2.1 Value Chain Analysis (VCA)

Lazenby and Ehlers (2010) put it plainly that “value added to a product or a service is the dissimilarity in pecuniary value of the finished product weighed against the monetary worth of inputs”. Therefore, VCA focuses on the value construction process right from the upstream (suppliers’ side) to the down-stream (customers’ side). It is founded on the premise that customers actually fancy and demand value when they buy products and the usefulness

added along the supply chain directly from the inputs through the transformation process to the agreeable end product that a customer wishes to procure.

2.2.2 Resource-Based View Theory

This theory gives superiority to an organization's resources above the industry makeup in achieving and sustaining a competitive lead. It also values the idiosyncratic disposition of resources moving from one firm to another and that the performance of an organization is a function of its resources and competencies (Lazenby and Ehlers, 2010). Therefore, managing strategically requires an elaborate internal analysis of what resources an organization has and how unique they are and if they are difficult to imitate in the long-run, the better.

The substance of the RBV is that there are three categories of resources, namely, tangible assets like funds, intangible assets like intellectual goods, and organizational capabilities that are based on unique skills and expertise that are transferrable across the operations processes of organisations that are said to lead to distinctive competencies that result into competitive advantage. According to Barney and Clark (2007) RBV centres on costly-to-copy traits and is a theory that is deep-seated in strategic unions and theorists argue that human capital is key in terms of sustainable competitive alliances as well as that it is difficult to replicate. This therefore contributes to the bottom line of any supply chain.

2.2.3 Stakeholder Theory

This theory is centered on how a firm functions in relation to its internal and external impacts on the environment (Jensen MC, 2010). Jensen identifies stakeholders as voluntary and involuntary individuals and units that put in either directly or indirectly to a company's welfare or those that stand a possibility to any probable hazard because of the survival of an organization and its processes. Lazenby (2010) indicates that it is the relationships with stakeholders and not the dealings that will lead to competitive advantage.

2.2.4 Sustainable Supply Chain Management (SSCM)

Carter and Rogers (2008) made a deliberate stab to introduce sustainability in SCM. According to Pagell, Wu et al. (2010) SSCM means a supply chain that would least affect the natural or social systems while still yielding profit over the long run. This is based on a satisfied customer that appreciates a firm's efforts to minimize the impact of their inputs, processes, and outputs on economic, social, and environment areas both locally and globally.

2.3 Empirical Literature

This section reviewed various articles and journals on previous studies done in relation to environmental requirements in the supplier selection process and in particular when evaluating both potential and existing suppliers for a firm's inputs in an effort to achieve total quality management.

2.3.1 Environmental Requirements

The concept of having a green supply chain is fast moving from being a public relations strategy to a means of compliance and economic value (Barker, 2010). Wisner, Leong, and Tan (2005) uphold this and emphasize that consumers' sentiments towards environmentally sound processes has significantly taken centre stage and this, therefore, makes green supply an area of great concern for any manufacturing firm. This was later observed in a survey carried out by KPMG (KPMG, 2008) as managers and businesses are now required to report on sustainability. The survey noted that the challenge is that responsibilities extend beyond the physical boundaries of businesses and control problems come in a big way. Therefore for manufacturing firms, the area of environmental management as well as resource management are key and the complexities that come with managing the supply chains compound this challenge further.

A survey by Theyel (2001) indicated that environmental requirements are positively related to waste reduction and this has a potential favourable effect on resource management. According to Cousins et al. (2008), sustainability is the ability to achieve economic prosperity while protecting the eco-system. Issues relating to the environment and sustainability have grown in relevance and need be considered when designing supply chain strategy (Chopra and Mendl, 2010). In some instances, regulations are driving changes while in others; transformation is motivated by the understanding that the physical environment is a risk factor.

Ehlers and Lazenby (2010), indicate that environmental impact relates to the effects of a firm's products and processes on the environment like degradation through a firm's GHG and waste. According to the Early Warning Systems Network, a climate trend analysis of Kenya shows that long rains in central Kenya have declined by more than 100 millimeters since the mid-1970s. Though it is likely to go on, the analysis does not however point out at the real cause (USGS, 2010). As such governments take measures that they consider necessary and expedient for protecting the quality of environment and preventing, controlling and abating environmental pollution: management and handling of hazardous waste, manufacturing, conservation, storage and transportation of such materials (Sople, 2010).

According to Jabbour and Jabbour (2009), there exists a gap between the set supplier selection criteria and compliance to requirements. This is the bedrock of this study and focus was on finding out whether this is also applicable in Kenyan manufacturing sector as failure to comply can deny firms benefits that those firms that practice the same, enjoy (Burt, Dobler and Starling, 2003). According to the Ministry of Environment and Mineral Resources (June,2013), environmental degradation that has been caused by erratic rainfall as result of deforestation call for replanting of more indigenous trees and putting in place other measures aimed at preventing further erosion. A research done by Okello and Kiringe (2004)

adds another important perspective that failure by governments to include all stakeholders can have negative consequences in the management of natural resources.

2.3.2 *Environmental Management Systems (EMS) and Strategies*

Today's executives face a bewildering range of standards and codes of practice. Environmental change is affecting the way firms do business due to the introduction of new environmental legislation, shareholders' demands, and environmental accountability that stresses stringent disclosure standards (Large and Thomsen, 2011). ISO 14001 on environmental management systems is becoming increasingly important for firms that operate globally. The Environmental Protection Agency (EPA) seeks to take this a step higher and is drawing on advances in science and technology, application of government regulations and policies to promote green business practices (Lysons and Farrington, 2006).

According to Zhu and Sarkis (2006), a firm's environmental mission and internal policies are considered very important for green sourcing. Kytle and Ruggie (2005) also indicate that firms are coming to terms with the reality that appropriate strategies that transcend the supply chains are now necessary. According to Burt et al. (2003), the US EPA defined a process-based hierarchy of integrated waste management systems. It should be noted that waste disposal is inevitable, but more important is the understanding that there is need for a firm to review and identify opportunities for waste diversion. The environmental pressures that affect a business are likely to emanate from sources inside and outside the firm (Cousins et al., 2008). This therefore implies that manufacturing firm need to do comprehensive evaluation of the supply chain in terms of their actions so that they can come up with appropriate strategies to mitigate emerging environmental issues.

Most of the items, for example, equipment and packaging materials can be salvaged for re-use, instead of discarding them away (Burt et al., 2003). It is also prudent to recycle as much and as energy efficiently as possible as firms pursue TQM. This is an elaborate process

that involves collection, separation or sorting, preparation, sale to other users, reprocess, and eventual resale and re-use of the recycled material (Lysons and Farrington, 2006). Therefore, efficiency is increased and resource depletion is also reduced. Green supplier evaluation and green collaboration exert direct influence on environmental performance (Large and Thomsen, 2011). According to (Bhat, 2009), increasing manipulation of the environment often creates conflicts between human goals and natural processes. Therefore, appropriate strategies should be formulated and embedded in the corporate social responsibility of the firms and should be closely aligned to their CSR oriented purchasing strategies (Keating et al., 2008). In doing this, care should be taken to ensure that firms do not compromise the potential increase in economic or environmental costs that can lead to health and safety concerns of consumers or increased risk of product damage.

The role played by team leaders and value champions is vital in incorporating environmental issues in the procurement process (Walker et al., 2008). Pederson (2009) further observed that two characteristics that appeared to facilitate CSR are size and sophistication of CSR systems. The worrying trend though is that CSR supply chain activities still remain the preserve of a small group of SMEs (Pederson, 2009) even though failure to live up to customer expectations is one of the most unfortunate short-coming that a firm can face. Therefore, there is need for an organization to analyse its green-house management process by evaluating emissions from a firm's products supply chain, accounting for the same, and evaluate a firm's mitigation strategies and systems to ensure compliance (Booth, 2010).

2.3.3 Supplier Relationship Management

Holt and Ghobadian (2009) indicate that attitude to environmental issues is a key forecaster of GSCM activity and implementation levels appear to be moderated by size and nationality. As such SMEs seem to face less pressure and adopt less operational practices.

Walton et al. (1998) and Handfield et al. (2009) observe that availability of resources and buyer's training affects the supplier evaluation and process improvement as a crucial area to achieving positive environmental outcome. Further some aspects of national identity seem to influence the operational practices. Early supplier involvement in environmental improvement is vital and should be well and carefully done. Suppliers as the source of inputs form an integral part of the competitive survival of the manufacturing firm in the business environment and as such relationship management is very important (Baily et al., 2008).

According to Handfield et al. (2009), supplier quality management represents the ability to meet or exceed current and future expectations or requirements within critical performance areas on a consistent basis. According to Cousins et al. (2008), companies do not become green, they become greener. This is believed to make as well as positively influencing businesses to undertake to cause less damage to the planet. Environmental reporting motivates firms to be more analytical and disciplined in understanding the nature of their processes. This identifies opportunities for cost saving and enhances the degree of process knowledge within the operation. Environmental risk management creates positive public relations to the firm, attract talented labour, and attract investors and customers. According to Pycraft et al. (2010) firms are now asking supply managers to push their suppliers on increasing efforts aimed at reducing the effect of their products and processes on the environment: energy use in production and transportation. Therefore there is need to do a total supply chain evaluation or appraisal of the amount of waste or pollution cumulatively in an effort to bring forth a product for consumption and after consumption impact.

For the supplier to be able to meet buyers' expectations, diverse customer needs should be communicated in clear and unambiguous terms, and in a manner that enables the suppliers to efficiently and effectively deliver what is required by the customer. A case study by Strand (2009) observes that vigorous supplier assessment that encourages environmental

and social responsibility while promoting collaborative relationships leads to stronger and more closely linked supply chains. Foestl et al. (2010) as well as Large and Gimenez (2011) concur with the study and indicates that buyer–supplier collaboration on green issues can go a step further to ensure supplier development that will yield impressive results on environmental performance. According to Theyel (2001), in the long-run, firms experience improvements as a result of relationships and buyers play a key role in ensuring that collaboration with suppliers is feasible for their mutual benefit. This was later confirmed by Klassen and Vachon (2003) who indicated that collaboration with external stakeholders notably suppliers encourages suppliers to invest in technology aimed at preventing pollution (Lee and Klassen,2008).

Spence and Bourlakis (2009), suggest that there is need for firms to move from transactional approach in matters environment to responsible supply chain partnerships especially with strategic suppliers. However, this cannot happen if there is no mutual trust among the firms involved in the supply chain (Jiang, 2009; Lee and Klassen, 2008). In order to make this possible, facilitation of continuous improvement, better communication, and further integration of processes is necessary. Tieman, Vorst and Ghazali (2012), found out that existing GSCM performance measurements were mainly cost related and were not all inclusive. Therefore the level of trust among supply chain firms on issues like process quality and total waste in order to achieve TQM is very important (Bone and Verbeke, 2008). This study therefore sought to find out how collaboration between buyers and suppliers affect TQM.

2.3.4 Total Quality Management

A survey by Zhu and Sarkis (2004) observes that quality management programs are very significant to many GSCM practices and that the effect of external GSCM on environmental and economic performance is greater for firms that have more systematically

implemented quality management practices. In an effort to ensuring green purchasing, a supply chain pollution avoidance (SCPA) approach to protecting the environment by going back to the beginning of the supply chain, and attempting to reduce the initial generation of waste throughout the supply chain is used (Burt et al.,2003). This approach focuses on processes that prevent or minimize pollution from being created throughout the supply chain.

Implementation of TQM is perceived to enable firms to improve internal efficiencies, as a prerequisite to achieving competitive advantage in global markets (Stading and Vorkuka, 2013; Lambert and Ouedraogo, 2008). This is also observed by Marwa and Zairi (2008) who conclude in their research that for Kenyan businesses to keep pace with global competitiveness there is need for a focal TQM approach based on a broad and comprehensive methodology. An exploratory study by Vathsala Wickramasinghe (2010) outlined the TQM dimensions by various authors (Ahire et al., 1996, Flynn et al., 1994, Raghunathan et al., 1989, and Zhang et al., 2000) and supplier quality management appears to be the common denominator. This, therefore, implies that practical and comprehensive efforts are necessary for any manufacturing firm that is out to excel in the current business environment. Pagell and Wu (2009), observe that supplier certification also helps to ensure sustainable supply chains, and one possible way through which this can be achieved is through active involvement by the buyer in the supply chain by ensuring that suppliers comply with environmental requirements. This is the gist of this study.

2.3.5 Supplier Selection Criteria

According to Keating et al. (2008) there is no one set of supplier evaluation criteria that can be applied across firms. Therefore there is need for appropriateness and relevance when coming up with applicable supplier criteria. Early surveys by re-known authors like Dickson (1996) identified quality cost and delivery performance history as the most commonly used supplier selection criteria. These conclusions were later reinforced by various

researchers like:-Ceb and Bayractor (2003), who developed a model for supplier selection that used quality, costs and delivery. Hsu et al. (2006) also highlighted quality, price and delivery criteria. A variation of the above had been done by Lee et al. (2001) who added service to the above but did not include green considerations. Interestingly, an earlier research by Watson et al. (1998) had suggested that supplier evaluation and process enhancement are the crucial areas to boost purchasing effect on environmental results.

Jabbour and Jabbour (2009) indicated that prior to their research; environmental concerns were not included in supplier selection criteria in the literature they consulted. Whilst there is quite a lot of literature regarding environmental issues in the supply chain, in practice, the more sophisticated and important environment criteria are not used by firms, which opt for criteria that provide a simplified analysis (Handfield et al., 2002). Furtado (2005) made a literature compendium concerning supplier selection criteria that have been used for over forty years and then defined and categorized them. Unfortunately, there were no issues related to environmental concerns that were cited in supplier selection criteria. Jabbour and Jabbour (2009) conducted a study to verify if companies in Brazil were adopting environmental requirements in the supplier selection process and found out that companies still relied on the traditional parameters like quality and cost and do not adopt environmental criteria when selecting suppliers.

Carsten et al. (2010) indicates that evaluation alone is not sufficient and for a firm to achieve long term benefits, the buyer needs to ensure that active involvement in ensuring compliance is paramount. Suppliers were found to initiate environmental efforts when the customers took steps to evaluate them on green issues an indication that suppliers transform processes to meet customer demands (Lee and Klassen, 2008). According to Stoughton and Ludema (2012) creating green supply chain was a priority for the companies studied and managers believed success in this area would transform their companies to best in class.

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Therefore, manufacturers need to internalize the previously ignored external costs and trade-offs are a necessity and focus should be on the total supply chain costs. According to Strand (2009), suppliers of incoming materials therefore need to be involved right from the beginning in order for the end customer to get the desired product. This research was to find out how supplier selection criteria affects realization of TQM as a source of competitive advantage in the selected ISO 14001 EMS certified manufacturing firms in Nairobi, Kenya.

2.4 The Gap

Environmental issues in supplier selection are a relatively new phenomenon in the area of supply chain management in Kenya. Further affront, stakeholders are making attempts to involve the whole supply chain in terms of green sourcing (Olga, 2012). This implies that Kenyan manufacturing firms need to inculcate green supply in order for them to be able to compete successfully in the global market. However, most businesses advocate for environmentally friendly products without going deeper into implementation. In Kenya, a research by Okello and Kiringe (2004) highlights that failure by governments to include all stakeholders can have negative effects in the management of natural resources. Marwa and Zairi (2008) conclude in their study that for Kenyan businesses to keep abreast with global competitiveness there is need for a focal TQM approach based on a broad and comprehensive methodology. However, according to the literature reviewed, a study is yet to be done on Kenyan manufacturing firms that are ISO 14001 EMS certified to help shed more light on this area of green issues with particular emphasis on the supplier selection criteria. A study

was therefore necessary to assess the adoption of environmental requirements in the supplier selection criteria in manufacturing firms in Nairobi, Kenya as they try to contextualize quality in relation to environment issues in their quest to achieve TQM.

2.5 Conceptual Framework

This section seeks to explain and show how independent variables affect the dependent variable. It shows how environmental requirements, environmental management systems and strategies, supplier relation management, and supplier selection criteria affect TQM in manufacturing firms in Nairobi, Kenya as shown in figure 1.

2.5.1 *Environmental Requirements*

According to Handfield et al. (2009) environment consists of all or any of the following media, namely, air, water and land. Environmental requirements came about as a result of renewed awareness of the impact of industrial processes on the environment (Lyson and Farrington, 2006). Responsible manufacturing firms need to have the right competencies to proactively handle pollution, ensure disclosure on green issues and waste management, in order to control ozone layer depleting substances. The most important areas of environmental concern include the efficient use of raw materials in manufacturing operations, pollution and waste which can have or bring about harmful effects to the bionetwork, and energy economy that can reduce pressure on the sources of energy that include water, fuel, wind, wood and uranium. (Lyson and Farrington, 2006). This can lead to customer satisfaction, increased sales revenue, reduced re-work costs, and improve overall profitability of the firm. Further, firms can benefit from improved corporate image of the firm as well as reduced litigation costs as a result of non-conformance.

According to the National Environment Management Authority (NEMA), sustainability targets for ministries for 2012-2013 financial year indicates targets, activities and indicators against which sustainability reporting has to be made (NEMA,2012-2013).

The targets include the domestication of environmental policy at work place, creating awareness, waste management, mitigation measures, and promoting conservation among other issues. Therefore, manufacturing firms in Kenya need to have a genuine concern for the eco-system, and enhance risk management. Handfield et al. (2009) observed that it is important to take a just in time perspective (JIT) in waste management in order to eliminate waste within the supply chain. This theory looks at waste throughout the supply chain and attempts to minimize it by doing the right things throughout the process and ensuring continual improvement in order to achieve TQM as pollution causing disasters can be attributed to operational drift (Cousins et al., 2008). More important in the long-term is the environmental impact of products which cannot be recycled and processes which consume large amounts of energy. Reducing waste is environmentally sound and it reduces costs for the organization.

2.5.2 Environmental Management System and Strategies

One of the most important aspects of environmental management is risk management (Chopra and Meindl, 2010). Environmental change is affecting the way firms do business due to the introduction of new environmental legislation coupled with stakeholders' demands that stress environmental accountability and stringent disclosure standards. This heightened awareness has spurred interest on how firms manage their actions in relation to the physical environment (Pycraft et al., 2010). This has led to increased concern on the opportunities and risks associated with environmental change.

There is need to ensure that a manufacturing firm has the ability to be able to ascertain its contribution to environmental problems and develop appropriate environmental systems and mitigation strategies to reduce negative impacts on the environment (Bhat, 2009). According to Cousins et al. (2009), in order for manufacturing firms to achieve customer

satisfaction in the contemporary business environment, there is need to reduce, reuse, recycle, incinerate, and dispose of waste in an environmentally friendly way.

Cousins et al. (2008) observe that consumers are expected to become more aware of the origins of the products, so environmental issues are crucial for supply chain strategists. This involves the active management of supply chain activities by the focus firm with the objective of maximizing customer value and achieving a sustainable competitive advantage, by keenly observing and taking into account green issues (Handfield et al., 2009). It actually represents a proactive approach by the focus firms to develop and manage supply chains in the most effective and efficient ways with a unity in objectives (Sople, 2010). Therefore efficient and effective environmental management systems and strategies are essential in order to achieve TQM.

2.5.3 Supplier Selection Criteria

Booth (2010) indicates that supplier selection criteria are not a question of having a wide array of variables to evaluate a supplier on. Rather it is how a buyer identifies the most relevant and appropriate parameters that suits the buying firm and the entire supply chain. According to Cousins et al., (2008) the trend is to move away from the superfluous traditional approach of price, quantity, and delivery terms to a more comprehensive total cost of ownership approach that goes beyond the standard unit price, transportation and tooling when carrying out supplier evaluation to include emerging issues like environmental conformity. Hanfield et al. (2009) indicate that in addition to price, there should be acquisition costs like freight and administration charges, usage costs, and end-of life costs like disposal.

Selecting the right supplier has never been so important (Handfield et al., 2009). The emerging requirements from customers and other stakeholders have had profound effect on supplier selection criteria. A strategic view that combines customers' needs and a firm's

objectives is therefore necessary. Strategic supplier selection is the process of identifying potential suppliers, agreeing on performance parameters to be measured, casting the supplier selection net wider for a comprehensive evaluation, and finally making supplier selection. There is no one standard way of evaluating and selecting suppliers as it depends on appropriateness and relevance of the critical performance metrics (Cousins et al., 2008).

Conventional supplier selection criteria are based on cost, quantity, delivery, and flexibility. However, in the contemporary business world, the trend is for buying organisations to include financial risk analysis, ethical analysis, environmental analysis, e-commerce capability, corporate social responsibility (CSR), diversity of ownership, innovation capability and management capabilities (Hadfield et al., 2009). So focusing on the traditional parameters is short-range and cannot lead to sustainable competitive advantage.

2.5.4 Supplier Relationship Management

Early supplier involvement in environmental improvement is of paramount importance and should be well and carefully done. Suppliers being the source of inputs form an integral part of the competitive survival of the manufacturing firm in the business environment (Bailey, Farmer, Crocker, Jessop, and Jones, 2008). Legislation alone is not sufficient as most legal requirements emphasize on determining the cost incidence so that appropriation pertaining to payments of fines is done. This leads to supply chain partners like buyers and customers down the chain paying for pollution caused by upstream members. In some cases if a supplier is caught and fined, the costs are passed down the value chain.

Close co-operation, early supplier involvement and relationships management should be the way to go. Supply chain partners at all levels of the organization must fully comprehend and dedicate themselves to the principles of TQM in order to achieve customer satisfaction. One of the most important principles is pursuing quality at source as suppliers contribute immensely in terms of product quality. According to Handfield et al. (2009),

supplier quality management represents the ability to meet or exceed current and future expectations or requirements within critical performance areas on a consistent basis. For the supplier to be able to meet the expectations of the buyers and the diverse customer needs there is need for mutual buyer-supplier collaboration on new products and processes development, an agreement on the total cost of ownership, and free and flawless communication between the buying organization and their suppliers in order to achieve competitive advantage.

