The Moderation Effect of Adoption of Green Environment on the Relationship between Organizational Characteristics and Performance of Manufacturing Firms in Kenya

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(*Business Administration*)

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

2016

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A Thesis Submitted in Partial Fulfillment for the Degree of Doctor of Philosophy in Business Administration of Jomo Kenyatta University of Agriculture and Technology.

2016

DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

This thesis is dedicated to my mother, my wife and my children Davis, Dwight and Danna whose love, strength, perseverance and patience enabled me to overcome the many challenges I faced throughout my doctoral studies.

ACKNOWLEDGMENT

By God's Grace, I have done it. It has not been easy but through the support of family, friends, supervisors and colleagues we have been able to surmount what was a tall order. Though I received a lot of support from very many people, I wish to recognize a few who helped actualize this study.

To my Supervisors, Dr. Hazel Gachunga, Prof. John Kihoro and Prof. Martin Ogutu, I will forever be indebted to you. Your unwavering interest in this study, your availability whenever I needed your counsel and your immense knowledge was really educative and without it, I would not be here. I pray that the Good Lord gives you strength and good health to continue assisting future upcoming scholars.

Much regards to Dr. Mike Iravo for his concern and support while the Chairman of Department of Procurement and Entrepreneurship. Much appreciation too goes to Prof. Mukulu the Principal, the teaching and non-teaching teams at ETLM. To these and those that I did not mention but who helped me in one way or the other, thank you very much and God Bless you.

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ACRONYMS AND ABBREVIATIONS

AGOA	African Growth and Opportunity Act
BITC	Business in the Community
CERs	Carbon Emission Reductions
CO2	Carbon dioxide
CR	corporate responsibility
CSR	Corporate Social Responsibility
EMCA	Environmental Management and Coordination Act
EMS	Environmental Management Systems
EPA	Environmental Protection Act
ESG	Environment, Social and Governance
EU	European Union
GDP	Gross Domestic Product
GNP	Gross National Product
HPOs	High Performing Organizations
ISO	14001 International standard for environmental conservation
JFC	Japanese Carbon Finance Company Limited
KAM	Kenya Association of Manufacturers
LEI	Leadership Effectiveness Index
MBA	Master of Business Administration
MMR	Moderated Multiple Regression

NEMA	National Environment Management Authority
RoA	Return on Assets
RoCE	Return on Capital Employed
RoE	Return on Equity
SO_2	Sulphur dioxide
SPSS	Statistical Package for Social Scientists
UNEP	United Nations Environment Program
US	United States of America

DEFINITION OF TERMS

Organizational Characteristics: These are four characteristics which differentiate high performing organizations by leading them to achieving continually superior performance such as higher customer satisfaction, greater customer loyalty and higher productivity. They are customer orientation, quality emphasis, innovativeness and effective leadership (Wiley, 2010)

Adoption of green environment: A firm's tendency to voluntarily take up environmental conservation beyond its legal obligation (Freeman, 1984).

Customer orientation : A component of market orientation that focuses on putting the customers at the centre of an organization's strategic focus (Mc Eachern &Warranty, 2005).

Quality emphasis : A set of organizational practices put in place to ensure the consistent production of high quality products and services (Powel, 1995).

Innovation : According to Kimberly and Evanisko (2011), innovation is the process of making better or new products, processes, services or ideas.

Leadership effectiveness : According to Wiley (2010), Management effectiveness is a factor of management skills and actions that lead to superior performance.

Stakeholder : Any group or individual who can affect or is affected by the achievement of the organization's objectives (Freeman, 1984).

Firm performance : Financial or non-financial Indications that a firm is able to meet at least some interests of most or all its stakeholders (Levey, 1995).

Moderating variable : A moderator is a qualitative (e.g., sex, race, class) or quantitative (e.g., level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable. Within a correlational analysis framework, a moderator is a third variable that affects the zero-order correlation between two other variables (Levey, 1995).

Performance Measurements : Indicators employed to imply that a firm is achieving its objectives (Ohemenge, 2009)

Strategy : The process of putting the plan into operation (Sunil, Peter, Petr & Klave, 2011).

Sustainability : A concept on use of natural resources to meet today's needs without compromising the ability of future generations to utilize the same (Hua, Ja&Pei, 2015).