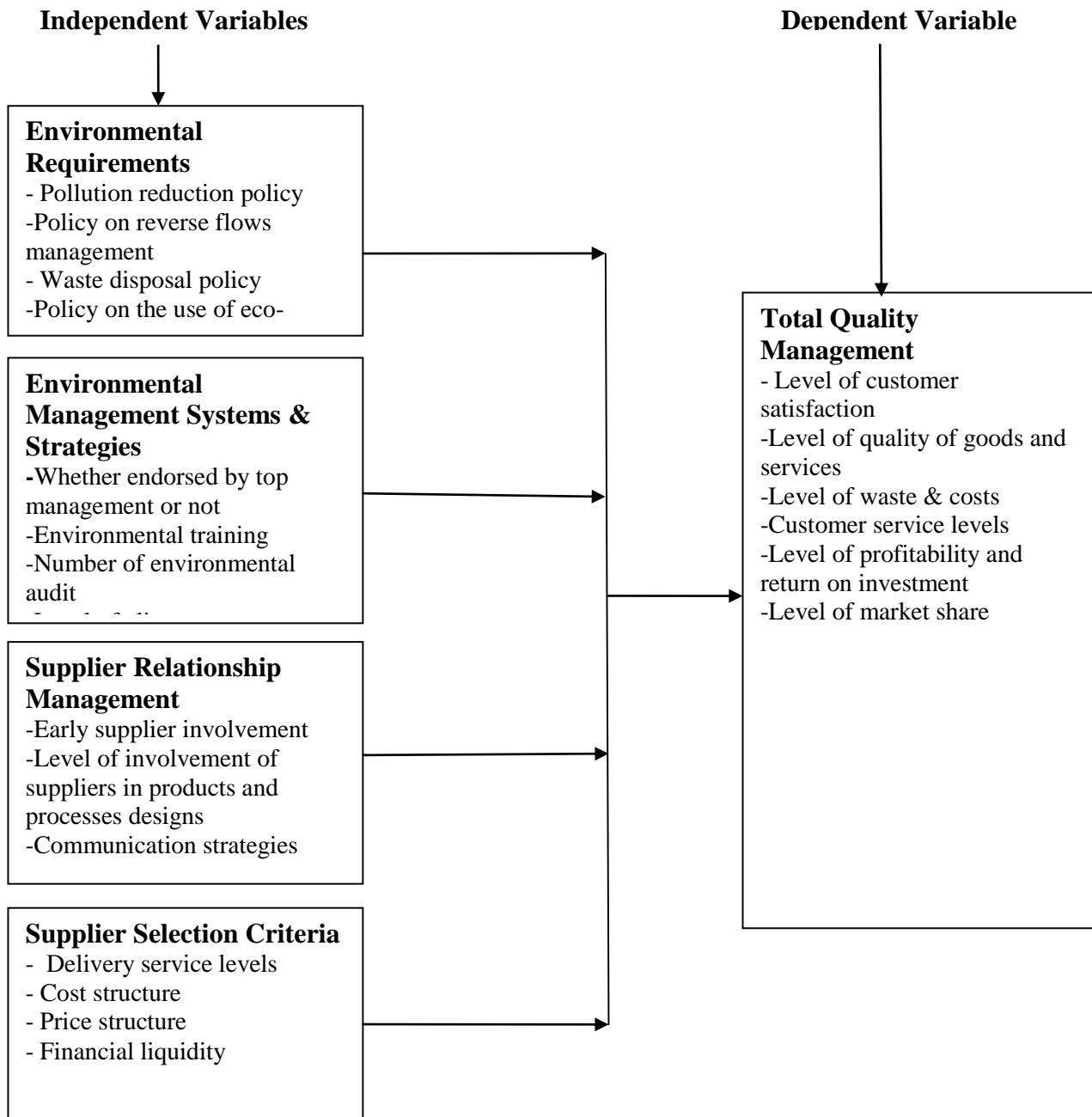
2.5.5 Total Quality Management

TQM is a comprehensive approach to the management of quality that emphasizes the role of all the business processes and people within an organization to influence and improve quality in order to achieve customer satisfaction (Pycraft et al., 2010). It is a management philosophy of how to integrate and approach continuous quality improvement. TQM implies that quality is strategic, needs teamwork, involves all employees and stresses empowerment, and it includes both internal and external stakeholders. TQM is important because it ensures that errors are not allowed to enter the system and process because they can be costly if detected later in the supply chain.

According to Handfield et al. (2009) the cost of quality can be subcategorized into three parts: appraisal costs that encompass activities like testing of incoming materials, failure costs which can be internal or external like process waste, and replacement of defective goods from suppliers, and preventive costs like design of products and processes to avoid defects. Traditionally, costs pertaining to shortcomings in environmental management have been regarded as external costs. An external cost since it was believed that they do not impact on the business directly (Cousins et al., 2008). TQM enables a firm to achieve customer satisfaction as a result of quality goods that take into account customer needs. Customer satisfaction has the potential to lead to loyal customers that can help sell an

organization's products to other potential customers and this leads to improved market share and overall profitability of the firm.

FIGURE 1
The Conceptual Framework



Researcher's Conceptualization, 2014

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter gives an indication of the research design and methodology that will be used in the study. It gives a concise narrative of sampling methods and procedures, data collection instruments and the procedures of data collection that will be applied. Finally, it describes the appropriate data analysis method to use to generate the required data. This study will be quantitative. According to Leedy and Ormrod (2010), a quantitative study is recommended if there are time constraints and the study is confirmatory. Further, it does not require as extensive data as qualitative research as well as a high ability to put together in an orderly way data and effectively draw inferences from extensive data.

3.2 Research Design

Research design is about the type of data that needs to be collected in order to address the research questions and it deals with a logical problem (White, 2009). This is a quantitative research that employed a descriptive survey of a sample of respondents selected purposively to examine the situation as it is and questionnaires with rating scales were used as data collection instruments. This study sought to find out how ISO 14001 EMS certified manufacturing firms in Nairobi adopt green supply in order to achieve customer satisfaction. Therefore, the researcher tried to get information of the prevailing situation relating to environmental issues in the selected firms, in particular how environmental requirements and supplier relationship management affect TQM in the selected firms and what environmental management systems and strategies, and supplier selection criteria are used by the firms in order to achieve TQM.

Saunders, Lewis, and Thornill (2003) emphasize that a descriptive research portrays an accurate profile of persons, events or situations. Kothari (2009) opine that descriptive

research enables the researcher to get an explanation of the existing phenomenon by asking individuals about their perceptions, attitudes, behaviour or values. According to Kothari (2009) research design is the determination and statement of the general research approach or tactic to assume for a particular project. It can also be thought of as the structure of research (Kluger, Welman, and Mitchell, 2005).

3.3 Study Population

Population involves the total of the elements for study (Mugenda, 2003). The population in this research was obtained from the manufacturing firms' employees who include Managers, Supervisors, and Clerical Officers working in the Purchasing, Sales/Marketing, and Operations/Production departments. The target population involved 167 respondents consisting of nine managers, eighteen supervisors and one hundred and forty clerical officers.

A sampling frame is a catalog or respondents from the three companies from which a sample can be selected (Kluger et al., 2005). The sampling frame was obtained from the firms' three departments as given by the contacts for this study.

Each of the selected manufacturing firms had fully functional production, sales and marketing and production departments. The three departments were selected because purchasing represents the firms from the supply side, Sales/Marketing interfaces with the customers (demand-side), and Production/Operations uses inputs sourced by Purchasing to transform them into the type of outputs required by the customer as advised by Sales/Marketing. Therefore in the input-output transformation the three departments directly contribute in waste generation along the supply chain. The researcher picked twenty (20) respondents from each of the selected firms.

3.4 Sampling Procedures and Sample Size

Sampling refers to a process in which an impartial and predetermined number of observations will be taken from the population (Kluger et al., 2005). Mugenda and Mugenda (2003) also indicate that sampling is a procedure where a portion of the facts is taken from a large set of data, and the deduction obtained from the sample is extended to the entire group. At the time of the study, Nairobi County had five ISO 14001 EMS certified manufacturing firms as listed in the Kenya Bureau of Statistics website. Out of the five firms, three were sister companies and the target departments like procurement were centralized as most functions like logistics were outsourced. Therefore for the purposes of this study, the three were treated as one entity hence the three manufacturing firms for the study. The three firms were considered as stratum. Leedy and Ormrod (2010) indicate that stratified sampling is a sampling method where the whole population of concern is split into sets or strata. Stratified sampling method was used to take care of the diversity of the specific departments' employees, already clustered in manufacturing firms.

Homogeneous sampling, a system of purposive sampling is focused on realizing a standardized sample where the units of analysis consist of similar characteristics. Homogeneous sampling was used to select twenty respondents from each firm that would provide leading information pertaining to the variables of the study. The twenty (20) respondents were drawn from Purchasing, Sales/Marketing, and Operations / Production departments from each firm giving a total of sixty (60) respondents representing a 36% of the target population. This sample was considered ideal as Gay (1992) suggests that a 10-20% sample size depending on the target population, is ideal and the larger the sample size the better in order to ensure representativeness. The researcher picked an equal number (twenty) of respondents from each firm in order to ensure uniformity when making comparisons. Mugenda and Mugenda (2003) opine that purposive sampling is used a study when the

researcher knows that the cases picked have the information required in respect to the objectives of his/her study.

The respondents had to meet specific criteria and should have had at least two years' experience in their respective departments. The contact person in each firm was instructed to ensure that the respondents consisted of clerical officers, supervisors and managers as it was felt that employees below the level of clerical officers were not in a position to conceptualize environmental requirements in supplier selection. Based on the aforementioned criteria, the researcher was able to come up with twenty (20) respondents from each firm. The sample of twenty respondents from each firm consisted of at least one Manager and one Supervisor from each of the three departments. Where the manager or Supervisor was not present, their assistants had to fill in the questionnaire.

3.5 Data Collection Instruments

The data collection instrument on the sample population will be by the use of questionnaires. The researcher used structured questionnaires comprising both closed and open-ended questions in order to ensure uniformity and adequacy in order for the researcher to obtain a wide range of feedback. The use of questionnaires as a data collection instrument was preferred in this study as it is considered to be economical in as far as data collection is concerned (Kluger, 2005). Information was obtained from respondents regarding how the incorporation of environmental requirements in the supplier selection criteria is a prerequisite for TQM. Leedy and Ormrod (2010) say that the questionnaire tool is the most appropriate where detailed information is required.

The questionnaire made use of checklists with issues that the researcher intends to investigate and rating scales (Likert scales) with areas of interest to be evaluated. The researcher printed the questionnaires. The researcher then identified a contact person in each

of the three manufacturing firms. This contact person was the one to distribute the questionnaires to the respondents in his or her company, indicating an agreeable collection time of the questionnaires after the respondents have answered them. The researcher, at agreed times, could keep in touch with the contact persons with the aim of expediting the exercise of answering the questionnaires within the agreed period. Record of respondents was kept to establish the rate of response. Therefore administration of the questionnaire was through “drop and pick-later” at agreed time method.

3.6 Instrument Validity and Instrument Reliability

When coming up with a questionnaire model for the collection of relevant information and in order to achieve the maximum possible reliability and validity, it is of supreme importance to ensure that the questionnaire intended for use will measure what it is supposed to evaluate and in a consistent way (Kluger et al., 2005). In order to ensure validity, the researcher presented the questionnaire to a senior lecturer in business research, a senior procurement manager in one of the firms, and the researcher’s study supervisor to look at them on their own for content validity. Their ideas on the content and construction were then incorporated to enhance the final version of the questionnaire.

Reliability is concerned with the degree to which the instrument produces similar outcomes on repeated testing. If one measures a construct by way of a specific instrument, equivalent outcomes ought to be achieved for similar objects regardless of when the instrument is dispensed, which particular account of it is used, and who is administering and rating. For the study, a pilot test using respondents from each of the three firms to be studied was done. Three supervisors, one from each firm, were selected purposively from production department, sales department, and purchasing department and this gave a pretest sample of 5% of the actual sample size. They were asked to answer the questionnaires and these particular respondents were not included in the main study. The purpose of the pilot study

was to detect likely defects in the measurement procedures, to pinpoint obscurely expressed items, and offer a prospect for the researcher to discern behaviours on the part of respondents that may point towards discomfiting content or phraseology of questions. The discrepancies and doubts that were noted were then put right.

3.7 Data Collection Procedure

Data relating to environmental requirements, environmental management systems and strategies, supplier relationship management, supplier selection criteria, and TQM was collected using a structured questionnaire. Questionnaires for this study mainly consisted of rating scales in order to ensure standardization of the data collected from respondents (Leedy and Ormrod, 2010). The questionnaires were mainly divided into sections according to the variables in order to facilitate the collection of data pertaining to environmental issues in supplier selection criteria and respondents were mostly required to rate on a Likert Scale the prevailing and critical supplier selection parameters that espouse environmental compliance in the selected manufacturing firms in Nairobi Kenya. Only the three ISO 14001 EMS certified manufacturing firms in Nairobi Kenya was included and the respondents selected from managerial and supervisory levels (management staff) down to the clerical level (junior staff), all from Purchasing, Production, and Sales/Marketing. The respondents were asked to focus on their suppliers in relation to environmental requirements, environmental management systems and strategies, supplier relationship management, and supplier selection criteria in an effort to achieve TQM.

3.8 Data Analysis and Presentation Methods

Data collected from the field was processed through data cleaning/editing to detect and correct errors and omissions, outliers or missing values, then categorized and coded into categories, themes and patterns for further analysis. The researcher used descriptive statistics

for further analysis. The qualitative data was analyzed for themes. Data from questionnaires was analyzed using Statistical Package for Social Sciences (SPSS- version19). After data analysis, summary of the key findings were interpreted, explained and presented using table, graphs like bar diagrams and pie charts, and percentages. Numerical and graphical procedures are considered to be ideal for clarity and easy of understanding (Kluger et al., 2005).

CHAPTER FOUR

FINDINGS AND INTERPRETATIONS

4.1 Introduction

This chapter gives the findings and interpretations of the study that sought to do an assessment on whether environmental requirements were being included in practice by manufacturing firms in Kenya in the area of supplier selection criteria in an effort to ensure total quality management. To achieve the purpose, four main objectives were identified and the first objective was to find out whether environmental requirements are being incorporated in the supplier selection criteria by manufacturing firms in Nairobi, Kenya. Further, to verify how the supplier selection criteria influence TQM in manufacturing firms in Kenya. Then to establish what environmental management systems are adopted by manufacturing firms in order to achieve TQM in Nairobi, Kenya. Lastly to find out how supplier relationship management affect TQM in manufacturing firms in Nairobi, Kenya .The chapter also discusses the findings of the study and compares them to preceding studies and works in order to understand whether manufacturing firms in Nairobi, Kenya practically incorporate environmental requirements in the supplier selection criteria as a pre-requisite to achieve TQM.

Data for the study was collected through the use of questionnaires which consisted of 1 open ended question and 14 closed questions .The questionnaires were administered to 60 respondents from which 56 responded and 4 did not respond. The data collected was cleaned, outliers removed, then entered and analysed using SPSS version 19.The results of the study were presented using tables, pie-charts and figures in order to provide a comprehensible representation of the research findings without any difficulties.

4.2 Response Rate

There were a total of 60 respondents selected purposively from Procurement, Operations, and Sales/Marketing departments of the selected three EMS 14001 certified manufacturing companies in Nairobi County. Out of the 60 respondents, 56 responded by correctly filling in the questionnaires and returning them to the researcher on time to facilitate the process of analysis. This gives a response rate of 93%.

TABLE 1
Response Rate

Category	Frequency	Percentage
Response	56	93
Non-response	4	7
Total	60	100

Source: Field Data, 2014

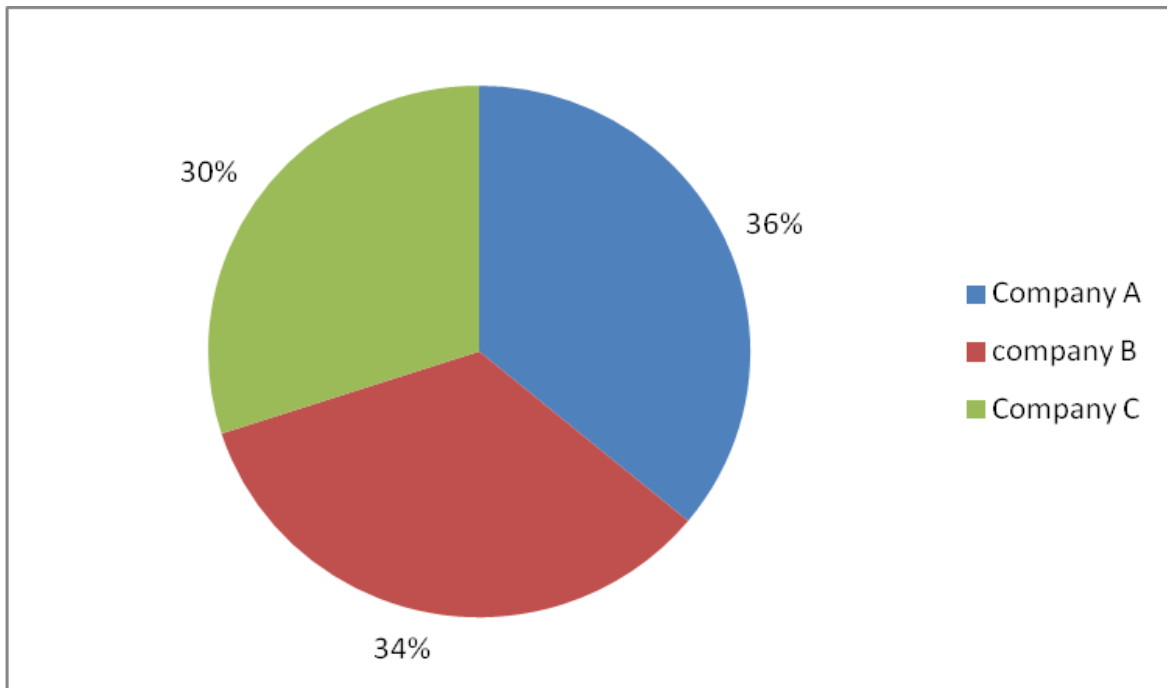
4.3 Profile of Respondents

4.3.1 Distribution of Respondents by Companies

Figure 2 below reveals that out of the 93% of the respondents who responded by filling and returning questionnaires for analysis, 36% were from company A, 34% from company B, and 30% from company C. Those that did not respond by filling and returning the questionnaires for data analysis were 7% of the total respondents. Therefore, company A had all its 20 respondents fill in and return the questionnaires, followed by company B with 19 and company C with 17. This showed that data analyzed was above average.

FIGURE 2

Distribution of Respondents by Companies



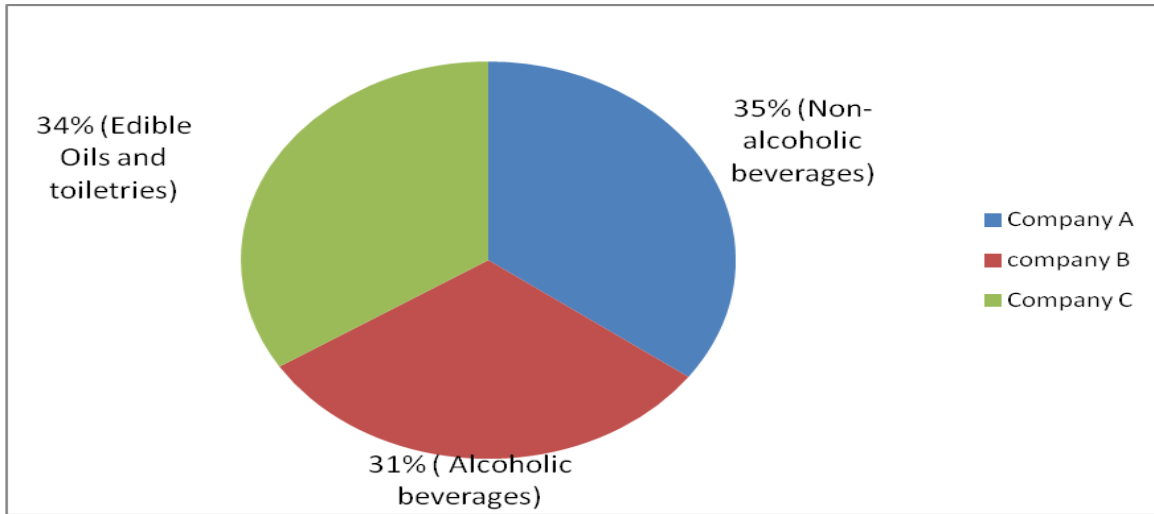
Source: Field Data, 2014

4.3.2 Type of Manufacturing Organization

As shown in figure 3 below, 35% of the respondents stated that their organization manufacture non-alcoholic beverages while 31% and 34% represented organizations that manufacture alcoholic beverages and edible oils and toiletries respectively. The findings resonate well with the selected organizations that were being surveyed. This question was important in order to confirm that the firms studied were involved in activities relevant to the objectives of the study.

FIGURE 3

Type of Manufacturing Organization



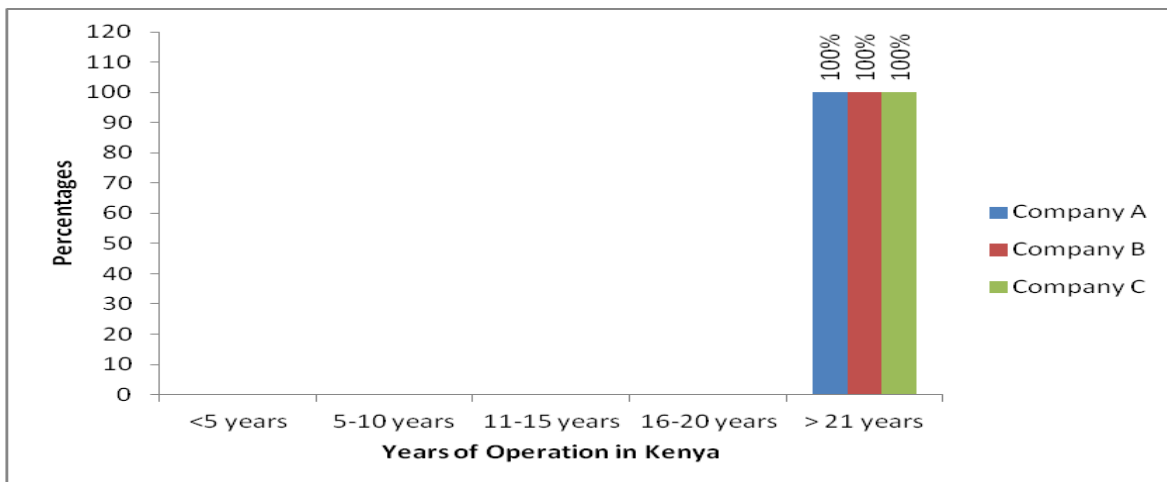
Source: Field Data, 2014

4.3.3 Duration Organizations have been Operating in Kenya

As indicated in figure 4, it was established that all the three manufacturing firms surveyed had been in operation in their respective industries for over 21 years. This showed that the study was undertaken in organizations with a fairly long manufacturing experience in Kenya.

FIGURE 4

Duration Organizations have been Operating in Kenya



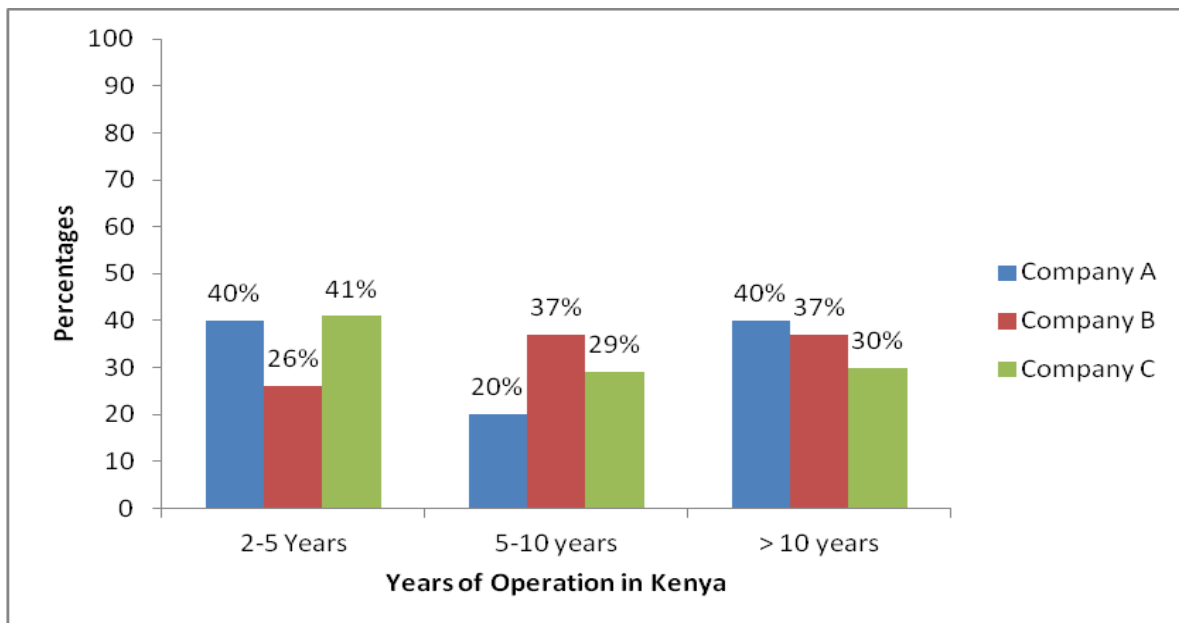
Source: Field Data, 2014

4.3.5 Duration Respondents have been in Employment in their Companies

As shown in figure 5, company C had the highest number of 41% of the respondents who had worked in their organization for 2-5 years and the least percentage (30%) of the respondents that had worked in the organization for more than 10 years. This is an indication that the respondents from the three organizations had varied long working experience. This experience was seen as an asset in terms of their knowledge in green issues in regard to their organisations when collecting data for this study.

FIGURE 5

Duration Respondents have been in Employment in their Companies



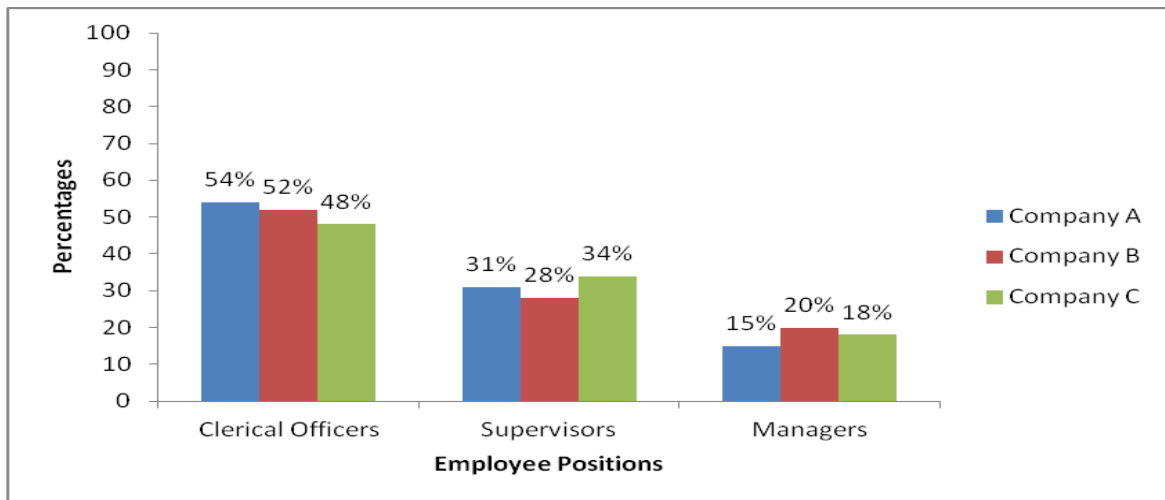
Source: Field Data, 2014

4.3.6 Employee Position in Organization

The study was out to establish the position of the respondent as it was targeting only employees who were thought to be knowledgeable on the area of study and would give answers that would satisfy the objectives of the study.

FIGURE 6

Employee Position in Organization



Source: Field Data, 2014

As indicated in figure 6 above, the highest number of respondents were clerical officers and company A had 54% while company C recorded the highest number of respondents who were supervisors at 34% of the respondents and managers were 15%, 20%, and 18% from company A,B, and C respectively. This showed that data collected and analyzed incorporated all levels of the departments studied in the selected manufacturing firms.

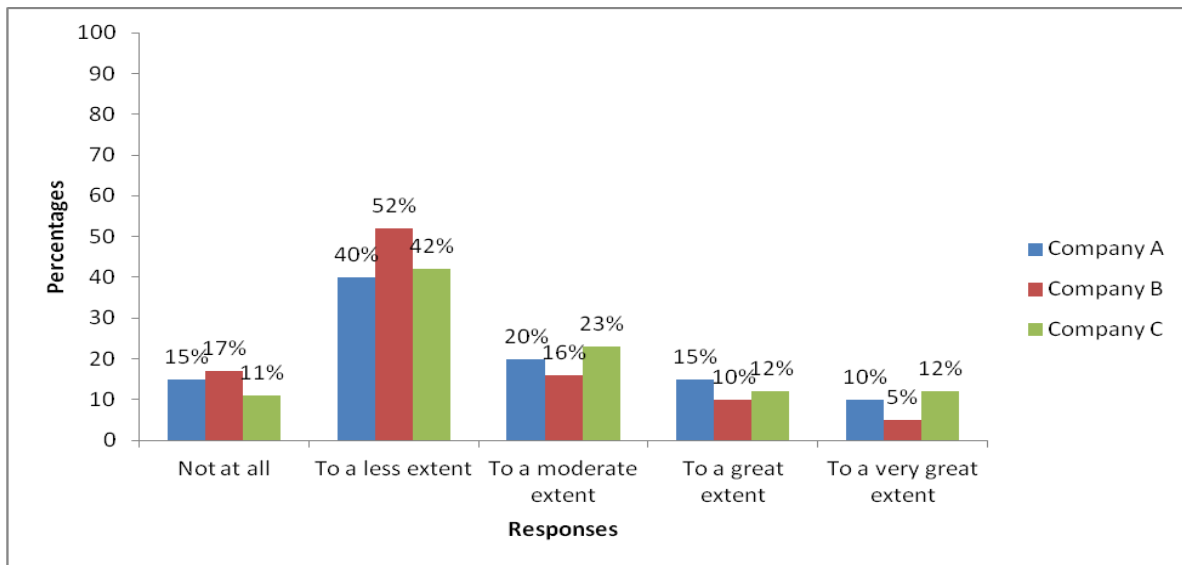
4.4 Incorporation of Environmental Requirements in the Supplier Selection Criteria

4.4.1 Capacity to Reduce Energy Consumption and Prevent Energy Waste

The respondents were asked to indicate whether their manufacturing firms focus on their suppliers' capacity to reduce energy consumption and prevent energy waste when selecting sources of materials. This question was thought crucial the responses would give an indication of how the studied firms viewed their suppliers' capacity in to reduce energy waste and use in an effort to reduce resources depletion.

FIGURE 7

Supplier's Capacity to Reduce Energy Consumption and Prevent Energy Waste



Source: Field Data, 2014

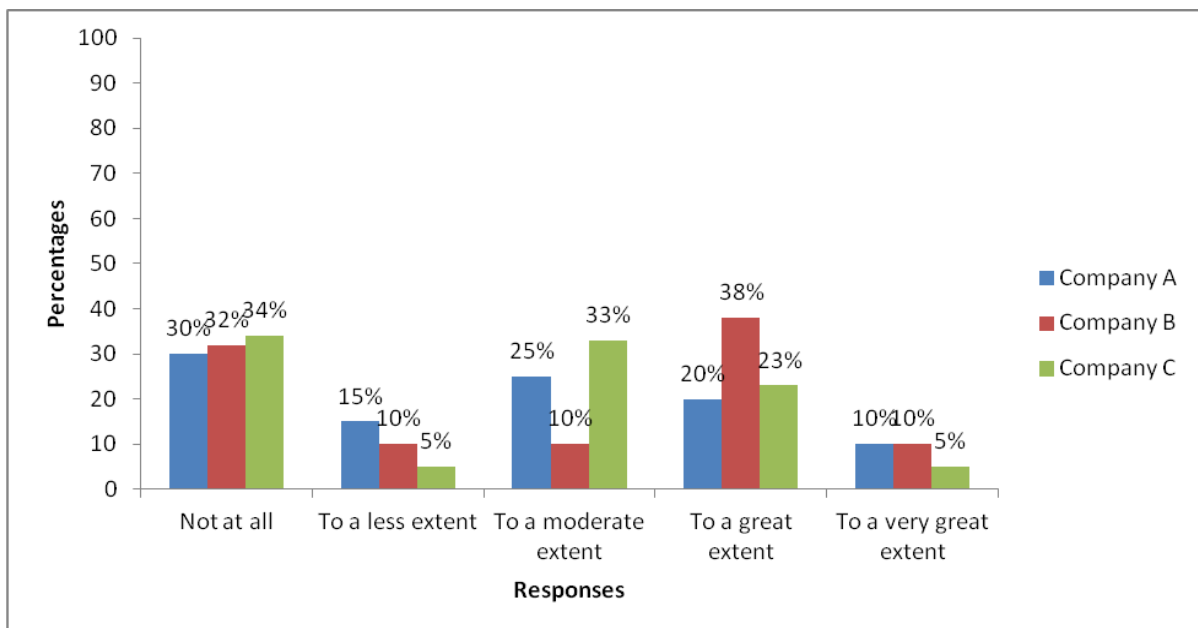
As evident in figure 7, a good number of the respondents representing 40% from company A, while 52% of the respondents from company B and 42% from company C indicated the extent to which their organizations focus on capacity to reduce energy consumption and prevent energy waste as requirement when selecting suppliers as less extent. In general, over 50% of the respondents indicated either to a less extent or not at all. While inclusion of the capacity to reduce energy consumption and prevent energy waste was part of supplier requirements and followed the best practices required of by modern organizations to lessen carbon foot print, it is still evident that more appropriate procedures had not been put in place by the manufacturing companies studied to consistently adopt this as an environmental requirement when selecting suppliers.

4.4.2 Supplier's Policy on the Use of Renewable Energy

The study sought to find out the extent to which the manufacturing organizations focus on their supplier's policy on the use of renewable energy such as wind and solar among others as a requirement when selecting suppliers. It is evident as shown in figure 8 that 30%

of the respondents from company A said it was not being implemented at all while 32 % from company B and 34 % from company C said it was not being done. While inclusion of policy on the use of renewable energy was part of supplier requirement and was in line with the best practices necessary in contemporary manufacturing firms in order to reduce carbon emissions and their impact, the above responses indicate that performance in terms of implementation is still wanting.

FIGURE 8
Supplier’s Policy on the Use of Renewable Energy



Source: Field Data, 2014

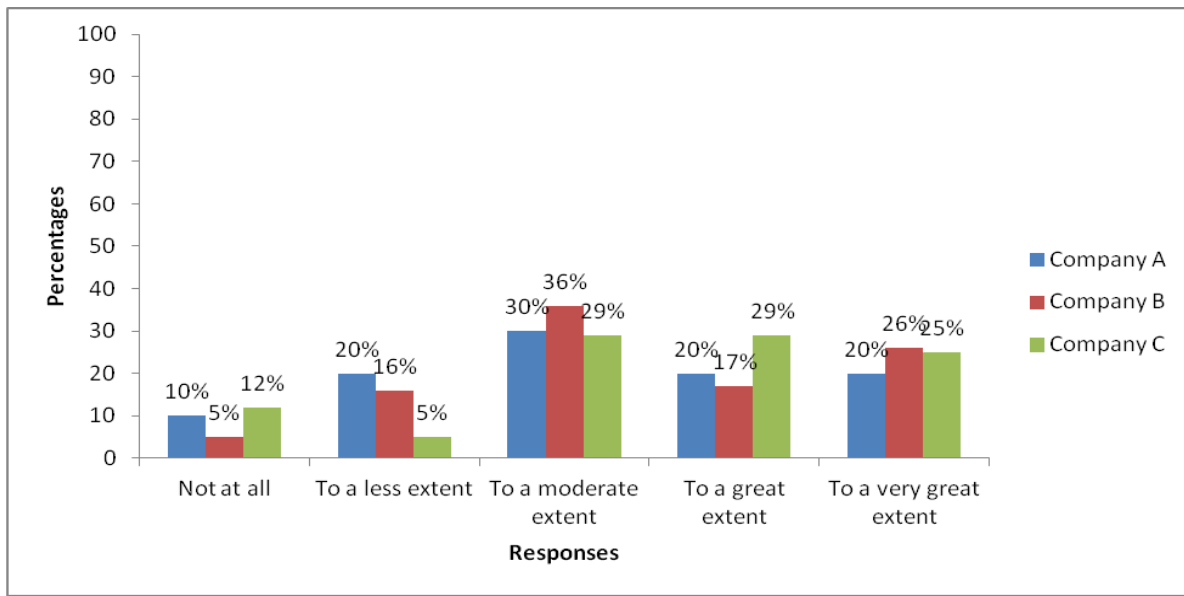
4.4.3 Supplier’s Policy on Reduction, Reuse and Recycling of Solid Industrial Waste

The respondents were asked to rate the extent to which their firms consider suppliers’ policy on reduction, reuse and recycling of solid industrial waste when evaluating suppliers. As illustrated in figure 9 responses in affirmative (to a great extent and a very great extent) were 40%, 43%, and 54% of the respondents in company A, B and C. respectively. In company C, 29 % of the respondents replied by saying that their firm considered the policy to a moderate extent. While inclusion of policy on reduction, reuse and recycling of solid

industrial waste was part of supplier requirement and followed the theoretical standard necessary in modern-day organizations to reduce carbon emissions, the above findings indicate that it is the implementation phase that was still inadequate.

FIGURE 9

Supplier’s Policy on Reduction, Reuse and Recycling of Solid Industrial Waste



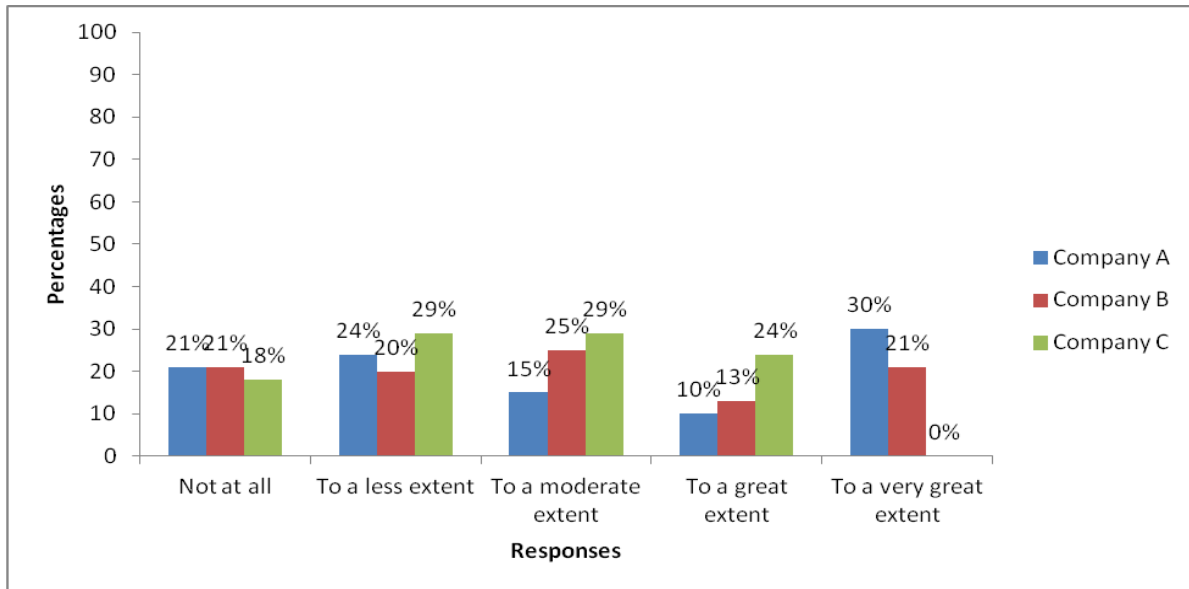
Source: Field Data, 2014

4.4.4 Supplier’s Capacity to Manage Reverse Flows of Rejected Goods

The respondents were asked to indicate to what to what extent the manufacturing firms took into consideration their supplier’s capacity to manage reverse flows as an environmental practice. As shown in figure 10 below, the respondents rated the extent to which their organizations focus on capacity to manage reverse flows of rejected goods when selecting a supplier as not being implemented at all (21% company A, 21% company B and 18% company C), less extent (24% company A, 20% company B, and 29% company C), and moderate extent (15% company A, 25% company B, and 29% company C), respectively. According to the responses company A and B recorded 30% and 21% of the respondents who agreed that it was being done in their firms while in company C none indicated that it was being done. Capacity to manage reverse flows of rejected goods as required of contemporary

organizations in an effort to protect the environment can be said to be below standard on implementation as some respondents' responses indicated.

FIGURE 10
Supplier's Capacity to Manage Reverse Flows of Rejected Goods



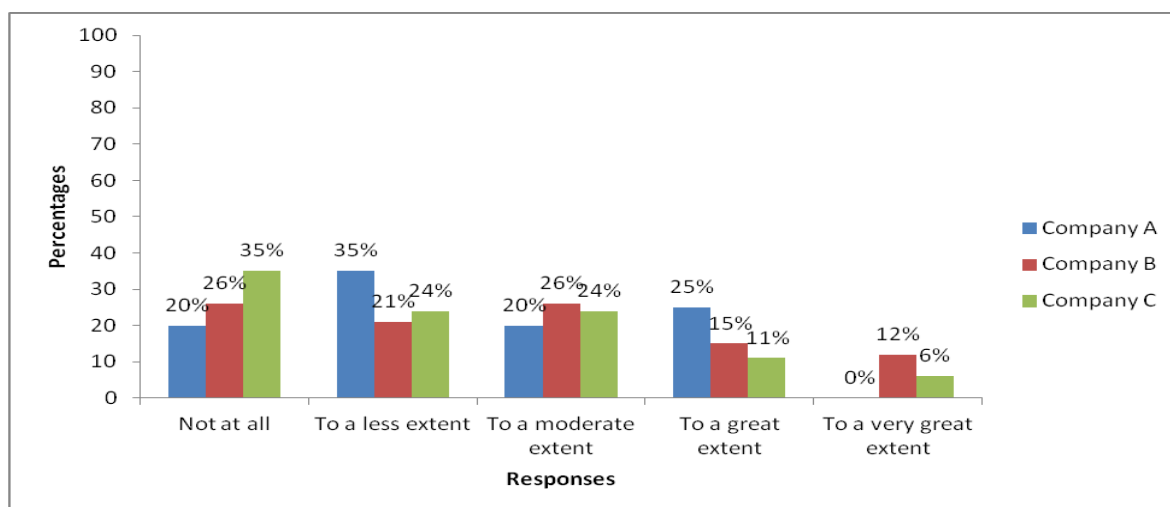
Source: Field Data, 2014

4.4.5 Supplier's Policy on the Use of Environmentally Friendly Materials

Further, the respondents were asked to rate the extent to which their organizations focus on their supplier's policy on the use of environmentally friendly materials like biodegradable materials, for example, paper when selecting a supplier and as evident from the figure most of the respondents indicated that it was either not done at all, to a less extent, or to a moderate extent as shown in figure 11 below.

FIGURE 11

Supplier's Policy on the Use of Environmentally Friendly Materials



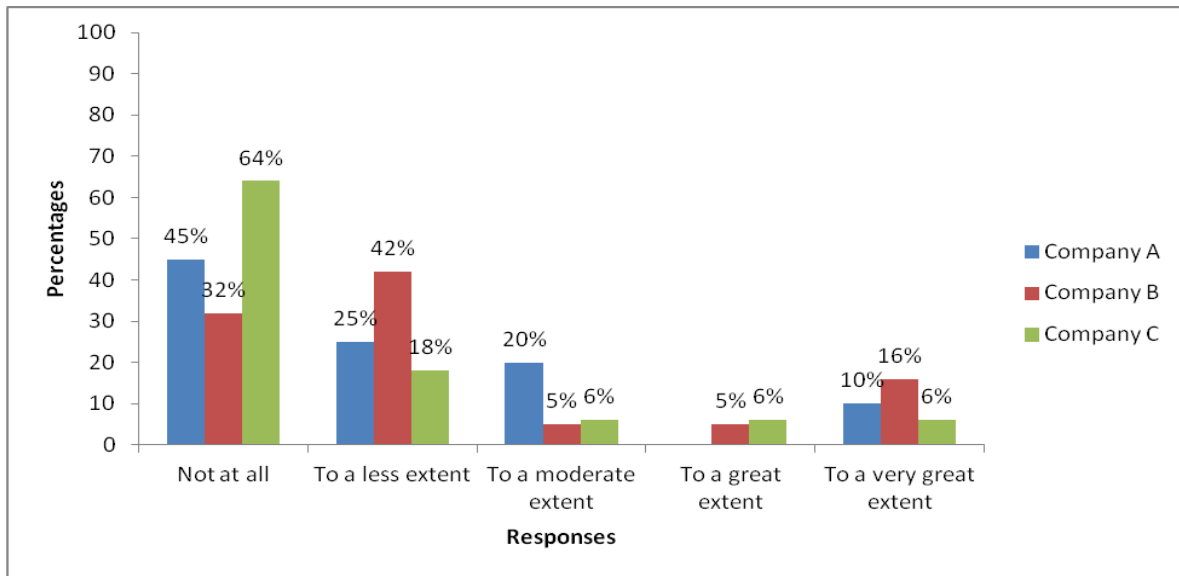
Source: Field Data, 2014

A paltry 25% of the respondents from company A indicated a supplier's policy on environmentally friendly materials was being considered to a great extent while company B and C recorded 15% and 11% on the level respectively. While presence of policy on the use of environmentally friendly materials was an indication that the policy was part of supplier selection requirement as required of modern manufacturing organizations in order to reduce negative environmental impacts, actual implementation was still a challenge and inconsistent across employees of the firms.

4.4.6 Supplier's Capacity to Manage Waste Disposal

The respondents were asked to rate the extent to which their firms took into consideration their supplier's capacity to manage waste disposal when selecting sources of their goods. This question was important as the supplier's capacity to manage waste disposal has a direct effect on costs related to waste throughout the supply chain.