ABSTRACT

For the manufacturing sector in Kenya to thrive, innovative strategies making use of the current important human concerns must be used. Strategic theory has for a long time shown that high performing organizations (HPOs) strategize along four traditional organizational characteristics; customer orientation, quality emphasis, innovation and leadership effectiveness. Keen analysis of most organizational strategies will reveal that the four characteristics are central to their strategies. To be leaders in the sub-sector, manufacturers will have to innovatively include emerging issues and concerns in their strategies. Due to the costs involved in adoption of environmental conservation measures in a firm's value creation chain, many firms are only willing to do the minimum they can get away with. Studies have shown that significant action by organizations on any issue arise if the issue is captured in the strategies. To most managers, the issues central to strategy are the four organizational characteristics which are; customer focus, product quality, innovativeness and leadership effectiveness. This study aimed at establishing whether adoption of green environment has a moderating effect on relationship between the four organizational characteristics and performance of manufacturing firms in Kenya. A descriptive research design was employed with the target population being the 642 manufacturing firms, members of the Kenya Association of Manufacturers as of December 2012. A sample of 177 firms distributed among the sub-sectors was randomly selected. A semi structured, self administered questionnaire was used to collect data. The target respondents were to be the Chief Operation Officers or other senior level managers with access to information. A pilot study was done to test the questionnaires validity and reliability. After data collection, qualitative and quantitative techniques were used to analyze primary data. Data analysis revealed that the organizational characteristics were strong predictors of firm performance. Further, it was established that adoption of green environment did moderate that relationship. However, the moderation was inverse for the relationship between organizational characteristics and performance where a unit rise in moderated organizational characteristics reduced firm performance. This was explained by the motives for the adoption. Results indicated that firms adopted green to sooth external expectations and not to improve efficiency and hence performance. Researchers have shown that internal motives encourage firms to exploit a management practice as an "organizational resource" to improve operations due to the precise application of explicit, rational, and proven rules. In contrast, external motives drive firms to seek legitimacy. Another reason for this is that most firms had adopted green for a relatively short time. In the short term, adoption of green increases cost of production lowering the effect of the organizational characteristics on the firm performance. Performance rises slowly over time and becomes evident in the long term. Based on the findings, it is recommended that manufacturing firms should align adoption of green environment with internal motives like lowering cost of production, improving product quality among others, for it to improve their performance. Membership associations such as Kenya Association of Manufacturers should engage their members on the benefits of adopting green with internal motives. This

study concentrated on the manufacturing sector. Other similar studies should be carried out in other sectors of the economy.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

This study sought to investigate the effect of adoption of green environment on the relationship between organizational characteristics and performance of manufacturing firms in Kenya. Stakeholders in the manufacturing sector in developing countries like Kenya are upbeat about the potential of the sector propelling them to middle income status in the near future. Although the government has in the last decade tried to pro-vide incentives to investors in the sector, the sector's growth has been stagnant (K.A.M, 2009). Several challenges that the sector is facing include high power costs, irregular power supply, dumping, poor infrastructure and a range of issues to comply with, which all go to raising the cost of production.

The liberalization of the economy in the early 1990's led to unprecedented level of competition from manufacturers who came in from other countries. Additionally the 1999 enactment of the Environmental Management and Coordination Act (EMCA) meant that manufacturers had to deal with a range of legal requirements aimed at conserving the environment. These include annual environmental audits, noise control, environ-mental impact assessments at the inception of any potentially environmental harmful projects and several among others. All these requirements go to eating up a firm's income and ultimately, raise their production costs, making the firm

uncompetitive. Moreover, customers and communities hosting the manufacturing firms are becoming more aware of the firms responsibilities to them, which include conserving their environment. The above requirements leave manufacturers with no option but to ensure their processes do not pollute the environment. The challenge has been in establishing whether strategies used by firms to ensure high performance is mutually exclusive of being proactive in environmental conservation. The costs involved in cleaner production are enormous. Firms need to procure environmental friendly technologies, train staff and hire others with the right skill sets and continuously audit processes to ensure they comply with set pollution guidelines. Scholars are in agreement that complying with environmental regulation is expensive. Spending on a cleaner environment can lead to a raise in the cost of goods produced, reducing their consumption (Godstein,1995).

1.2.1 Global Perspective on Organizational Characteristics, Adoption of Green Environment and Firm Performance

In the face of the challenges the world is facing due to climate change, governments in many countries have established many command-and-control policies, such as emission performance standards and abatement technology mandates, to regulate pollution. However, such command-and-control policies are often criticized as inflexible, heavy-handed, cost-ineffective, and less incentive on induced dynamic technology progress. All over the world, businesses are coming to terms with the fact that they need to mind an additional stakeholder to satisfy regulation and to gain a competitive edge. The additional stakeholder is the natural environment. Garrod and Chadwick (1996) say that

adoption of the green environment by businesses is rapidly becoming an important strategic issue. Many organizations have realized they can gain a competitive advantage by taking proactive measures to protect the natural environment from harm, in addition to avoiding penalties from regulators.

Organizations have been experimenting on the impact of pollution control and cleaner production on their performance for many years. In 1975, 3M, a US based company pioneered a new path to control pollution. Rather than merely collecting and treating waste after it had occurred, as required by law, they sought to prevent the creation of that waste in the first place. The program, dubbed Pollution Prevention Pays (3Ps) acted as a model for many other manufacturers in the US for the next 20 years. In that period, 3M reported saving up to $500 million through lower raw materials, compliance costs, disposal and liability costs (Stuat & Gautuam, 1996). Other proponents of this view include former US president Al Gore, (Gore, 1992), and Michael Porter, (Porter & Van der Linde, 1995).

The competitive advantage gained through sustainability extends beyond consumer choices. For instance, a study by A.T. Kearney and published by Strandberg (2009) ,found that companies that are listed on the Dow Jones Sustainability Index or Gold-man Sachs' SUSTAIN Focus outperformed industry averages during economic down-turns. The 2011 Sloan Management Review by the Massachusetts Institute of Technology (MIT) found similar results, demonstrating that companies implementing sustainability

at the core of their business strategy not only perform better in strong markets than companies that do not adopt sustainable practices, but that they are also more resilient during economic downturns (MIT., 2011). Furthermore, a study by Weber(2012) found that 60 per cent of a company's market value is attributable to its reputation and over two-thirds of US consumers avoid products made by companies they do not like and check labels to ascertain the identity of the parent company (Weber, 2012). Being a polluter is one reason that a company can lose credibility.

Further, results over a 5 year period showed that Dow Jones Groups Sustainability Index (DJGSI) performed an average of 36.1% better than did the traditional Dow Jones Group Index (World Economic Forum, 2005). The DJSI 2008 report, affirmed a positive strategically significant correlation between corporate sustainability and financial performance, citing that a number of its indexes have outperformed their comparative benchmarks in relation to total returns since the launch of the respective indices. The report found that sustainability strategies had a significant impact on the cost of external financing, return on invested capital, sales growth, and the fade-rate of a firm's competitive advantage." (As reported in BITC: The Value of Corporate Governance, October 2008.)

There is the dissenting side to this, supported by facts. The Environmental Protection Agency (E.P.A.) in a report published in 2011 reported that pollution control costs accounted for 2% of the GNP of the United States of America. It also reported that

environmental costs were up to 20% of corporate capital costs. These facts, according to Gautuam (1996), indicate a trade-off between environmental and economic goals. Among the supporters of this view is Portney (1994). A more recent study by Olga, Elizabeth and Helen (2015) titled: Does It Pay to Be Green? The Case of French Ski Resorts, published in the Journal of Travel Research found that contrary to findings of current studies that showed that a "proactive" environmental strategy is not more positively correlated with firms' performance than a "concerned citizen" strategy.

1.1.2 Organizational characteristics for high performing firms

Research has over time led to identification of some success factors, present in high performing firms. These factors are known to contribute to over 80% of a firm's performance (Owen *et al*, 2001). The factors have been christened organizational characteristics since all high performing organizations posses them in a some combination. The organizational characteristics are; customer orientation, quality emphasis, innovation and leadership effectiveness. Today, any well running organization strives to acquire these characteristics through staff training, capital injection, recruitment as well as staff motivation.

1.1.3 Kenyan Perspective

Many Kenyan companies agree that customer focus, quality emphasis, innovativeness and leadership effectiveness are key success factors. Statements such as customer is king, customer is always right and our customers are the most important person to our business are common in many businesses. Several studies have been carried out to

establish the relationship between customer orientation and performance. Customer orientation has been displayed in many ways. These include customer feedback programmes, customer reward programmes, continuous customer needs assessments and innovation to delight customers.

Quality emphasis has been another important success factor for businesses in Kenya. Studies indicate that over 70% of strategic plans in Kenya has quality improvement as a major component for organizational success. Another indicator of quality uptake in Kenya has been the adoption of quality standard such as ISO. Today, it is highly unlikely to find any sizable manufacturing concern without one or several ISO certifications. It has also become very common to find quality teams whose main function is to continuously think of how quality of products and processes can be improved.

Innovation has recently gained popularity as a means of gaining competitive advantage which is not easy to replicate. Through innovation, firms are developing new products, improving existing products as a means to differentiate them from competition as well as improving their processes in order to lower production costs and improve product quality. In the recent past, Kenya has witnessed improvements in product quality like reduction of cholesterol from cooking oils, reduction of sulphur in petroleum products among others. Such innovations are aimed at attracting new customers, maintain the existing ones as well as open export markets to countries that has restrictions on products and chemical composition of products.