FIGURE 12
Supplier's Capacity to Manage Waste Disposal



Source: Field Data, 2014

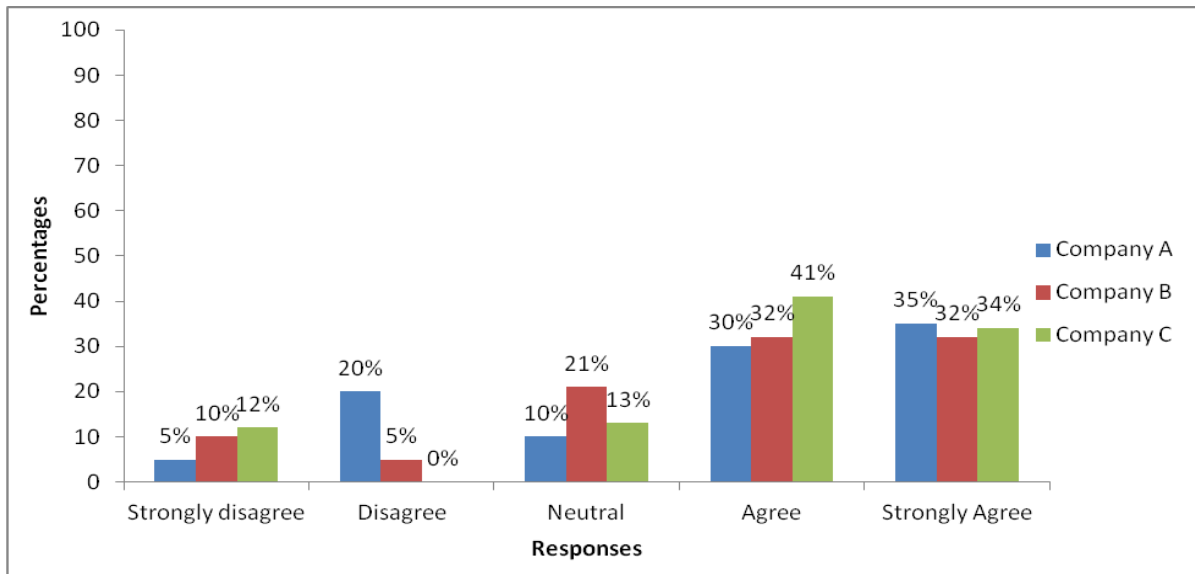
Figure 12 above illustrates that 45%, 32%, and 64% of the respondents from company A, B, and C respectively rated the extent to which their organizations focus on capacity to manage waste disposal when selecting a supplier as not being implemented at all. The above responses and findings indicate that adequate efforts were not in place to incorporate supplier focus on capacity to manage waste disposal as part of supplier selection requirement; there was a major gap on implementation.

4.5 Effect of Including Environmental Issues in the Supplier Selection Criteria on TQM

4.5.1 Enhanced Customer Satisfaction

The researcher sought to know the benefits that the manufacturing firms can get by incorporating environmental issues in the supplier selection criteria. This question was important as it was aimed at bringing to fore the possible dividends that could be realized from investing in the greening process in order for other firms in Kenya to adopt it.

FIGURE 13
Enhanced Customer Satisfaction



Source: Field Data, 2014

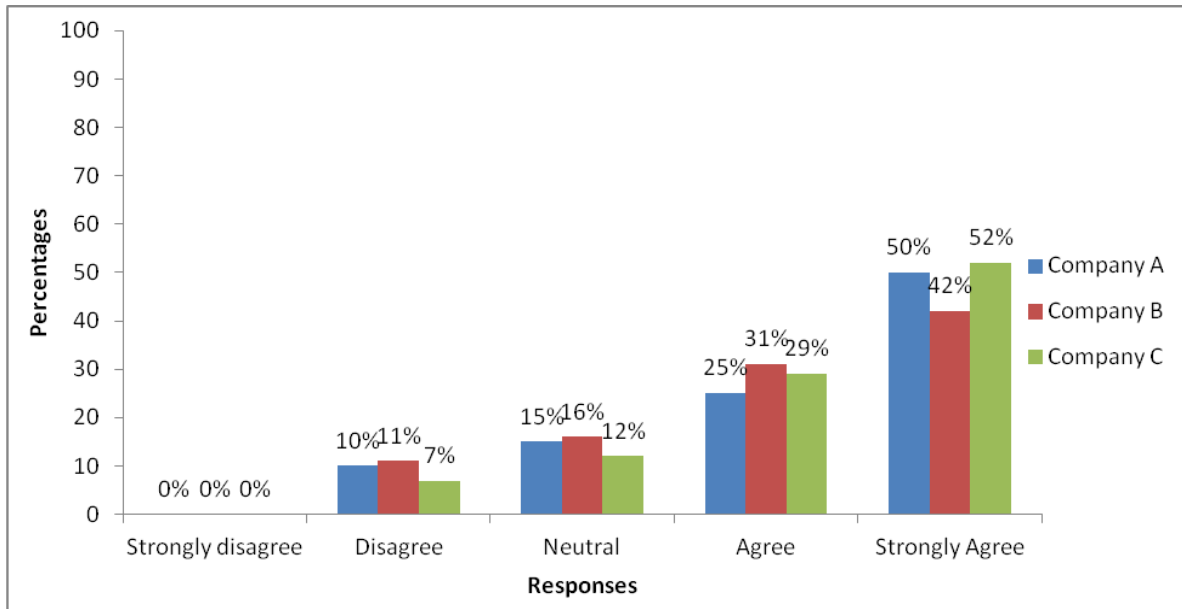
As evident in figure 13 above, 30%, 32%, and 41% of the respondents from company A, B, and C respectively were of the opinion that the inclusion of environmental requirements in supplier selection criteria has positive impact on customer satisfaction while 35%, 32%, and 34% of the respondents from company A, B, and C agree and strongly agreed respectively. The findings give the desired motivation to the idea of taking into account environmental concerns in supplier selection criteria as it helps firms to realize TQM in order to achieve customer satisfaction. This finding indicates that customer satisfaction could highly be achieved and improved when environmental requirements become part of supplier selection criteria.

4.5.2 Market Share Improves when Environmental Issues are Incorporated

As shown in figure 14, none of the respondents from the firms studied strongly disagreed with the idea that the inclusion of environmental requirements in the supplier selection had positive impact on market share, while 50%, 42%, and 52% of the respondents from company A, B, and C strongly agreed respectively. The findings point to a progressive relationship between inclusion of environmental requirements in supplier selection criteria

and market share performance. These responses and findings indicate that environmental requirements in supplier selection criteria can lead to improved market share.

FIGURE 14
Market Share Improves with Adoption of Green Issues



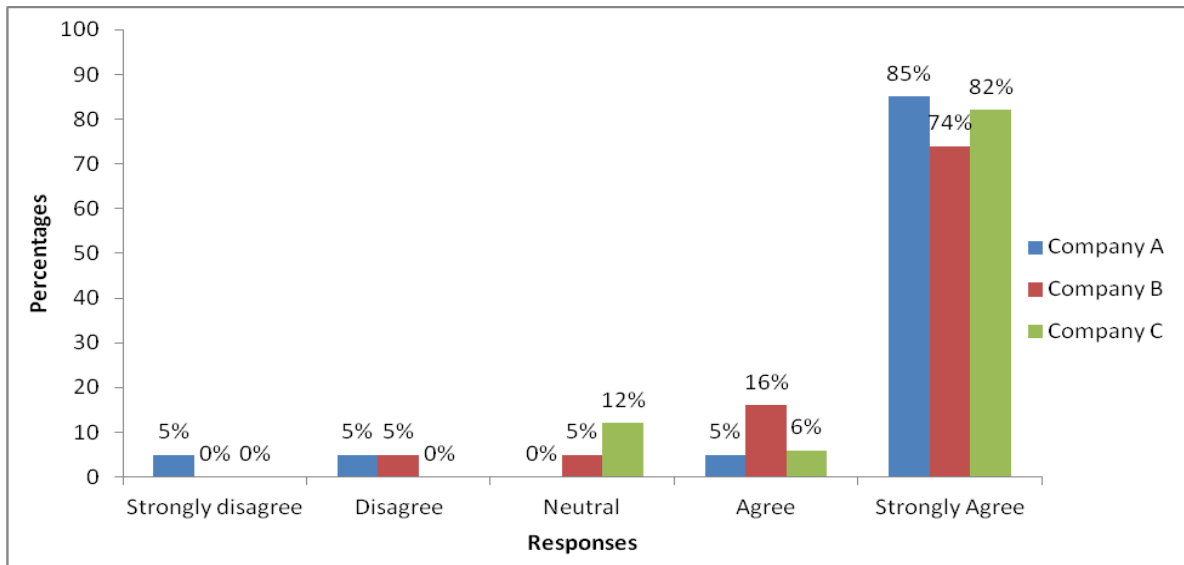
Source: Field Data, 2014

4.5.3 Profitability and Returns on Investment as a Result of Adopting Green Issues

As denoted in figure 15, 85%, 74%, and 82% of the respondents from company A, B, and C respectively strongly agreed that the inclusion of environmental requirements in supplier selection criteria can lead to higher profitability and return on investment. According to the responses the study indicated a perceived positive correlation between inclusion of environmental requirements in supplier selection criteria and profitability and return on investment. The answers and findings reveal that compliance to environmental requirements in supplier selection can improve a firm’s profitability and investors’

FIGURE 15

Profitability and Returns on Investment Improves if Green Issues are Incorporated



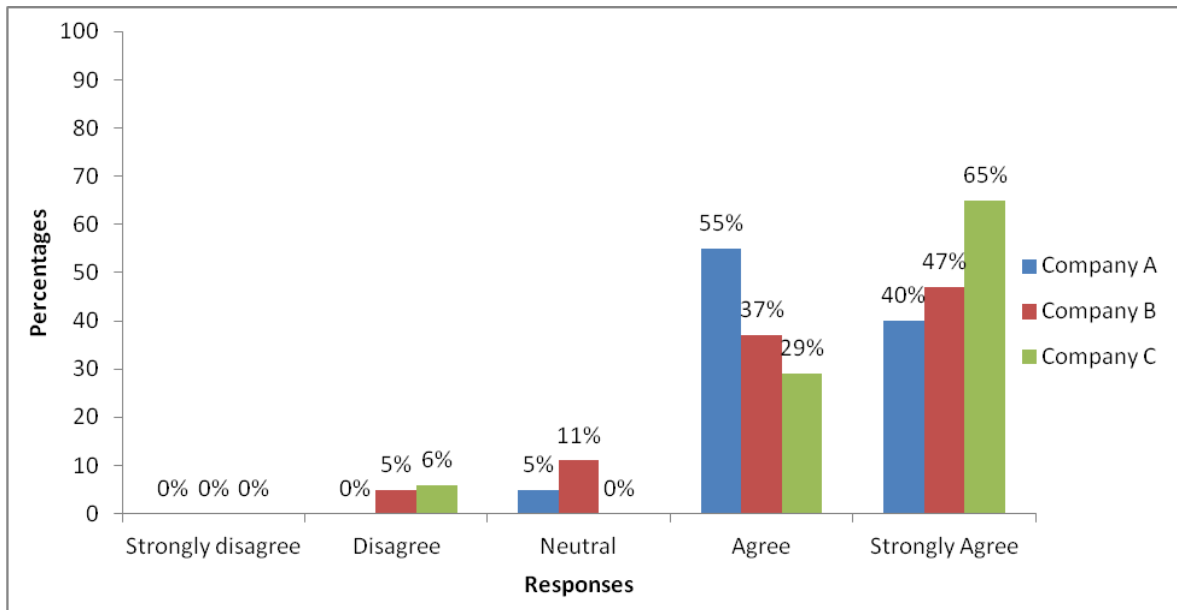
Source: Field Data, 2014

4.5.4 Adoption of Environmental Issues Leads to Reduced Waste

The study sought to find out whether the respondents felt that the adoption of green issues in the supplier selection criteria can lead to reduced waste into the supply chain of the manufacturing firms. As shown in figure 16 none of the respondents strongly disagreed with the idea that inclusion of environmental requirements in supplier selection criteria can lead to waste reduction, 55% of the respondents from company A agreed while 65% of the respondents from company C strongly agreed. The findings indicate that the addition of environmental requirements in supplier selection criteria can lead to reduced waste. These responses and findings point out that compliance to environmental requirements in the supplier selection criteria can reduce waste and costs related to it.

FIGURE 16

Adoption of Environmental Issues Leads to Reduced Waste



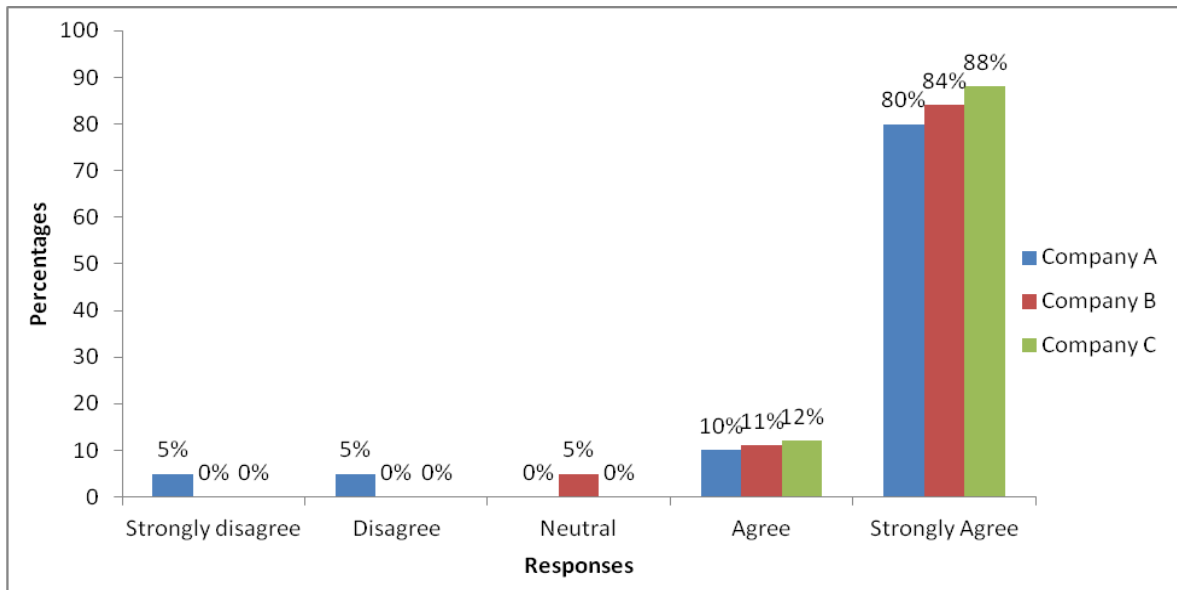
Source: Field Data, 2014

4.5.5 Quality of Goods Improves when Green Issues are adopted in Supplier Selection

It emerged that 80% of the respondents from company A, 84% from company B, and 88% from company C strongly agreed that the inclusion of environmental requirements in the supplier selection criteria positively affects the quality of goods produced by the manufacturing firms studied. This is clearly illustrated in figure 17 below. The outcomes, therefore, can be said to indicate with a certain degree of certainty that conformity to environmental requirements in supplier selection advances quality of goods.

FIGURE 17

Quality of Goods Improves when Green Issues are Adopted in Supplier Selection



Source: Field Data, 2014

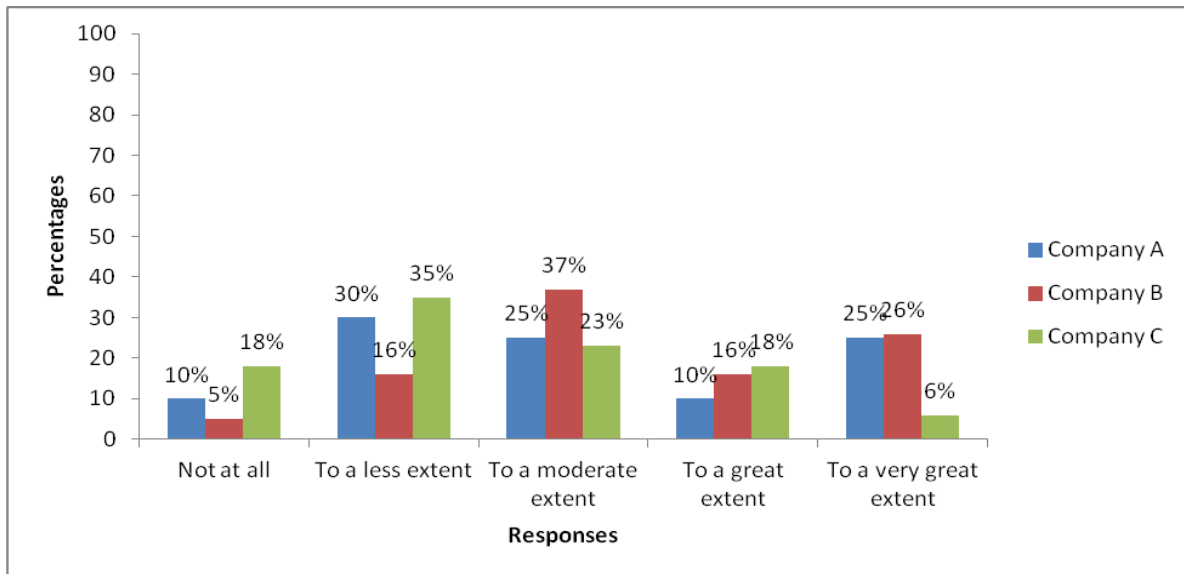
4.6 Environmental Management Systems (EMS) Adopted by the Manufacturing Firms

4.6.1 EMS is endorsed by Top Management in Manufacturing Firms

The study sought to find out whether EMS is endorsed and supported by top management. This question was critical as it was aimed at knowing what kind of EMS was adopted by the firms studied: a fragmented type of system or an integrated system that was well coordinated throughout the firm in order to ensure total quality management.

FIGURE 18

EMS is endorsed by Top Management in Manufacturing Firms



Source: Field Data, 2014

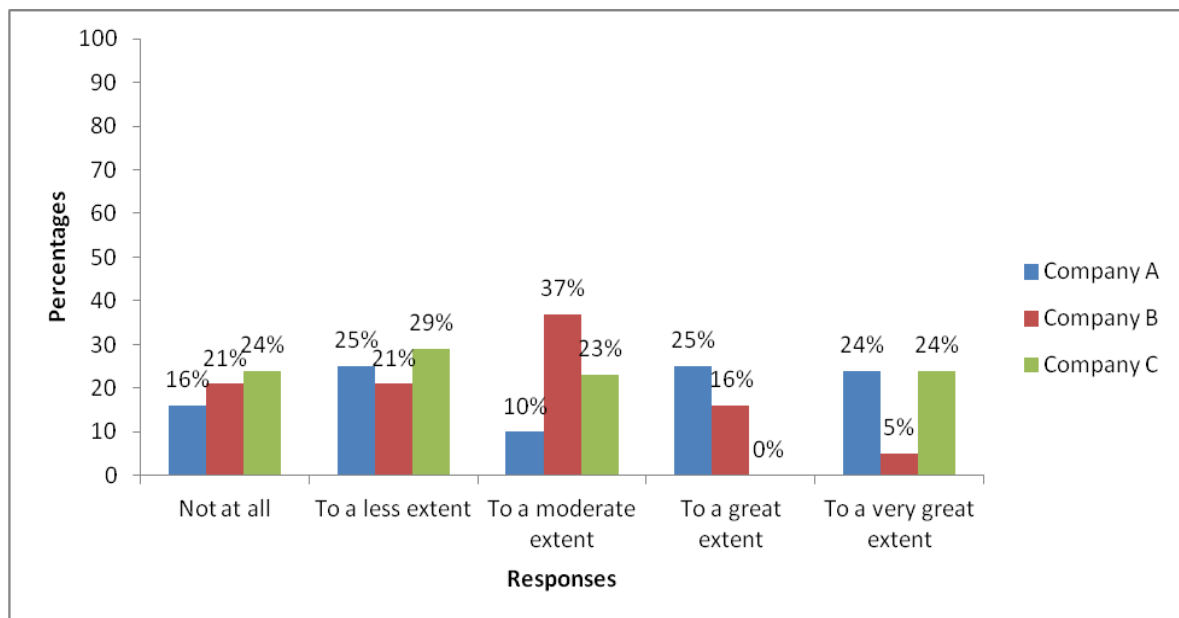
Figure 18 above shows that 18% of the respondents from company C denoted that their top management does not endorse the environmental management system, 35% felt that endorsement is done to a less extent, 23% reported it was done to a moderate extent, while 18% and 6% of the respondents indicated that EMS in the organization is endorsed by top management to a great extent, and very great extent respectively. The above outcomes indicate that there was inadequate top management support in the implementation of EMS in the organisations surveyed and this is contrary to the theoretical principles that require contemporary organizations to embrace sustainable environmental management in all levels of any organization in order to guarantee social, economic and environmental prosperity.

4.6.2 EMS Forms Part of the Overall Corporate Strategy

As shown in figure 19 24 % of the respondents from company A agreed to a very great extent that EMS forms part of the overall corporate strategy of their firms, 16% of the respondents from company B were to a great extent in agreement, while 24% of the respondents from company C were of the opinion that it was part of the overall corporate strategy in their organization. The above findings indicate that the selected manufacturing companies had not fully incorporated EMS as part of their overall corporate strategy contrary to the theoretical principles that requires contemporary organizations to embrace sustainable procurement in all organization levels of the organization in order to achieve environmental sustainability.

FIGURE 19

EMS Forms Part of the Overall Corporate Strategy



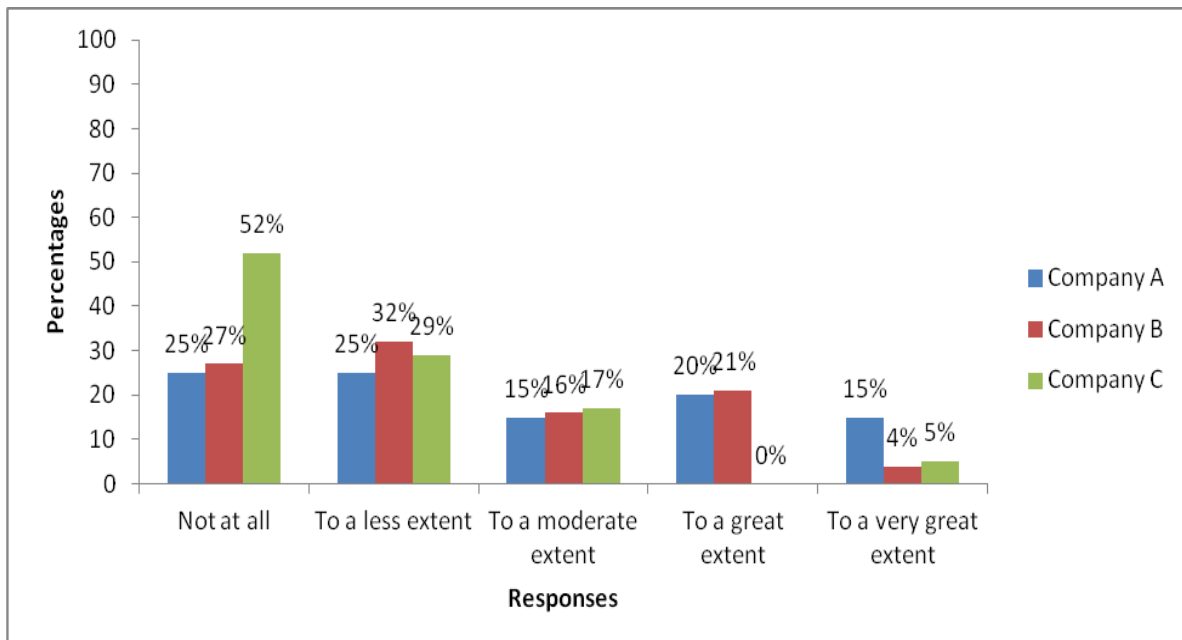
Source: Field Data, 2014

4.6.3 EMS Emphasizes Training on Environment

The study sought to find out whether EMS emphasized training of all the company employees on environmental matters in order to achieve TQM. According to figure 20 below, 52%, of the respondents from company C rated the extent of emphasis of EMS on green issues training as not at all as well as 27% of company respondents from company B, and 25% from company A. Company A had 25% of its respondents rating it as to a less extent, company B 32%, while 29% of the respondents from company C also rated it as less extent. The above findings indicate that the level of integrating and empowering all employees on EMS through training was below standard. The responses also indicate that though training was being carried out it was not done to all employees of the organization as TQM requires.

FIGURE 20

EMS Emphasizes Training on Environment



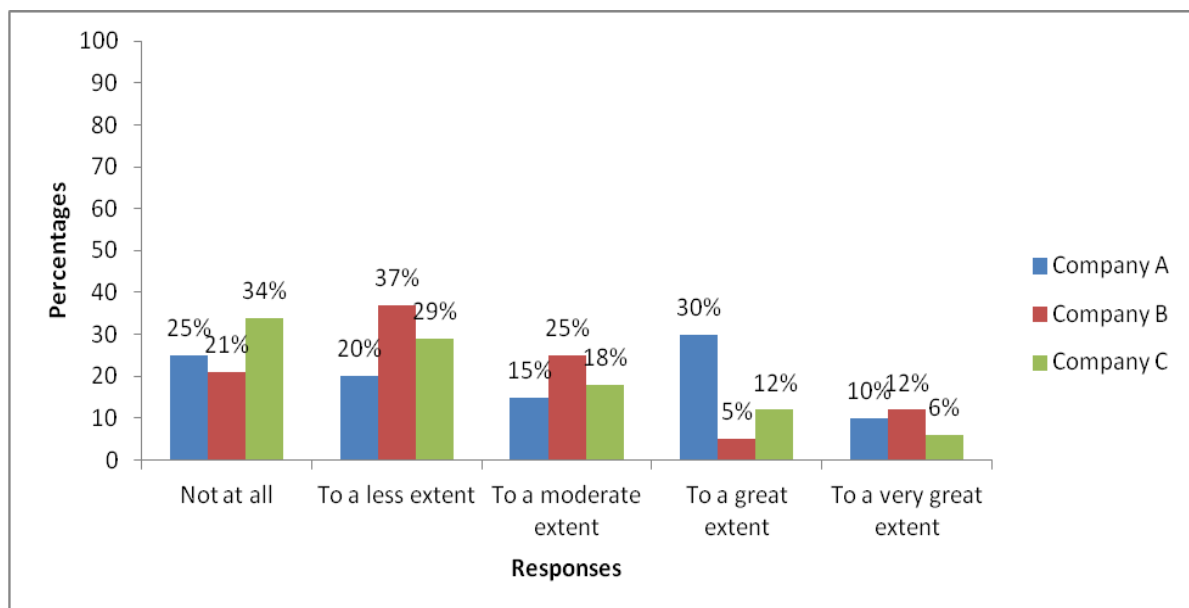
Source: Field Data, 2014

4.6.4 EMS is well communicated to Suppliers to Aid Implementation

As shown in to figure 21 below, most of the respondents rated the extent to which EMS is well communicated to suppliers to aid implementation as not at all, less extent, and to a moderate extent, great extent. The above findings indicate that the level of communicating EMS policies to external stakeholders was low, with respondents from company B indicating 5% to a great extent and 12% to a very great extent, and this adversely affected the operationalization of EMS and this was contrary to theoretical principles that require modern organizations to embrace green supply chain management across organisations in order to achieve TQM.

FIGURE 21

EMS is Well Communicated to Suppliers to Aid Implementation



Source: Field Data, 2014

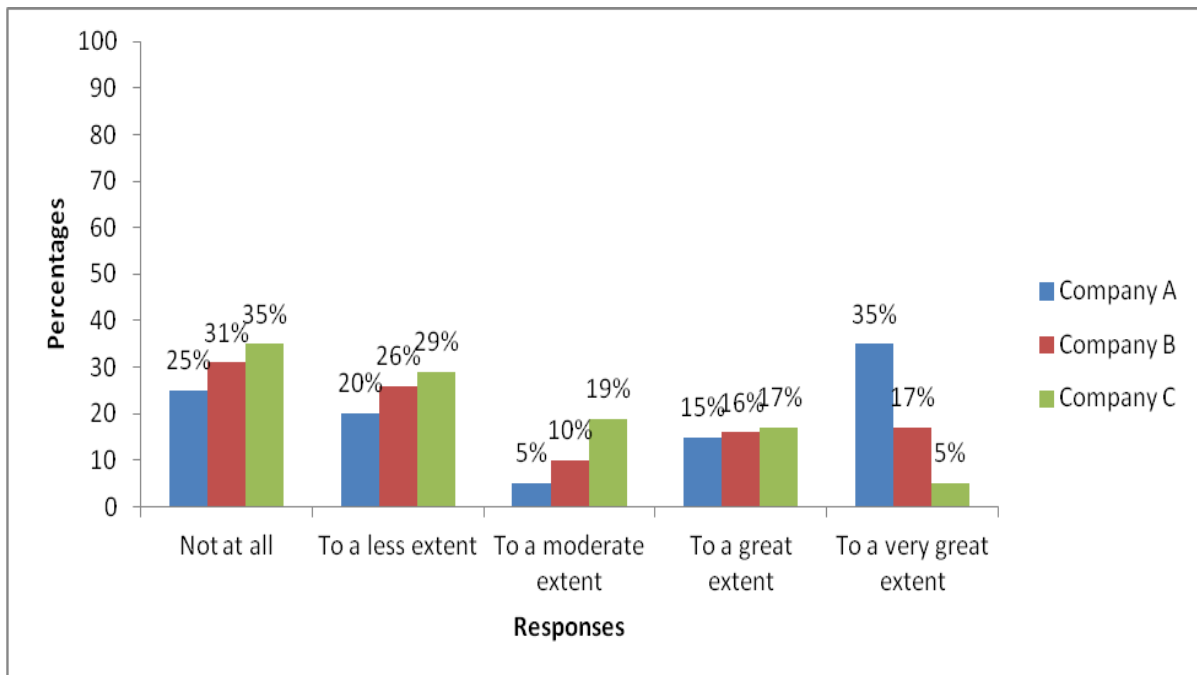
4.6.5 There is Continuous Environmental Audit and Improvement

The study sought to find out whether in the manufacturing firms studied, the practice of continuous environmental audit and improvement was being carried out. This information

was necessary in order for the researcher to understand the kind of EMS that was in the organizations studied in their quest to achieve TQM.

FIGURE 22

Presence of Continuous Environmental Audit and Improvement



Source: Field Data, 2014

Figure 22 above illustrates that only respondents from company A indicated an above average rating (15% to a great extent, 35% to a very great extent, and 5% to a moderate extent) of the extent to which there is continuous environmental audit and improvement in their company. The above findings are indicative of a situation where little is being done, particularly in company B and C, to continuously audit environmental issues for organizational improvement.

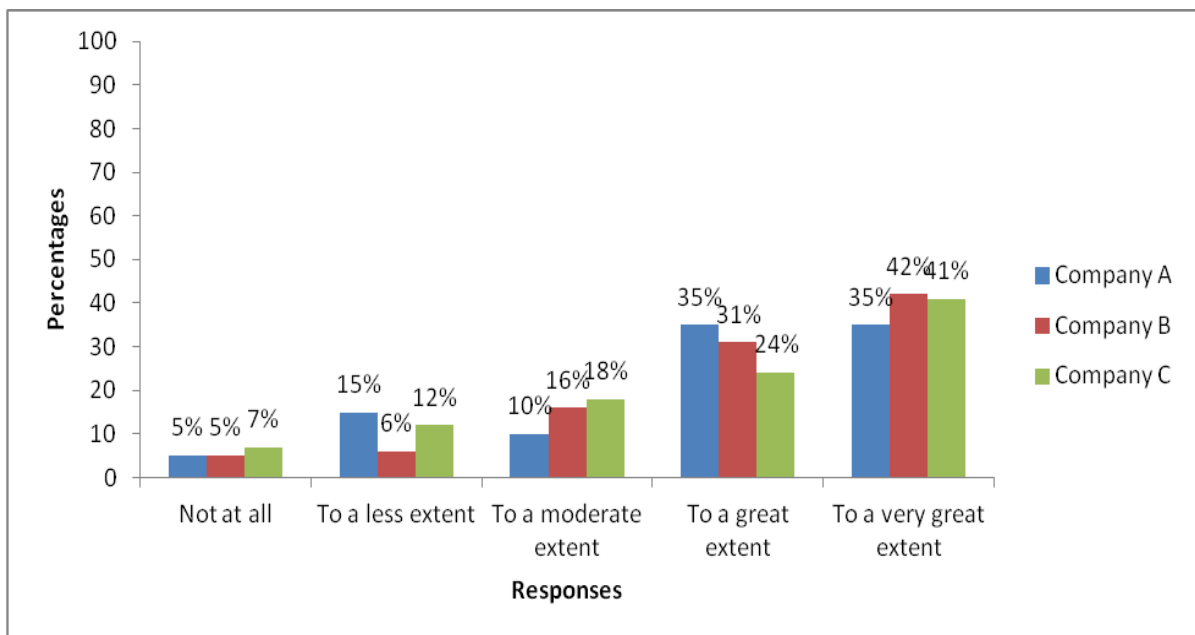
4.6.6 EMS Addresses Disposal in an Eco-friendly Way

The respondents were asked to rate the extent to which their EMS addresses disposal of waste in an eco-friendly manner. It is evident in figure 23 that most of the respondents rated the extent to which EMS addresses disposal in an eco- friendly way as not at all with

company C recording the highest (7%), while 41% of the respondents from the company indicated it was being done to a very great degree. The findings indicate that adoption of EMS in the disposal of items in an environmentally friendly way in the manufacturing companies studied was in line with the best principles that require contemporary organizations to embrace sustainable procurement in all levels of the organization though there is still some gaps that need to be addressed in order for the firms to operate at the same level with world class manufacturing firms.

FIGURE 23

EMS Addresses Disposal in an Eco- friendly Way



Source: Field Data, 2014

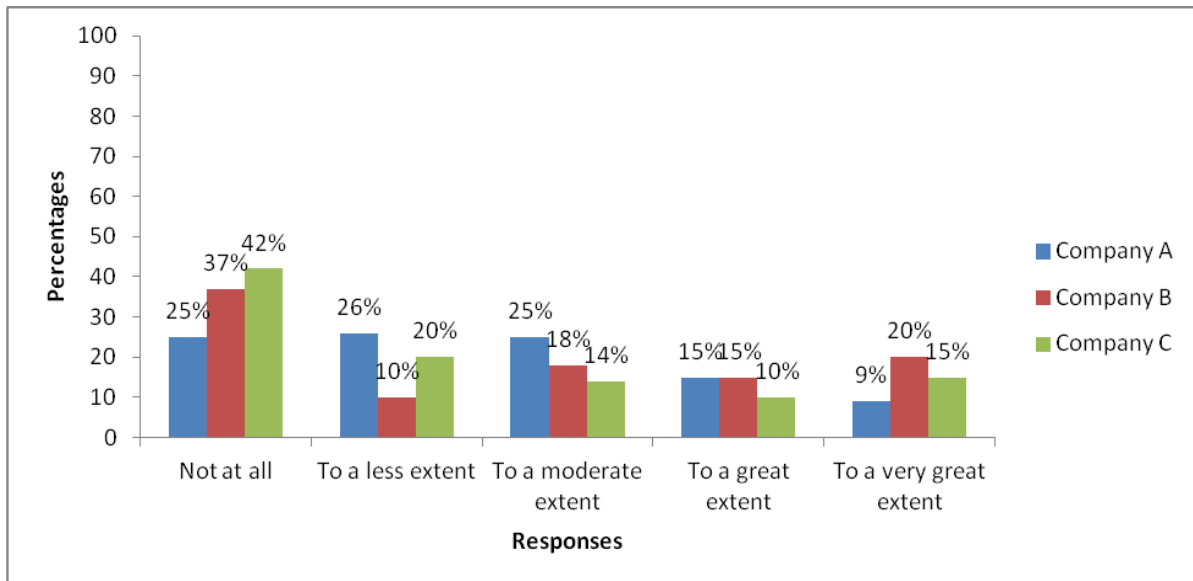
4.7 How Firms Improve Supplier Relation Management (SRM) in order Achieve TQM

4.7.1 Supplier Involvements in New Products and Processes Design to Reduce Waste

The study investigated the extent to which the manufacturing firms involve suppliers in new products and process design in order to reduce waste in the supply chain. This question was critical as it was felt that involving suppliers in new products would lead to in-built features aimed at reducing waste along the supply chain.

FIGURE 24

Supplier Involvements in New Products and Processes Design to Reduce Waste



Source: Field Data, 2014

Figure 24 presents the findings where 25%, 37%, and 42%, of the respondents from company A, B, and C respectively rated the extent of supplier involvement in new products and processes design in order to reduce waste as not at all, while 8%, 20%, and 15% of the respondents from company A, B, and C respectively rated it as to a very great degree. While the practice of supplier involvement in new products and processes design in order to reduce waste exhibit that manufacturing companies have generally complied with the commonly best practices that modern day manufacturing firms ought to pursue in order to improve efficiency and effectiveness in the procurement process in order to achieve TQM, low level of commitment on implementation is still a limitation in the firms studied as can be seen above.

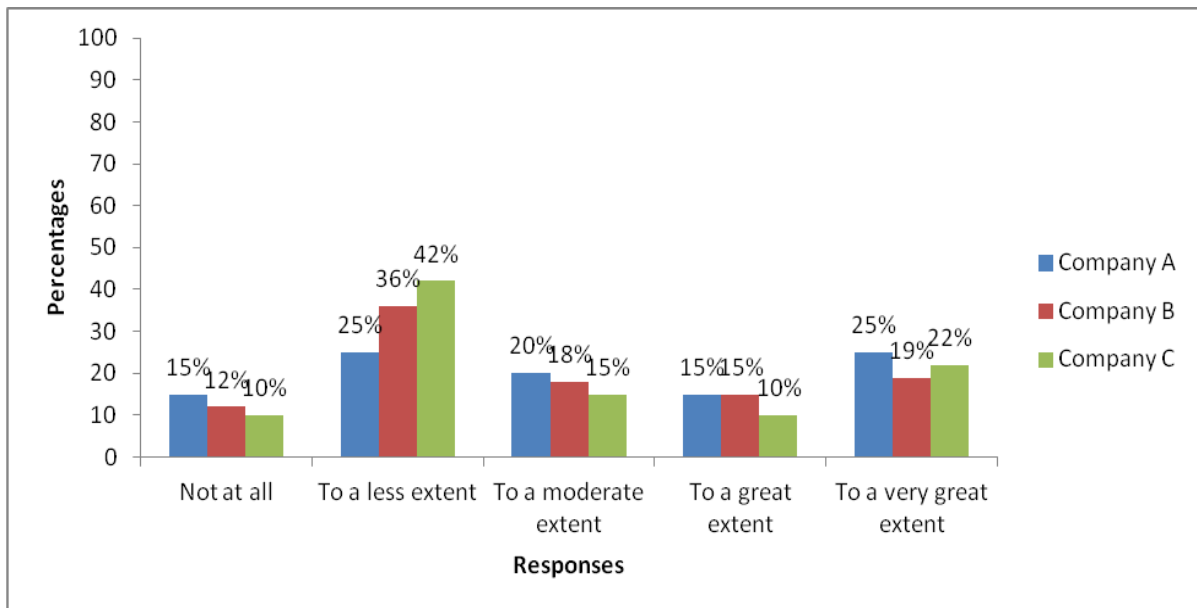
4.7.2 Supplier Involvements in Re-designing of Products and Processes to Reduce Waste

The respondents were asked to rate the extent to which their firms involve suppliers in re-designing products and processes. This question was thought to be important as manufacturing firms do not necessarily need to develop new products where some

modification to the existing products and processes can enable them achieve the objective of waste reduction in order to achieve TQM.

FIGURE 25

Supplier Involvements in Re-designing of Products and Processes



Source: Field Data, 2014

As shown in figure 25 above, 25%, 36%, and 42% of the respondents from company A,B, and C respectively rated the extent of supplier involvement in re-designing of products and processes in order to reduce waste as less extent, while 25%,19%, and 22% respectively rate it as to a very great extent. While the practice of supplier involvement in re-designing of products and processes in order to reduce waste has been widely fronted as very important for buying firms in order to reduce waste throughout the supply chain, low level of involvement as the above findings indicate point to the contrary.

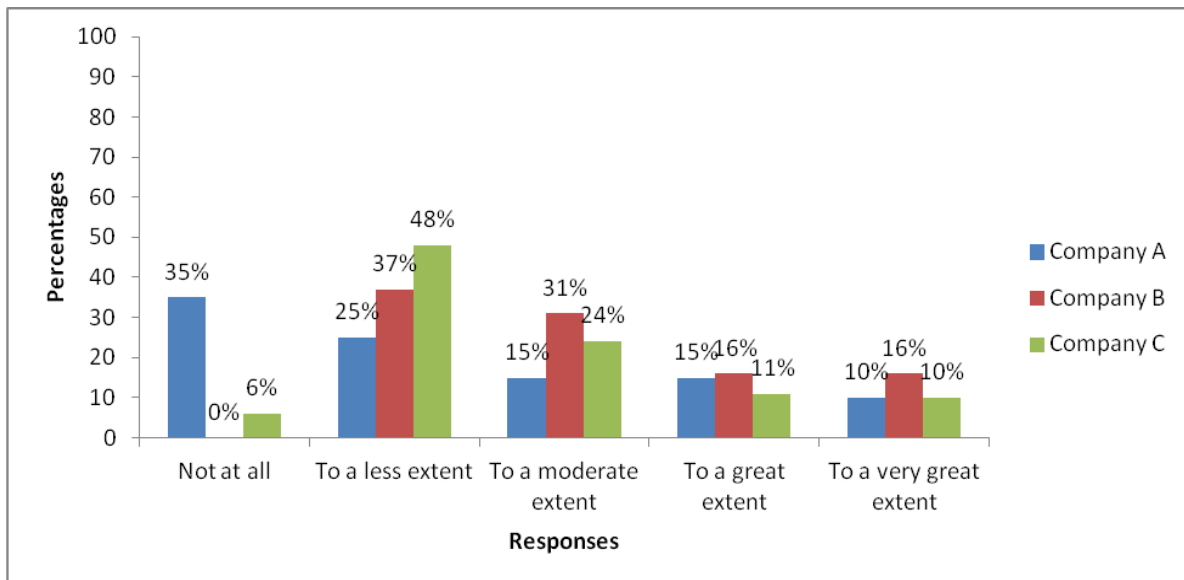
4.7.3 Exchange of Information between the Manufacturing Firms and its Suppliers

The study sought to find out to what extent the organizations facilitate exchange of information with their suppliers in order to improve buyer-supplier relationship as an avenue

to achieve to help inculcate best practices necessary in order to ensure environmental issues are part of the supplier selection process.

FIGURE 26

Exchange of Information of between the firms and its Suppliers



Source: Field Data, 2014

Figure 26 above shows that, 25%, 37%, and 48% of the respondents from company A, B and C respectively rated the extent of exchange of information between the manufacturing firms and their suppliers as to a less extent, while 15%, 31%, and 24% of the respondents from company A, B, and C rated it to a moderate extent. The above responses and findings indicate that while there were initiatives to exchange information between the manufacturing firm and its suppliers, there are indications that there could be some communication bottlenecks that adversely affect the exchange of information.

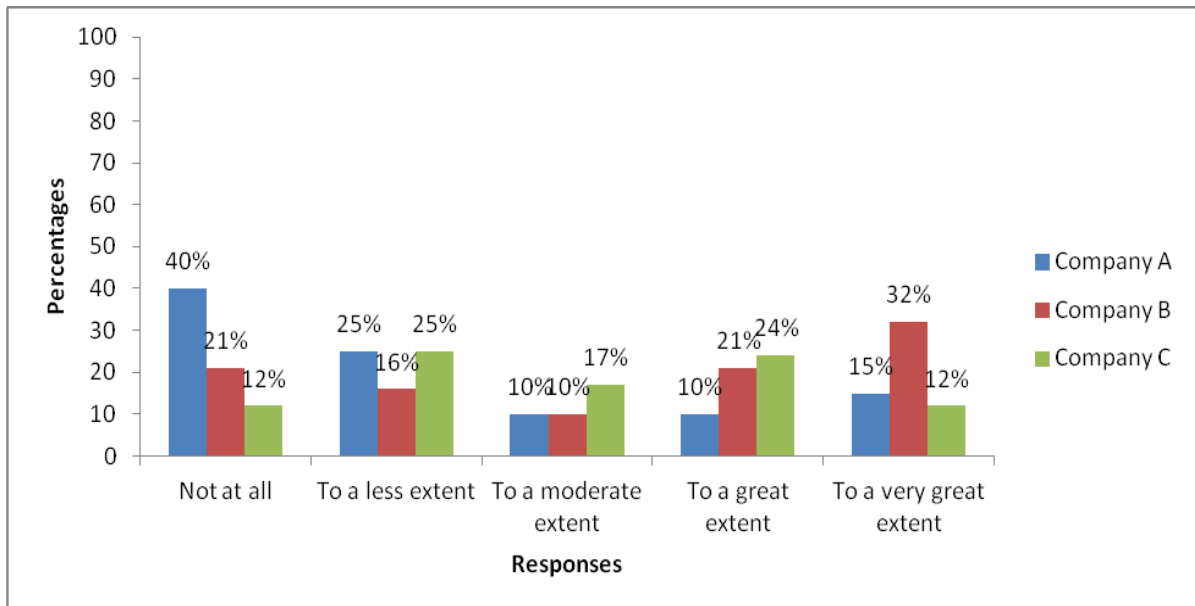
4.7.4 Manufacturing Firms Supporting Suppliers on EMS through Training

As presented in figure 27, 40%, 21%, and 12%, of the respondents from company A, B and C respectively indicated that support to suppliers on ISO 14001 EMS through training in their firms was not being done at all. However, Company B recorded an encouraging

response with 21% of its employees indicating that it was being done to a great extent while 32% felt it was being done to a very great extent. While the practice of supporting suppliers to be ISO 14001 EMS certified by offering training exhibit that the buying and manufacturing companies were working toward enhanced buyer-supplier relationship in order to pursue and improve total quality management in their business processes, the above findings indicate a low level of support necessary to achieve the same, particularly in company A and C.

FIGURE 27

Manufacturing Firms Support of Supplier on EMS through Training



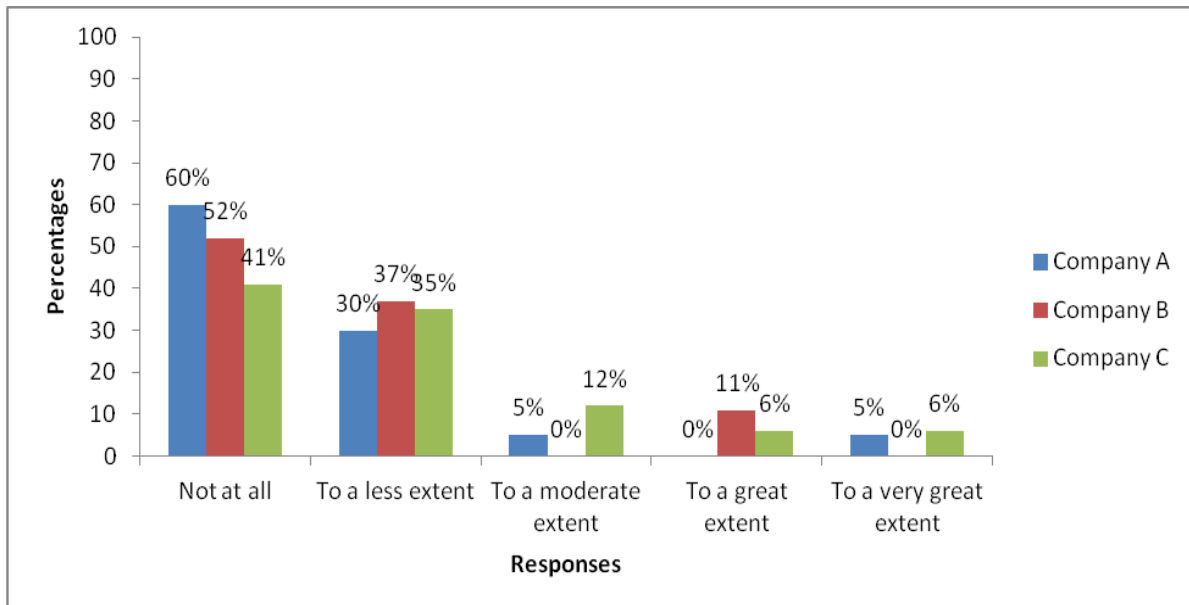
Source: Field Data, 2014

4.7.5 If the Manufacturing Facilitate a Total Cost of Ownership Approach with Suppliers

The study was out to establish whether the manufacturing firms facilitate total cost of ownership approach with their suppliers by bridging the gap between their firms in order to achieve TQM. This question was regarded necessary as most firms do not take into account all the elements of cost beyond price, transport and works.

FIGURE 28

Facilitation of Total Cost of Ownership Approach with Suppliers



Source: Field Data, 2014

It is evident in figure 28 above that 60%, 52%, and 41%, of the respondents from company A, B, and C respectively were of the opinion that facilitation of a total cost of ownership approach (beyond price, transport and works) was not done at all in their firms. Whereas the practice of facilitating a total cost of ownership approach usually exhibit that manufacturing companies are complying with the best practices in order to pursue and improve efficiency and effectiveness in organization purchases, the responses that total cost of ownership approach was not a concept being embraced fully by the surveyed manufacturing companies indicate lack of close co-operation between the firms and their suppliers in order to achieve competitive advantage.

4.8 How the Supplier Evaluation Criteria is Configured in the Manufacturing Firms

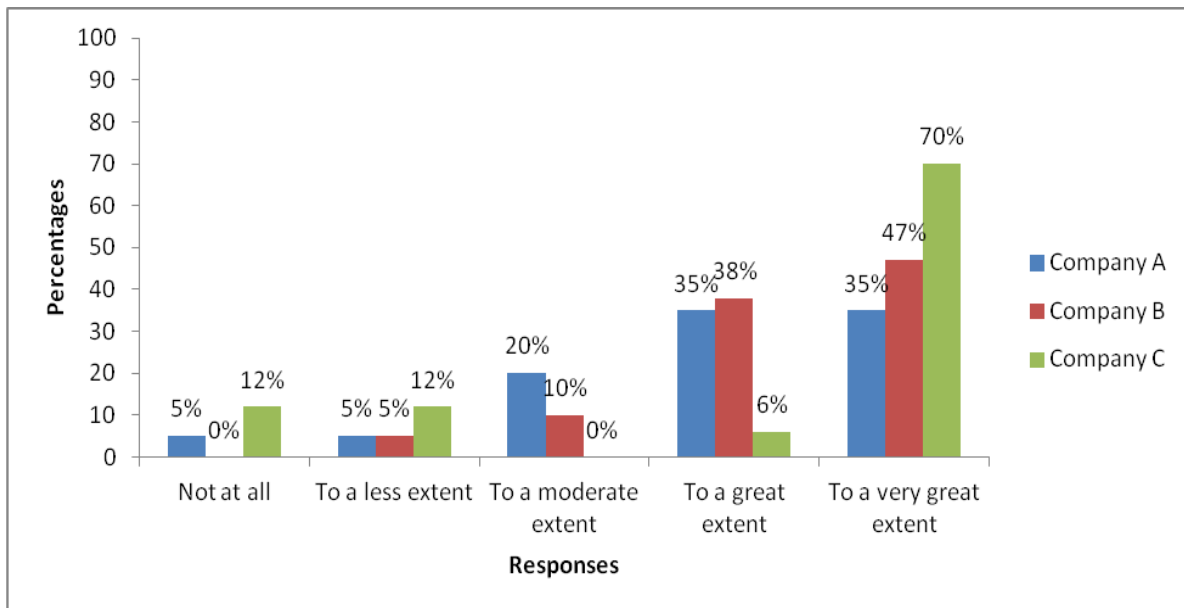
4.8.1 Supplier's Cost Structure as a Determinant of Supplier of Goods

The study sought to identify what factors the respondents' firms took into consideration when selecting suppliers. This question was considered pivotal as it would give

an indication of the position and direction the manufacturing firms in regard to environmental issues.

FIGURE 29

Supplier’s Cost Structure as a Determinant of Supplier of Goods



Source: Field Data, 2014

As indicated in figure 29 above, 35%, 47%, and 70%, of the respondents from company A, B, and C respectively were of the opinion that a supplier’s cost structure was the factor considered to a very great extent when evaluating suppliers. Taking into account supplier’s cost structure in the supplier evaluation criteria indicated that the organisations studied followed the theoretical principles that are necessary for modern-day organizations to ensure competitive procurement aimed at achieving competitive advantage. The above responses and findings indicate that suppliers’ cost structures were more important to buying firms as they determined the cost or market value at which goods were acquired.

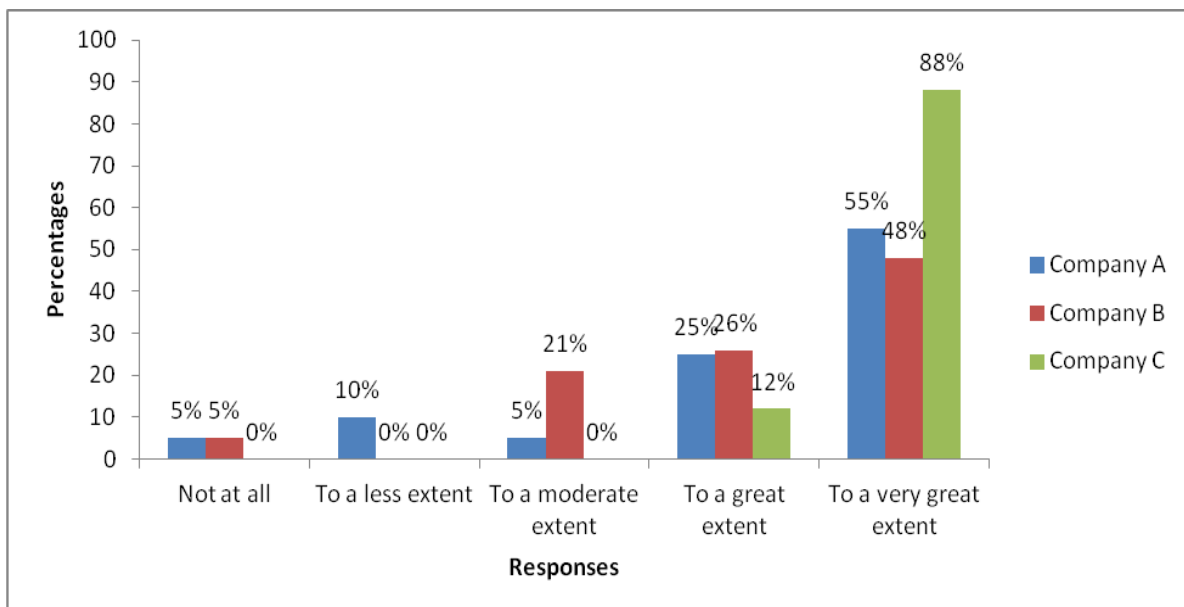
4.8.2 Financial Stability of Suppliers as a Determinant of Supplier of Goods

Figure 30 below shows that 55%, 48% and 88% of the respondents from company A, B, and C felt that the extent to which financial stability of suppliers became part of supplier

evaluation criteria was to a very great extent. The findings indicate that financial stability of suppliers was an integral part of the supplier evaluation criteria by buying firms. This could be due to the fact that the organisations surveyed were keen to ensuring continuity of supplies into their firms and to the consumer markets that they serve. Company C was particularly very impressive with 12%, and 88% of its respondents representing a great extent and a very great extent respectively.

FIGURE 30

Financial Stability of Suppliers as a Determinant of Supplier of Goods



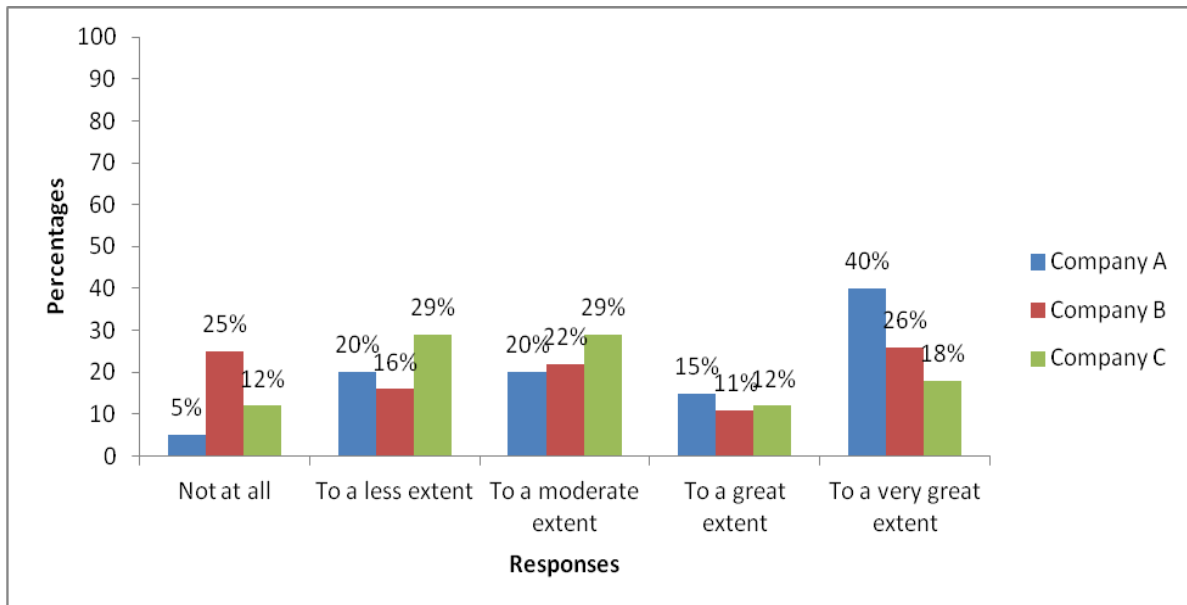
Source: Field Data, 2014

4.8.3 Supplier ISO 14001 EMS Certification as a Factor when Selecting Suppliers

The respondents were asked to rate the extent to which ISO 14001 EMS certification was taken into account in their firms when selecting suppliers. This question was considered important in order to know the composition of the supplier selection criteria in relation to green issues.

FIGURE 31

Supplier ISO 14001 EMS Certification a Factor when Selecting Suppliers



Source: Field Data, 2014

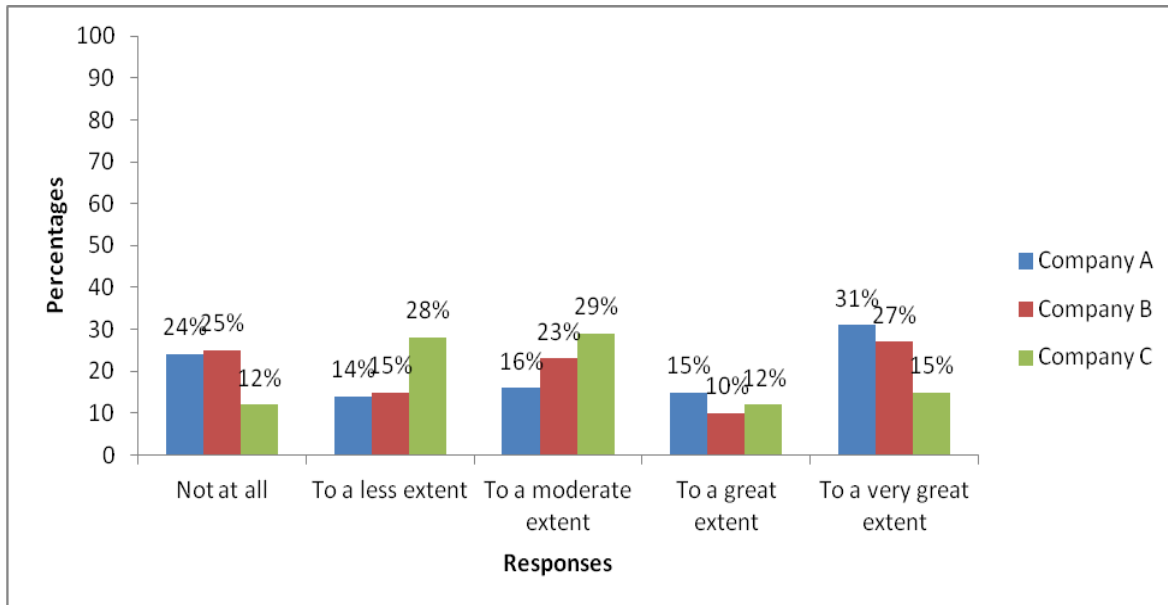
Figure 31 above indicates that company A was found to have a better performance compared to company B and C as 40% of its respondents felt that their organisation considered whether a supplier was ISO 14001 EMS certified or not was being done to a very great extent. While 25% of the respondents from company B felt it was not being done at all. The above findings show that whereas certification on environmental management systems is a known good business practice, it was not fully considered by the buying firms. This indicates that implementation was still low as far as environmental management issues are concerned.

4.8.4 E-Systems Capability of Suppliers as a Factor in Supplier Selection

The respondents were asked to rate the extent to which electronic systems capability of suppliers was considered as an important factor in supplier selection in their firms. This was considered important as e-systems capability facilitates flow of information between the firms in order to improve efficiency along the supply chain.

FIGURE 32

E-Systems Capability of Suppliers as a Factor in Supplier Selection



Source: Field Data, 2014

As indicated in figure 32 above, 24%, 25% and 12% of the respondents from company A, B, and C respectively indicated that E-Systems capability of suppliers was not at all included in the supplier evaluation criteria. While 14%, 15% and 28% of the respondents from company A, B, and C respectively were of the opinion that it was considered to a less extent. Adoption of E-Systems capability of suppliers as part of supplier evaluation is considered a good business practice for purchasing firms that value the tenet of getting their products and services right first time. However, the above findings indicate that in the studied firms E-system capability was not a major factor in the evaluation of suppliers of inputs into the firms' transformation processes in order to achieve TQM throughout the supply chain.

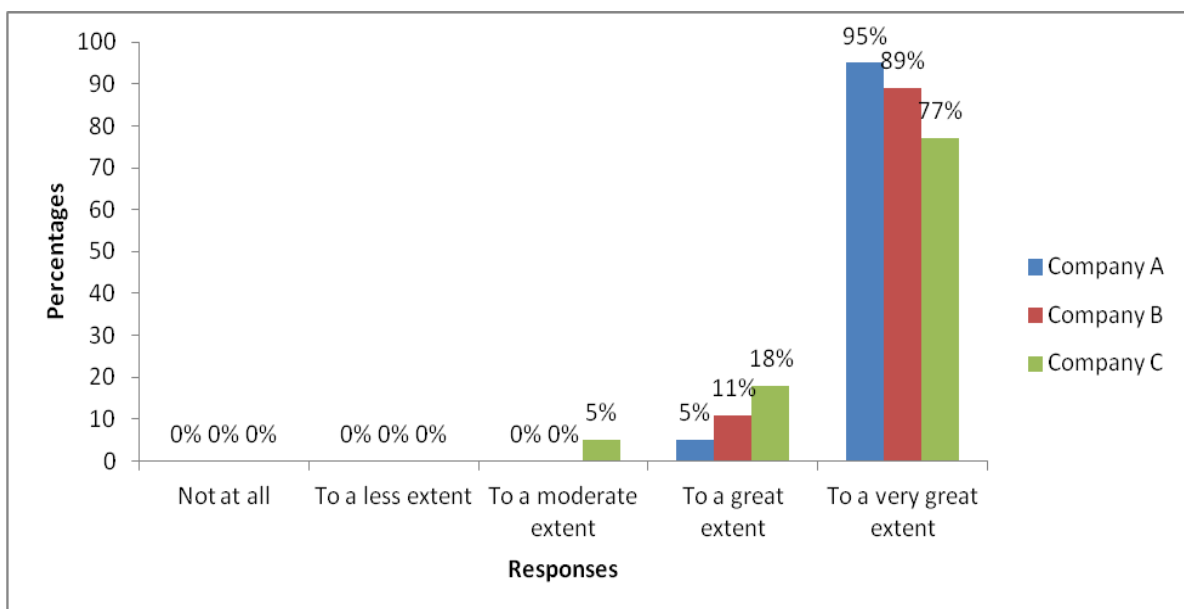
4.8.5 Quality of Products of Suppliers as a Determinant of which Supplier gets Business

The respondents were asked to rate quality of a supplier's products as a factor when selecting suppliers. As shown in figure 33 below, 77%, 89% and 95% of the respondents

from company C, B, and A respectively felt that quality of products of suppliers was considered part of supplier evaluation criteria to a very great extent. While none of the respondents indicated that the quality of products of suppliers was considered either to a less extent or to a less extent when evaluating suppliers. The findings are indications that quality was a major determinant when evaluating suitable suppliers of materials into the manufacturing firms studied.

FIGURE 33

Quality of Products of Suppliers as a Determinant of which Supplier gets Business



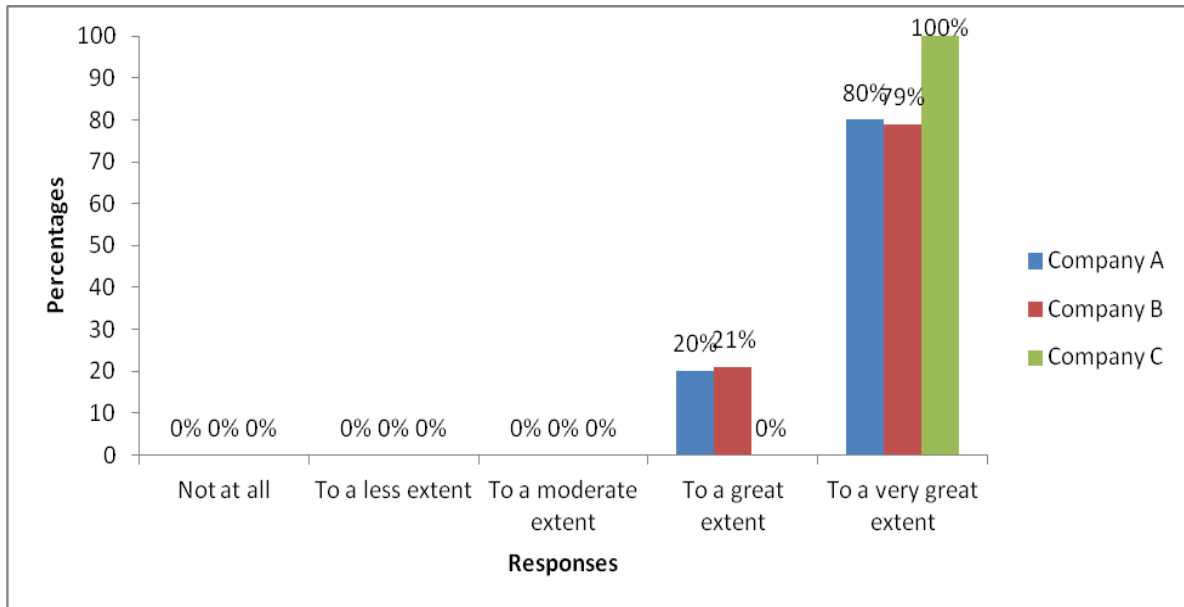
Source: Field Data, 2014

4.8.6 Price Charged by Suppliers as a Factor when Selecting Suppliers

As illustrated in figure 34 below, 80% and 79% of the respondents from company A and B respectively were of the opinion that price charged by suppliers was considered part of supplier evaluation criteria to a very great extent. While all respondents from company C felt that price was a major factor when selecting suppliers. The outcomes point to price as a core factor when determining whether the firms studied would purchase products from a given supplier or not.

FIGURE 34

Price Charged by Suppliers as a Factor when Selecting Suppliers



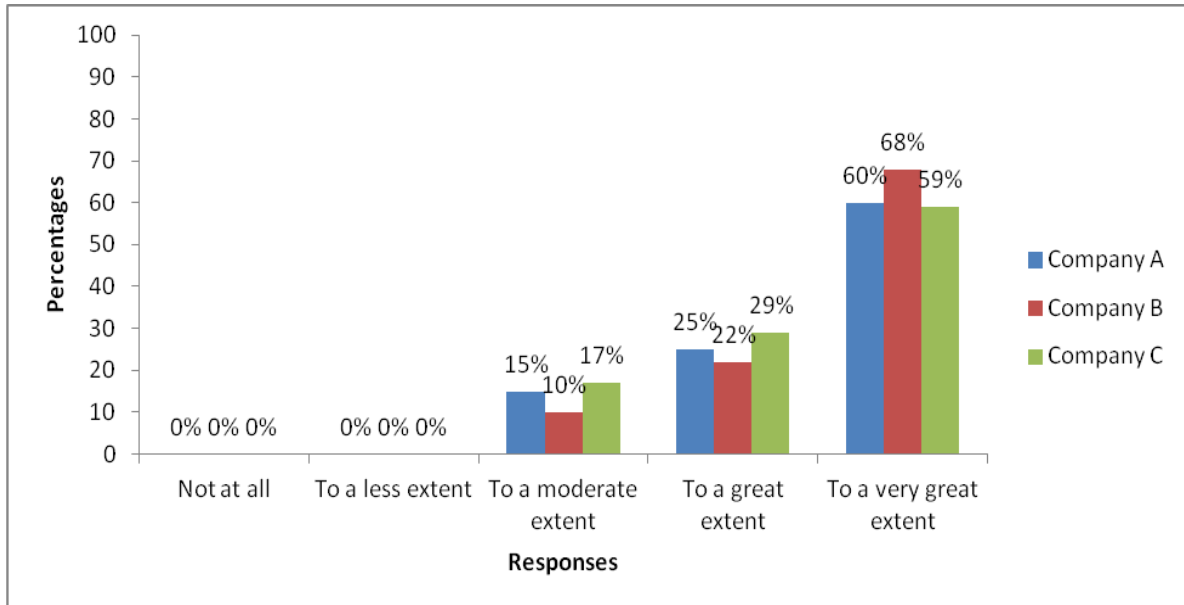
Source: Field Data, 2014

4.8.7 Delivery Service Levels of Suppliers as a Determinant of a Supplier of Goods

The study was out to find out whether a supplier’s delivery service levels were being taken into account in the supplier selection criteria. As indicated in figure 35 below, 60%, 68% and 59% of respondents from company A, B, and C respectively indicated that delivery service levels of suppliers was considered in the supplier evaluation criteria to a very great extent. The responses indicate that delivery was a key ingredient of supplier evaluation and criteria for supplier selection in the manufacturing firms studied.

FIGURE 35

Delivery Service Levels of Suppliers as a Determinant of a Supplier of Goods



Source: Field Data, 2014

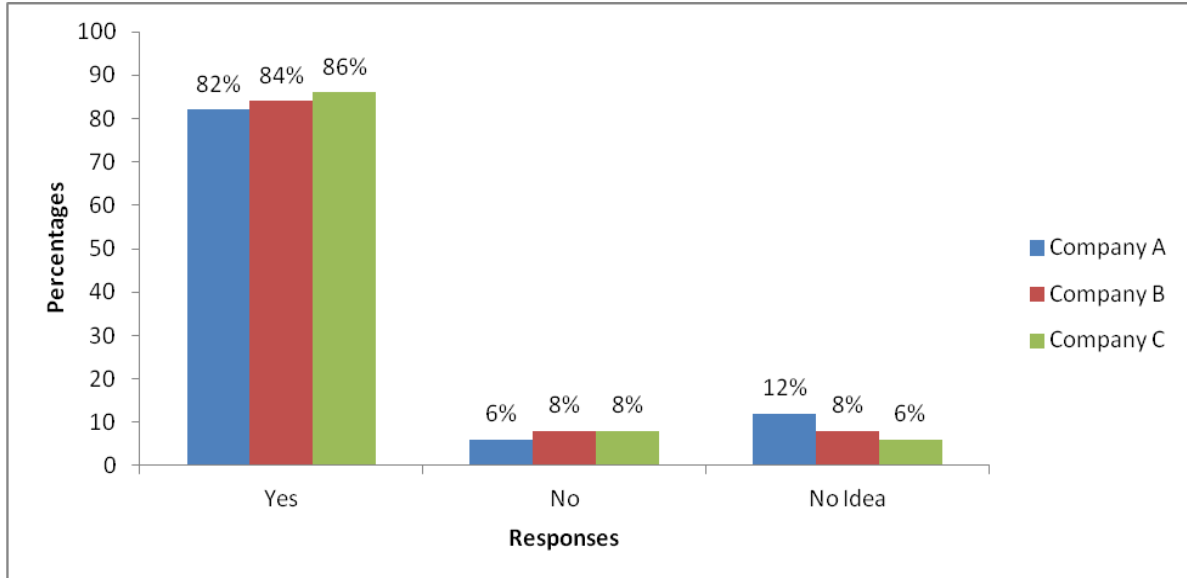
4.9 Adoption of Environmental Practices in the Manufacturing firms

4.9.1 Whether the Manufacturing Firms had an Environmental Policy

The study sought to find out whether the firms studied had environmental policies. This question was important in order to gauge the level of awareness among employees in the organisation on matters related to green issues. As can be seen in figure 36 below, the level of awareness among the respondent in the manufacturing firms studied was impressive since 86% of the respondents said their companies had an environmental policy.

FIGURE 36

Whether the Manufacturing Firms had an Environmental Policy



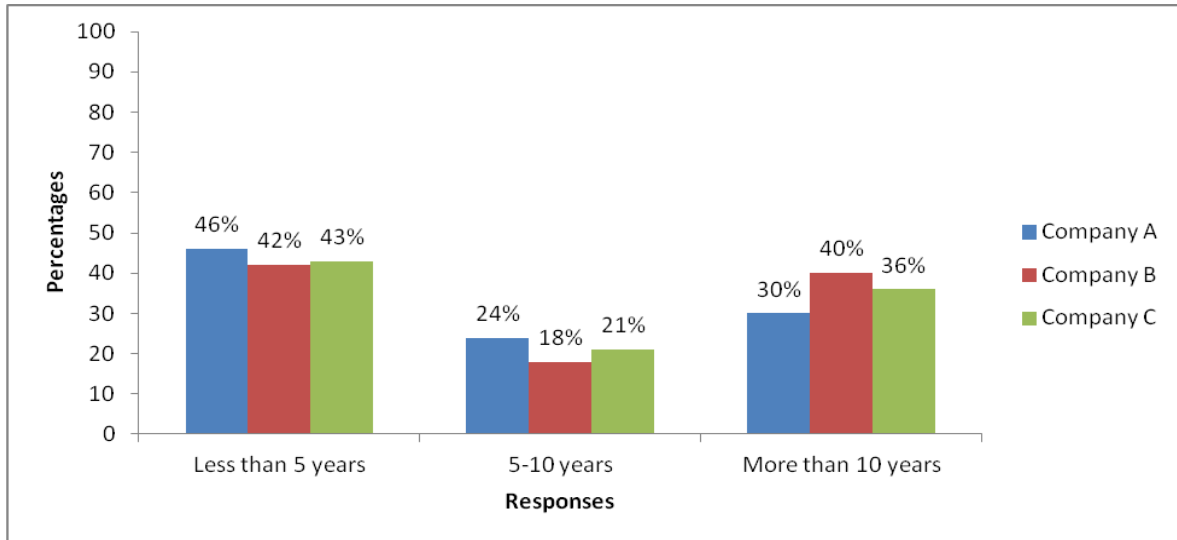
Source: Field Data, 2014

4.9.2 Duration Environmental Management Policy has been in Place in Organisation

The researcher sought to know for how long the environmental policy has been in place in the firms studied and this question was considered important as the researcher wanted to use the information to give an indication on whether environmental issues is a either a new phenomenon or has been in place for a considerable time. According to figure 37 below, 46%, 42%, and 43% of the respondents from company A, B, and C respectively indicated that the policy had been in place for less than five years. While 30%, 40%, and 36% of the respondents from company A, B, and C respectively said that the policy has been in place for over 10 years. This shows that the companies had just recently adopted green requirements in their supplier selection process in order to achieve TQM.

FIGURE 37

Duration Environmental Management Policy has been in Operation in the Firms



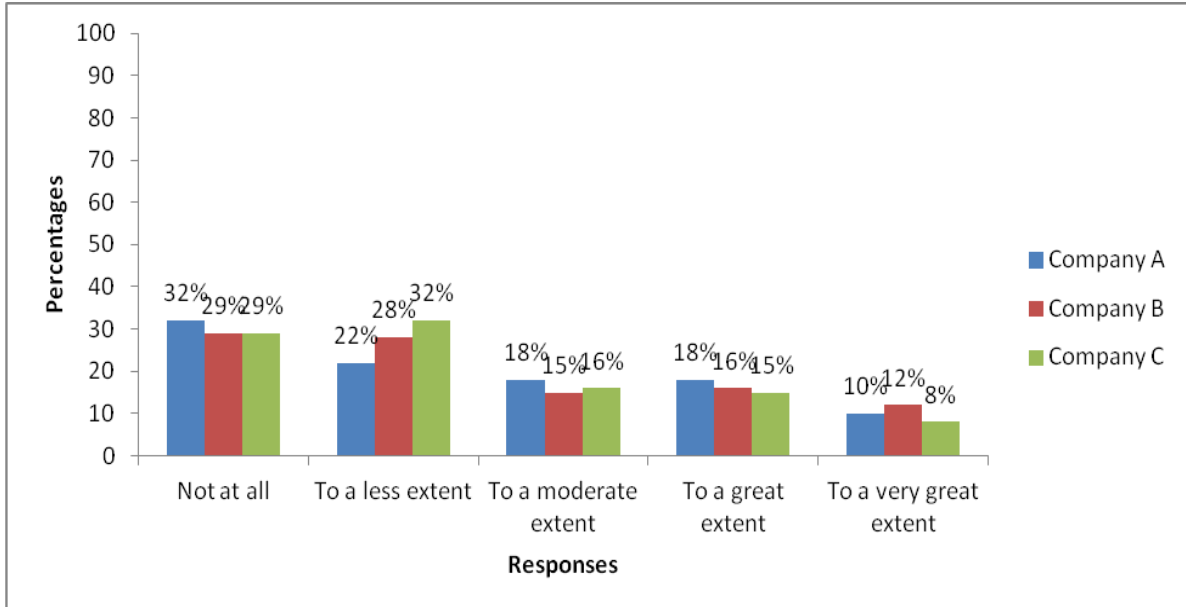
Source: Field Data, 2014

4.9.3 The Level of Checking Energy Consumption and Avoidance of Energy Wastes

The study investigated how the manufacturing firms studied were doing in terms of environmental friendly practices like the level of checking energy consumption and avoidance of energy wastes. This was important as it would be pointer to the level of environmental competencies in the firms in order to be able to extend it to its supply chain partners. As can be seen in figure 38 below , 22%, 28%, and 32% of the respondents from company A, B, and C respectively were of the opinion that the level of checking energy consumption and avoidance of energy wastes was being done to a less extent. This shows that compliance to sustainable use of energy was still low in the manufacturing firms studied.

FIGURE 38

The Level of Checking Energy Consumption and Avoidance of Energy Wastes



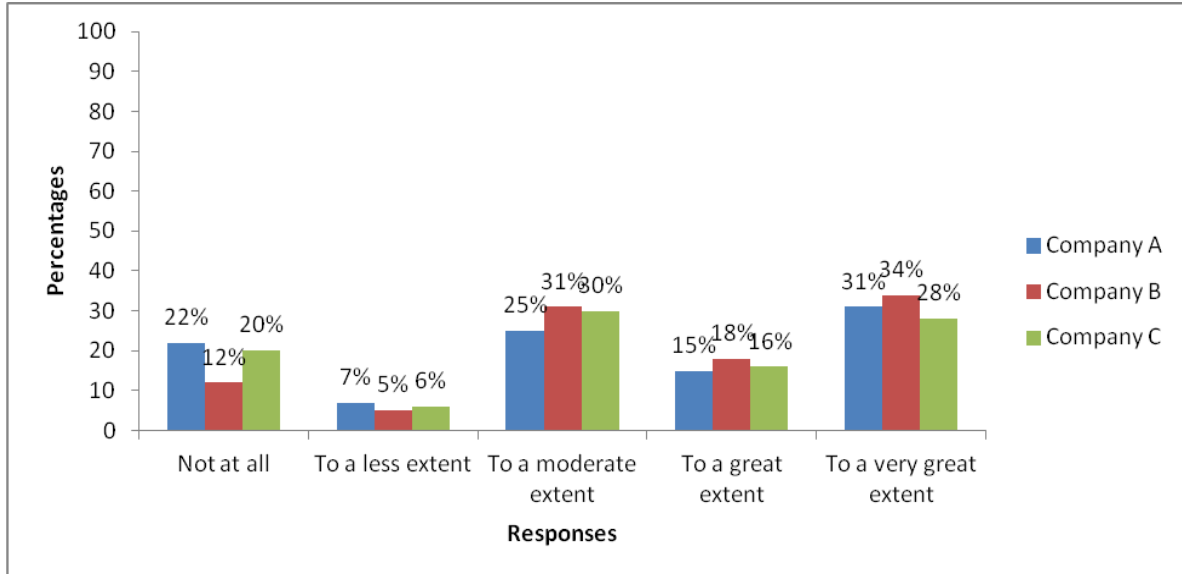
Source: Field Data, 2014

4.9.4 The Use of Renewable Energy and Green Power in the organizations

Figure 39 reveals that 22%, 12%, and 20% of the respondents from company A, B, and C respectively were of the opinion that use of renewable energy and green power in the organizations studied was not being done at all. While 25%, 31%, and 30% of the respondents from company A, B, and C respectively indicated that it was done to a moderate extent. While adoption and use of renewable energy by the surveyed manufacturing companies demonstrate that they have complied with the theoretical bases put forward for firms to practice and safeguard depletion of natural resources, there is still a low level of commitment to its execution.

FIGURE 39

The Use of Renewable Energy and Green Power in the Organisations



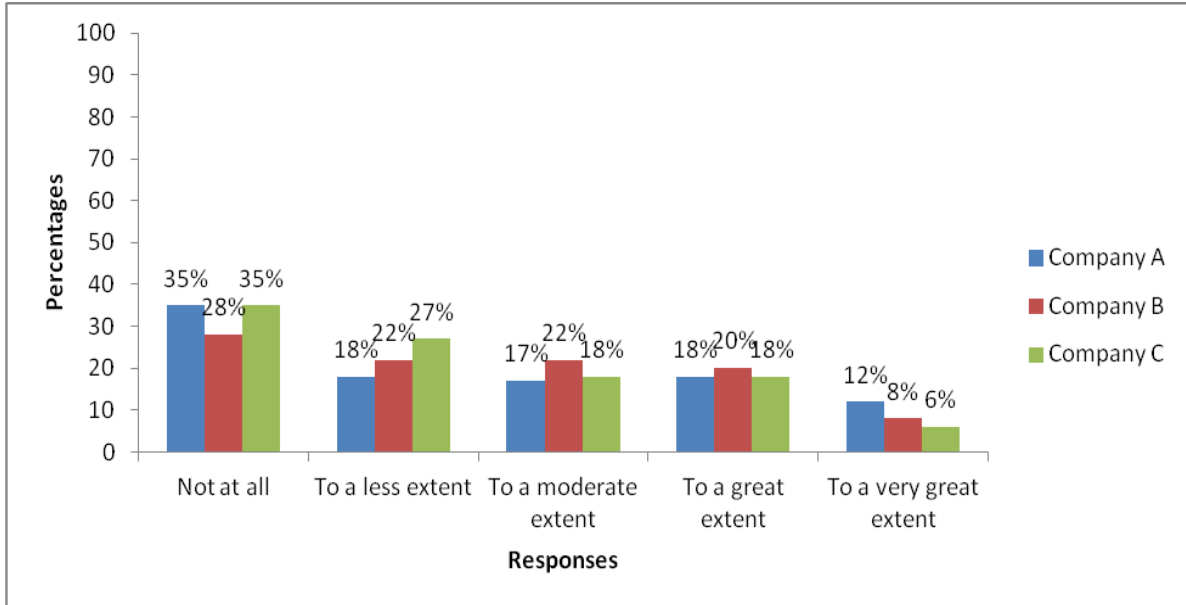
Source: Field Data,2014

4.9.5 Reduction, Reuse and Recycling of Industrial Wastes and Water in the Organizations

Reduction, reuse, and recycling of industrial wastes and water in the manufacturing firms studied was seen as an important sustainability practice and the study sought to find out how it was being done in the firms. According to figure 40 below, the ratings it is evident that only 12%, 8%, and 6% of the respondents from company A, B, and C respectively were of the opinion that reduction, reuse and recycling of wastes and water in the firms studied was being done to a very great extent. Therefore, the level of implementation of the practice by the manufacturing firms was not satisfactory and was evidently resolute with a lot of implementation limitation.

FIGURE 40

Reduction, Reuse and Recycling of Industrial Wastes and Water in the Organisation



Source: Field Data, 2014

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives discussions of the findings, conclusions of the research and recommendations based on the objectives of the study. It also proposes areas for further research.

5.2 Discussion of Findings

5.2.1 Adoption of Environmental Requirements in Supplier Selection Criteria

The study sought to establish whether environmental requirements are incorporated in the supplier selection criteria by the selected manufacturing firms in pursuit of TQM. From the research it emerged that the surveyed firms were found to consider their supplier's capacity to reduce energy consumption and prevent energy waste to a low level. It came into view that 45% of the respondents from company A were of the opinion that it was being done, while in company B only 31% felt so, and in company C only 47% agreed. When asked if the organizations focus on supplier's policy on the use of renewable energy such as wind and solar, 55%, 58%, and 60% of the respondents from company A, B, and C respectively felt it was being done. The study established that 40% of the respondents working for company A, 50% and 52% from company B and C respectively indicated that supplier's policy on reduction, reuse and recycling of solid industrial waste was taken into consideration in their organization. On supplier's capacity to manage reverse flows of rejected goods; policy on the use of environmentally friendly materials such as bio-degradable materials like paper and capacity to manage waste disposal, the scores range from 14% to 41%. Findings also reveal that compliance to sustainable use of energy and reduction, reuse and recycling

strategy by manufacturing companies was not to the required standard and was beleaguered with implementation challenges and this is in line with Olga's assertions (2012).

However, as indicated in figures 7-12, though consideration of environmental requirements when selecting suppliers was being done, it was still evident that implementation was a major issue as the dismal affirmative responses suggest. In line with the findings of Migai (2010) titled "*An Investigation into Kenya's Manufacturing Firms Compliance to Environmental Adaptations*" this study indicated that there were some organizations that had not taken environmental issues to a level where this study could conclusively express that implementation was fully done. This could mean that adequate measures had not been put in place by the manufacturing companies to evaluate the sources of their materials. Therefore, according to the responses the firms studied were at the preliminary stage of implementing green requirements in the supplier selection criteria and these findings concur with Olga's (2012) discussion on green strategies given the level of advancement.

5.2.2 Areas of Concern in the Supplier Selection Criteria in the Firms

The study was also out to determine how the supplier selection criteria configured in order to achieve TQM in the firms studied. To gain insight into how they do it, respondents from the firms were asked to rate the major issues that were included in their criteria in order to achieve TQM as a source of competitive advantage. The surveyed firms were found to give prominence to the supplier's cost structure, financial stability, the quality of goods, price charged for goods delivered, and delivery service levels as these indicators were all rated favourably (figures 29, 30, 33-35).

However, as indicated in figures 31-.32, on whether a supplier is ISO 14001 EMS certified or not and E-Systems capability of suppliers, the ratings were still low. This is an indication that the manufacturing firms were more concerned with the traditional supplier

selection criteria like cost or market value of goods, viability of suppliers to ensure continuous supply, quality of inputs and timely delivery and these findings are in congruent with the findings by Jabbour and Jabbour (2009). Therefore, the supplier selection criteria in the studied companies were found be inadequate for the firms studied to achieve TQM.

5.2.3 Specific Areas that the Firm's EMS Satisfies

The manufacturing firms surveyed were also assessed on their environmental management systems under ISO 14001 as it was thought that the EMS framework helps a company achieve its environmental goals through consistent control and evaluation of its operations. The respondents were asked to indicate whether the various areas/components formed part of their EMS as not at all, to a less extent, to a moderate extent, to a great extent, and to a very great extent in regard to their organizations. EMS on disposal of materials in an eco- friendly way in the manufacturing firms was ranked highest with 80% to 90% of the respondents for the companies studied. This could be an indication that the firms studied were either more concerned with compliance to regulations, external stakeholders concerns, maintaining their EMS 14001 certification, or the immediate general public image. This revelation is in line with Hyatt's (2011) assertion that firms were taking steps aimed at showing the external stakeholders that the firms were compliant while in the real sense nothing to that effect was happening.

It emerged that in company B endorsement by top management was rated at 79% followed by company B at 60%, while in company C, only 47% of the respondents felt the top management support was adequate. This was an indication of limited top management support particularly in company C in the implementation of EMS and this hampered what Carter and Rodgers (2008) call clear aligning of economic goals and sustainability concerns that create a business case for acceptance and adoption of green practices. On EMS being part of the overall corporate strategy 48% to 60% of the respondents agreed. While emphasis on

EMS training the positive responses ranged from 19% to 50%, EMS related communication to suppliers to aid implementation between 38% and 55%, and continuous environmental audit and improvement ranged from 38% to 55%. Contrary to Cousins et al (2008) recommendation for organization-wide responsibility for successful greening of supply in order to achieve TQM, the study established that in the surveyed firms, respective procurement departments were the functions explicitly and implicitly mandated with environmental management issues in the organizations as they were perceived to greatly determine sources of inputs into their organizations. Though it is not wrong for procurement to lead on environmental issues in regard to supplier selection, EMS should be an integrated system that should comprise all the functions of the firm in order to ensure smooth and total implementation. According to figures 18-23, the study established that there was no consistency along the EMS framework in regard to environment as suggested in the continuous improvement cycle (EPA, 2014).

5.2.4 Areas on which the Firms Involved Suppliers in order to Improve SRM

The study was also out to find out if suppliers were involved in critical business processes in order to improve SRM as firms worked towards achieving TQM. From the study supplier involvement on the various critical processes was found to be dismal as indicated in figures 24-28. For instance, on the extent to which the firms studied involved their suppliers in re-designing of products and processes in order to reduce waste, 60% of company A respondents were of the opinion that it was being done, while 53% and 48% of the respondents from company B and C respectively felt it was being done. On extent to which the firms involve suppliers to facilitate a total cost of ownership approach beyond price, transport and works, the percentage of respondents who said it was being done was 10%,10% and 24% from company A, B, and C respectively. These findings go well together with

Hyatt's (2011) who asserted that in relation to green issues, external actions are at times calculated to create a picture of responsiveness and that practice may or may not be evident.

5.2.5 Impact of environmental requirements on TQM

The respondents from the selected manufacturing firms were asked to indicate what they thought was the impact of including environmental requirements in the supplier selection criteria on TQM. On the 1-5 Likert Scale, they were asked to specify whether they strongly agreed, agreed, disagreed, strongly disagreed, or they were neutral that compliance to green issues increased customer satisfaction, market share, profitability and return on investment, quality of goods, and reduced waste. From the study, it emerged that majority of the respondents from all the manufacturing firms studied were in agreement that customer satisfaction was enhanced.

Figures 13-17 show data obtained from the field regarding the benefits or positive impact of the inclusion of environmental requirements in the supplier selection criteria in order to achieve TQM. It emerged that 30%, 32%, and 41% of the respondents from company A, B, and C respectively agreed that customer satisfaction was enhanced, while 35%, 32%, and 34% in that order felt strongly agreed. On market share, profitability and returns on investment, reduction of waste, and quality of goods, respondents from the three firms felt that environmental requirements as part of the supplier selection criteria lead to improved TQM as shown in the figures. This revelation indicates that in the firms studied, there was high appreciation of the fact that going green was one of the best ways through which TQM would be achieved. Therefore, from the study it came out clearly the blending of environmental requirement and TQM would lead to superior dividends than when each of the concepts is adopted independent of the other. This result is consistent with the assertion by Handfield et al (2009) that for a buyer to successfully evaluate a supplier there is need for a broader approach that goes beyond the traditional statistical issues like a supplier's

environmental management system. Therefore, manufacturing firms expecting to reap the benefits of TQM should ensure compliance to environmental requirements.

5.2 Conclusions

On environmental requirements in the supplier selection criteria, the highlights of company A are that when selecting suppliers, the company focused on a supplier's policy on the use of renewable energy like wind and solar as indicated by 55% of its respondents otherwise the firm was doing poorly on environmental issues in regard to supplier selection criteria. It was noted to do relatively well on EMS than company B and C as 50% to 80% of the respondents were in agreement that the various EMS indicators are satisfied along the EMS continuum. On SRM, the firm involves its suppliers in re-designing products and processes in order to reduce waste and was generally noted to do poorly on other areas of supplier relationship. The main supplier selection criteria is price and quality and was noted to do well when it comes to ascertain whether a supplier is EMS certified or not.

On environmental requirements, company B was performing averagely on supplier's policy on the use of renewable energy and its policy on reduction, re-use and recycling of solid waste. Its performance was poor on the other indicators of environmental requirements. Apart from doing well on disposal in an eco-friendly way, top management support, and aligning EMS to the overall corporate strategy, execution on EMS leaves a lot of gaps that need to be taken care of. On SRM, the company was noted to perform above average on all other indicators except on total cost of ownership where it was performing dismally. In the supplier selection criteria it emerged that price, quality, supplier's cost structure, and the financial stability of suppliers were the key factors.

Although company C exhibited the desire to include environmental requirements in its supplier selection criteria, it does not assess its suppliers on their capacity to manage reverse logistics, waste disposal in an eco-friendly way, and on their policy on the use of

environmentally friendly materials. It emerged that of the three firms, company C had the most disjointed EMS that concentrates only on disposal of waste in an eco-friendly way probably because of fear of the external stake-holders like the government and the certification body. Like company A, on SRM, its efforts were concentrated on supporting their suppliers in terms of training in order for them to be ISO 14001 EMS certified. This could be because they were more interested on doing business with companies that had the relevant certification. Similar to the other firms studied, its supplier selection criteria was focused on the financial objectives of the company by putting more emphasis on price, supplier's financial stability, and the quality of products

From the critical analysis of the responses regarding the adoption of green requirements in supplier selection criteria as pre-requisite for total quality management, the study established that despite the perceived positive direct impact of inclusion of environmental requirements in supplier selection criteria on customer satisfaction, company market share, profitability and return on investment, reduced waste and quality of good and indirect positive improvement on investors' confidence and cost reductions, there exists a range of gaps or weaknesses in the implementation of green requirements in supplier selection criteria as pre-requisite for total quality management across the EMS 14001 certified firms studied. The manufacturing firms were not fully looking into their suppliers' capacity to reduce energy consumption and reduce energy waste, manage waste disposal, as well as goods rejected by them. Further, there was a low level of attention to their suppliers' policies on the use of green energy, use of bio-degradable materials like paper, as well as on reduction, reuse, and recycling of solid industrial waste.

For the firms, this study revealed possible inconsistencies on the kind of environmental management systems in place and how the firms perform on the indicators. This trend in EMS performance showed that for a firm to be rated as an EMS certified firm,

there is need for the firms to have a comprehensive system that performs exceptionally good and uniformly on all the indicators of EMS. Exceptional performance on some areas while on others, a firm performs dismally is recipe for total failure as any weakness along the EMS continuum renders the whole system ineffective and this negates the objectives of such an investment on environmental compliance. The study established that the environmental management system in the firms studied was not all inclusive and in line with ISO 14001 which recommends top management commitment. Top management support is the bedrock of any EMS and if there is low level of input from the leaders then the whole system crumbles into bits and parts knocking down business processes down the business machinery.

The firms were also found to be performing poorly on supplier relationship management which in effect hinders the achievement of TQM. From the study, suppliers were not adequately involved various business processes and activities such as in the design of new products and processes in order to reduce waste. It is common knowledge that successful manufacturing companies partner with their suppliers in an effort to come up with products that do not consume excess resources like raw materials and energy in order to reduce strain on the sources of raw materials, wastage in the production process and on the disposal of any waste by coming up with a product that can be recycled. Besides, product and process re-engineering in order to reduce waste though necessary was not being done. The SRM process was noted to be limited by low level of exchange of information between the firms and its suppliers, inadequate support to suppliers to facilitate their certification, and insufficient facilitation of total cost of ownership that goes beyond purchase price and works. The manufacturing firms should note that working closely with suppliers is an essential component in order for any firm to achieve TQM as the supply chain partners strive to reduce total costs that are beneficial to all parties and this includes environmental costs.

In line with previous studies on supplier evaluation criteria, though EMS 14001 certified, the firms were found to rely to a very great extent on the traditional supplier evaluation factors like price, financial stability of the suppliers, quality of products, and delivery service levels. E-system capabilities and ISO 14001 EMS certification were not given the attention that they should. The firms studied therefore showed a tendency of acting contrary to the requirements of their certification on environmental management.

This study revealed that in the studied firms although the firms were alive to the benefits of incorporating environmental requirements in the supplier selection criteria in order to achieve TQM, implementation was still a major challenge even in companies that are ISO 14001 EMS certified as the study revealed that all the firms were at the preliminary stages of incorporating environmental issues in the area of supplier selection process. However, other Kenyan manufacturing firms can borrow leaf from the studied firms in order to ensure the process of greening is inculcated in the country.

5.3 Recommendations

This study sought to undertake an assessment of green requirements in supplier selection criteria as pre-requisite for total quality management with specific reference to the three selected ISO 14001 EMS certified manufacturing firms in Nairobi, Kenya. Based on foregoing critical analysis of research findings, a number of challenges, problems or weaknesses were ascertained as discussed in section 5.2 above. As a result, this study recommends that in order to improve undertakings of green requirements in supplier selection criteria as pre-requisite for total quality management in the manufacturing industry, Kenyan manufacturing companies should ensure that their environmental management policies are well developed and appropriate implementation steps are taken to help steer and guide incorporation of green requirements in supplier selection criteria as pre-requisite for total quality management. The policies should be well defined and top management should show

commitment and support the implementation of environmental management systems. For instance, offering appropriate, timely, consistent and adequate training to its personnel on matters relating to green procurement.

Kenyan manufacturing companies should put in place measures aimed at consistent checking of adopted environmental requirements in every process of supplier selection. For instance, potential risks of inputs to all stakeholders like employees, customers, and the physical environment should be critically evaluated. There should be improvement on the coordination and channeling of resources (budgetary allocation) for successful implementation of green requirement in supplier selection.

The manufacturing firms should adopt and comply with existing sustainability best practices used by world class manufacturing firms .This involves and is not limited to the reduction, re-use and recycling strategy. They should also fully align environmental management systems and strategies to the overall corporate strategy in order to improve their operationalization and remove any potential bottlenecks to facilitate flawless implementation.

Further, the firms should improve the level of integration both within and outside supply chain partners and all employees should be empowered on environmental management systems and strategies. This can be made possible through the development of feasible structured communication systems and channels to facilitate free flow of environmental management best practices related to external stakeholders like suppliers and suppliers' suppliers in order to improve the operationalization of environmental management systems throughout the supply chain and network. This is to forestall communication hurdles like insufficient or distorted information.

Lastly, companies should put more effort on continuous environmental audit for organizations involved in value addition in order to improve and achieve competitive advantage. They should cultivate and improve good buyer-supplier relationships based on a

win-win situation, inclusiveness, involvement in critical supply issues, exchange of information and attainment of ISO 14001 EMS and related environmental certifications. The point of departure should be by evaluating the strengths of the parties involved, start building together from there and then gradually sort out their respective weaker points collectively to develop a robust and sustainable green link.

5.4 Recommendations for Further Research

The study may have assumed that top management commitment, and employees knowledge on sustainability are the key ingredients to implementation of environmental requirements in supplier selection. However, the study does not openly rule out the fact that external forces like government intervention and leadership on environmental issues are critical in order for firms to achieve TQM. Therefore, a possible path of inquiry should be on what the government is doing to help manufacturing firms inculcate the culture of environmental requirements. Further, a study is necessary to establish whether the Kenyan government appreciates the fact that managing the supply process can lead to TQM and what steps it has taken to this end.

REFERENCES

- Ahire, S.L., Waller, M.A., Golhar, D.Y. (1996), Quality management in TQM versus non-TQM firms: an empirical investigation. *International Journal of Quality & Reliability Management*, 13 (8):10-14.
- Baddenhorst-Weiss, Fourie, & Nel, J.D. (2009), *Study guide for strategic sourcing*: UNISA, Pretoria.
- Baily, P., Farmer, D. Crocker, B., Jessop, & Jones (2008), *Procurement principles and management* (10th ed.) Prentice Hall.
- Barker, M.R. (2010), *Corporate governance, competition, & political parties: Explaining corporate governance changes in Europe*. Oxford University Press.
- Barney, J.B., & Clark, D.N. (2007), Library.Wur.nl. Accessed 28/02/2014
- Bhat, K.S. (2009), An empirical study of barriers of TQM implementation in Indian industries. *The Total Quality Magazine*, 21(3): 8-13.
- Bone.K., & Verbeke, W. (2008), Religious values informing halal meat production and the control and delivery of credence quality. *Agricultural and Human Values*, 25 (1): 8-10.
- Booth (2010), *Strategic procurement: Organising suppliers & supply chain for competitive advantage*. Kogan Page.
- Bowen, F., Cousins, P., Lamming R. & Faruk, A. (2001), The role of supply management capabilities in green supply. *Production and operations Management*, 10(2).
- Bowersox, D.J., Closs, D.J. & Cooper, M.B. (2002), *Supply chain logistics management*. New York: McGraw-Hill.
- Burt, D.N., Dobler, D.W. & Starling, L. S. (2003), *World class supply management* (7th ed).Tata MacGraw-Hill
- Buyukozkan, G., & Cifci, G.(2011), Evaluation of green supply chain management practices: A fuzzy ANP approach. *Production Planning and Control*, 23(6): 10-15.
- Carter, C.R., & Rogers, D.S.2008. Emeraldinsight.com. Accessed on 28/02/2014.
- Ceb, F., & Bayraktar, D., (2003), An integrated approach for supplier selection. *Logistics Information Management*, 16 (6).
- Chopra S., & Meindl (2010), *Supply chain management: strategy, planning and operations* (4th ed.).Pearson International Edition.
- Cooper, D.R. & Schindler, P.S. (2011), *Business research methods* (11th ed.).McGraw-Hill
- Cousins, P., Lamming, R., Lawson, B., & Squire. (2008), *Strategic supply management: principles, theories and practice* .Prentice Hall.

- Coyle .J.J., Bardi, J.E. and Langley, C. J. (2003), *The management of business logistics: A supply chain perspective* (7th Ed.). Thomson Learning.
- Darnall, N. (2006), Why Firms Mandate ISO 14001 Certification. *Business and Society*.45 (3): 5-9.
- Dickson, G.W. (1996), An analysis of supplier selection systems and decisions. *Journal of Purchasing*, 2(1): 6-11.
- Dozbaba, M.S. (2004), *Critical buyer/supplier relationships: Generating high performance*. UNISA, Pretoria.
- Flynn, B.B., Schroeder, R.C., & Sakakibara, S. (1994), A framework for quality management research and an associated measurement instrument, *Journal of Operations Management*, 11.
- Foerstl, K., Reuter, C., Hartman, E., & Blome, C. (2010), Managing supplier sustainability risks in a dynamically changing environment-sustainable supplier management in the chemical industry; *Journal of Purchasing and Supply Management*, 20(2).
- Furtado, G.A.P. (2005), Supplier selection criteria for partnership relations: A Study at Large Companies.
- Gay,L.R. (1992), *Educational research: competencies for analysis and application*. New York: Macmillan Publishing Co.
- Green, D. & Verran, C. (2000), Gaining leverage in supplier knowledge. *Purchasing Today*. March: 10-11.
- Handfield, Monczka, Giunipero, & Patterson (2009), *Sourcing and supply chain management* (4th ed.). South-Western Cengage Learning
- Hanfland, D. (2008), Supplier Quality: Today's pressing priority. *Supply Chain Management Review*.
- Holt, D. & Ghobadian, A. (2009), An empirical study of green supply chain management practices among UK manufacturers. *Journal of manufacturing technology management*, 20(7).
- Hsu, C., Kannan, V.R., Leong, G.K., & Tan, K. (2006), Supplier selection construct: Instrument development and validation, *International Journal of Logistics Management*.17 (2).
- Hyatt, D .G. (2011), How do shareholder pressures drive proactive environmental strategies? External institutional forces and legitimacy. *Case Western Reserve University*.
- Jabbour, L.S., & Jabbour, J.C. (2009), Are supplier criteria going green? Case studies of companies in Brazil. *Industrial Management and Data Systems*.

- Jensen, M.C. (2010), Journal of applied corporate finance. Wiley Online Library. Accessed 28/02/2014.
- Kenneth, L., & Farrington, B. (2006), Purchasing and supply chain management (7th ed.). Prentice Hall
- Kenya Bureau of Standards .(2013), Certified firms on ISO 14001 environmental management systems. www.kebs.org. Accessed on 26/08/2013.
- Kluger, Welman, & Mitchell.2005. *Research methodology* (3rd ed.).Oxford University Press South Africa.
- Kothari, C.R. (2009), *Research methodology; methods & techniques*. New Age International (P) Publishers, New Delhi, India.
- KPMG . (2008), KPMG International survey of corporate responsibility reporting www.kpmg.com (Accessed 05/08/2013).
- Kytle, B., & Ruggie, J.G. (2005), *Corporate social responsibility at risk management*. John F. Kennedy School of Government, Harvard University, Boston .MA.
- Lambert. & Ouedraogo, N. (2008), Empirical investigation of ISO 9001 quality management systems' impact on organisational learning and process performances. *Total Quality Management and Business Excellence*.19 (10).
- Langley, C. J., Coyle .J.J., Gibson J. B., Novack R. A., & Bardi E. J. (2008), *Managing supply chains: A logistics approach* (8th Ed).South-Western Cengage Learning
- Large, R.O. & Gimenez T.C. (2011), Drivers of green supply management performance: evidence from Germany. *Journal of Purchasing and Supply Management*, 17(3).
- Lazenby, K. & Ehlers, T. (2010), *Strategic management: South African concepts and cases* (3rd ed.).Van Shaik Publisher
- Lee, E., Ha, S. (2001), Supplier selection and management system considering relationships in SCM. *IEEE Transactions on Engineering Management*, Vol.48 No.3.
- Lee, S., & Klassen, R.D. (2008), Drivers and enablers that foster environmental management capabilities in small-and medium-sized suppliers in supply chains. *Production and operations Management*, 17(6).
- Leedy, P.D., & Ormrod, J.E. (2010), *Practical research; planning and design* (9th ed.).Pearson.
- Marwa, S., Zairi, M. (2008), Towards an integrated national quality award in Kenya. *The total quality management Journal* 20(3).Emerald Publishing Ltd.
- Migai J. M. A. (2010), An investigation into Kenya's Manufacturing Firms Compliance to Environmental Adaptations, : *A publication of University of Nairobi*.

- Ministry of Environment and Mineral Resources.* (2013), Review of Rainfall the “Long Rains June. Accessed on 05/08/2013.
- Mugenda, O.M., & Mugenda, B.G. (2003), *Research methods-quantitative and qualitative approaches*. Nairobi: Acts Press Publishers.
- National Environment Management Authority*, (2013), <http://www.nema.go.ke>. Accessed on 05/08/2013.
- New, S., & Westbrook, R. (2004), *Understanding supply chains: concepts, critiques & futures*. Oxford University Press.
- Okello, M.M., & Kiringe, J.W. (2004), Threats to biodiversity and their implications in protected and adjacent dispersal areas of Kenya. *Journal of Sustainable Tourism*, 12(1).
- Pedersen, E.R. (2009), The many and the few: rounding up SMEs that manage CSR in the supply chain. *Supply Chain Management*, 45(2):16-18.
- Pycraft (2010), *Operations management: Global and South African perspectives* (2nd ed.) Pearson Education SA (Pty) Ltd.
- Theyel, G. (2001), Customer supplier relations for environmental performance. *Greener Management International*.35 (3):8-10.
- Tieman, M., Vorst, G.A.J., & Ghazali, M.C. (2012), *Principles in halal supply chain management*. *Journal of Islamic Marketing* 3(3).www.emeraldinsight.com.
- Raghunathan, T.S., Rao, S.S., & Solis, L.E. (1997), A comparative Study of Quality Practices: USA, China, and India. *Industrial Management and Data Systems*, 97(6):5-8.
- Saunders M., Lewis P., & Thornhill, A. (2003), *Research methods for business students. United Kingdom*: Prentice hall, Pearson Edition.
- Sople, V.V. (2010), *Logistics management* (2nd ed.). Pearson.
- Srivastava, S.K., & Ballou, R.H. (2004), *Business logistics/supply chain management* (5th ed.). Pearson Education
- Stading, G.L., & Vorkuka, R.J. (2003), Building quality strategy content using the process from national and international quality Awards. *Total Quality Management and Business Excellence*, 14(8): 12-14.
- Strand, R. (2009), Corporate Responsibility in Scandinavian supply chains. *Journal of Business Ethics*, 85 (1).
- Stoughton, M.A., & Ludema, J. (2012), The driving forces of sustainability. *Journal of Organisational Change Management*.Vol.25 No.4.
- USGS Science for a Changing World.(2010), A Climate trend analysis of Kenya. August.

- Walker, Di Sisto, L., & McBain, D. (2008), Drivers and barriers to environmental supply chain management practices: lessons from the public and private sectors. *Journal of Purchasing and supply management*.14 (1).
- Walton, S.V., Handfield, R.B., & Melnyk, S.A. (1998), The green supply chain: integrating suppliers into environmental management process. *International Journal of Purchasing & Materials Management*, 34 (2).
- Wisner D. W., Leong K.G., & Tan K.C. (2005), *Principles of supply chain management: A balanced approach*. Thomson South-Western.
- Wolf, C., & Seuring, S. (2010), Environmental impacts as buying criteria for third party logistics services. *International Journal of Physical Distribution and Logistics Management*. 4(1/2).
- Zhang, Z., Waszink, A., & Wijngaard, J. (2000), An instrument for measuring TQM implementation for Chinese manufacturing Industries. *International Journal of Quality and Reliability Management*, 17 (7): 6-10.
- Zhu, Q., Sarkis, J., & Lai, K. (2008), Green supply chain management implications for closing the loop. *Transportation Research-Part E*, 44 (1): 5-8.

APPENDICES

APPENDIX I

QUESTIONNAIRE

Kindly fill the questionnaire and tick where appropriate. The information provided will be treated with utmost confidentiality and it is for academic purposes only.

Section A: General Information about the Organization and the Respondent

1. What is the name of your organization?

2. What type of a manufacturing firm is your organization?

Non-alcoholic beverages

Alcoholic beverages

Edible oils and toiletries

Packaging materials

Other (please state)

3. How long has your organization been in operation in Kenya

Less than 5 years

6 – 10 years

11 – 15 years

16 – 20 years

More than 20 years

4. How many employees does your organization have?

Less than 50 employees

51-150 employees

151-300 employees

301-500 employees

More than 500 employees

5. How long have you been working for your organization?

2- 5 years

5-10 years

More than 10 years

6. What is your position in your organization?

Clerical Officer

Supervisor

Manager

Section B: Adoption of environmental requirements / issues

7. Does your organization have an environmental management policy?

Yes No No idea

8. If yes, for how long has the policy been in place?

Less than 5 years

5.10 ears

More than 10 years

9. Who is responsible for environmental management in your organization? Why? (Please give a brief explanation, if possible).

10. To what extent does your organization adopt the following sustainability and environmental friendly practices? *Please use the Likert scale below to rank your*

opinion: 1= Not at all, 2 = to a less extent, 3= to a moderate extent, 4= to a great extent, 5= to a very great extent

Sustainable and Environmental Friendly Practices	1	2	3	4	5
Checking energy consumption and avoiding energy wastes					
Use renewable energy and green power (e.g. Wind, solar, hydro, biomass etc)					
Reduction, reuse and recycling of industrial wastes and water					
Other (please specify)					

Section C: Environmental Requirements

11. Which of the following areas of environmental requirements does your organization focus on when selecting suppliers? *Please use the Likert scale below to rank your opinion: 1= Not at all, 2 = to a less extent, 3= to a moderate extent, 4= to a great extent, 5= to a very great extent*

Areas	1	2	3	4	5
Their capacity to reduce energy consumption and prevent energy waste					
Their policy on the use of renewable energy e.g. Wind, solar,etc					
Their policy on reduction, reuse and recycling of solid industrial waste					
Their capacity to manage reverse flows of rejected goods					
Their policy on the use of environmentally friendly materials (bio-degradable materials like paper)					
Their capacity to manage waste disposal					

SECTION D: Impact of Including Environmental Issues in the Supplier Selection

Criteria on TQM

12. In your opinion do you think the inclusion of environmental requirements in supplier selection criteria has any impact (benefits) on the following TQM indicators? *Please indicate your choice of answer to the question by marking the preferred box.*

Terms of Sustainable Competitive Advantage	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Customer Satisfaction					
Market Share					
Profitability and Returns on Investment					
Reduced waste					
Quality of goods					

SECTION E: Environmental Management System (EMS)

13. Which of the following specific areas (components) does your organisation's EMS satisfy? *Please use the scale following points to rank your opinion: 1= Not at all, 2 = to a less extent, 3= to a moderate extent, 4= to a great extent, 5= to a very great extent*

Areas (Components)	1	2	3	4	5
EMS is endorsed by top management					
EMS forms part of the overall corporate strategy					
EMS emphasizes training on environment					
EMS is well communicated to suppliers to aid implementation					
There is continuous environmental audit and improvement					
EMS addresses disposal in an eco-friendly way					

Section F: Supplier Relationship Management (SRM)

14. To what extent does your organization involve your suppliers in the following areas in order to improve buyer-supplier relationship? *Please use the following scale points to*

rank your opinion: 1= Not at all, 2 = to a less extent, 3= to a moderate extent, 4= to a great extent, 5= to a very great extent

Areas	1	2	3	4	5
Involvement in new products and processes design in order to reduce waste					
Involvement in re-designing of products and processes in order to reduce waste					
Exchange of information between your firm and your suppliers					
Supporting your suppliers to be ISO 14001 EMS certified by offering training					
Facilitating a Total Cost of Ownership approach (beyond price, transport and works)					

Section G: Supplier Evaluation Criteria

15. Which one of the following factors does your organization consider when evaluating suppliers? Use the scale points to rank your opinion: 1= Not at all, 2 = to a less extent, 3= to a moderate extent, 4= to a great extent, 5= to a very great extent

Factors	1	2	3	4	5
Supplier's cost structure					
Financial stability of suppliers					
If a supplier is ISO 14001 EMS certified or not					
E-Systems capability of suppliers					
Quality of products of suppliers					
Price charged by suppliers					
Delivery service levels of suppliers					

THANK YOU VERY MUCH FOR YOUR PARTICIPATION

APPENDIX II

Table A1

List of EMS Certified firms (Nairobi & its Environs)

Firm Name	Postal Address	Certificate No.	Scope
Bidco Oil Refineries Ltd	P.O.Box 239-01000, Thika	ENV/006	Manufacturing
Central Glass Industries Ltd	P.O.Box 49835-00100, Nairobi	ENV/004	Manufacturing
Coca-Cola Juices Limited	P.O.Box 78511-0507, Nairobi	ENV/015	Manufacturing
East African Maltings Ltd	P.O.Box 41412-00100, Nairobi	ENV/005	Manufacturing
Kenya Breweries Ltd	P.O.Box 30161-00100, Nairobi	ENV/012	Manufacturing

Source: www.kebs.org. Accessed on 26/08/2013