The role of effective organizational leadership has been dawning on Kenyan Firms. In the recent years, more emphasis and effort is being put in recruitment of organizational leaders. Organizations are investing heavily to retain such leaders including by offering them exceptional perks, trainings and free operating space. Among the organizations whose good performance has been attributed to effective leadership include Equity Bank, Safaricom, Kenyatta University, East African Breweries.

Few local examples of manufacturers adopting green environment are available. One such is The Mumias Sugar Company. According to UNFCCC (2012), the Mumias Sugar Company generates renewable energy through the combustion of bagasse which is available as a waste component of factory production. The project generates 35 MW of electricity of which 10 MW are consumed by the factory itself, and the balance is sold to the national electricity grid (UNFCCC, 2012). From an emission reductions standpoint, combusting biomass for electricity generation has a dual benefit: It produces renewable energy while avoiding methane emissions, which would result from land filling the bagasse.

The project is expected to save nearly 1.3 million tonnes of carbon dioxide emissions over a 10-year period (2008 - 2018). Revenues from CERs are a key element of the financing strategy of the renewable energy project at Mumias Sugar Company. Carbon emission reductions income is expected to increase the project's internal rate of return by two percent (UNEP, 2012). Mumias Sugar has entered into a ten-year agreement

(2009–2019) with the Japanese Carbon Finance Company Limited (JFC), selling its CERs on a long-term basis and thereby generating significant revenue.

1.1.4 Green Environment

The natural environment encompasses all living and non-living things occurring naturally on earth or some region thereof. It is an environment that encompasses the interaction of all living species. It is difficult to find absolutely natural environments, and it is common that the naturalness varies in a continuum, from ideally 100% natural in one extreme to 0% natural in the other. More precisely, it is possible to consider the different aspects or components of an environment, and see that their degree of naturalness is not uniform. The need to be aware of the impact of business activities to the environment and taking proactive measures to prevent them or mitigate them has been driven by several factors. To begin with, there is a growing awareness that natural resource pool is definite.

A study by the United Nations in 95 countries led to publication of the Institute (2005). One of the main conclusions of the study was that 60% of the ecosystems supporting life on earth such as fresh water, clean air and relatively stable climate are being degraded or used unsustainably. This is a major concern to businesses. Many raw materials are sourced from the ecosystems. Destruction of the same would lead to unavailability of raw materials. Additionally, signs of severe stress to the environment are becoming visible. The Institute (2005), report concludes that the time for a rational, well planned

transition to a sustainable system is running out. Already we are faced by full scale emergencies through water and food shortages, destruction of tropical forests, climate change, and air pollution among others. Cahil and Ftizpatrick (2006) argue that the future of human beings is dependent on the environment in which we live and on which we rely. They further say that urgent action is needed to reverse the current levels of environmental degradation and human poverty worldwide. They suggest that one such action is by corporate entities adopting green environment in their undertakings.

1.1.4 Manufacturing Sector in Kenya

Manufacturing is one of the main engines of growth in developing countries (Szirmai, 2009). Although the sector is usually small in most African economies, in terms of share of total output or employment, growth of this sector has long been considered crucial for economic development. This special interest in manufacturing stems from the belief that the sector is a potential engine of modernization, a creator of skilled jobs, and a generator of positive spillover effects (Tybout, 2000). Policy makers in Kenya recognize the importance of the manufacturing sector for long-term economic development. Indeed, the growth targets for manufacturing stated by the government in its Vision 2030 document are ambitious and require rapidly increasing investment levels, eventually reaching levels above 30% of GDP (Republic of Kenya, 2007). According to the 2009 Statistical Abstract, the manufacturing sector comprised of over 4,900 enterprises and directly employed more than 260, 000 persons as at the year 2008 with an additional over 1.7 million people employed in the informal side of the industry.

Major manufacturing industries in Kenya include; agricultural processing, publishing and printing, manufacture of textiles and clothing, cement, tires, batteries, paper, ceramics, and leather goods. Assembly plants, which utilize imported parts, produce various kinds of commercial and passenger vehicles and even export a small quantity to other African countries such as Uganda, Tanzania, Rwanda, Burundi and most recently, South Sudan.

Kenya also refines crude petroleum into petroleum products, which are mainly consumed locally. Since 2004, the performance of the manufacturing sector has been mixed. In 2004-06 the sector grew by approximately 4.5 per cent before reaching a high of 6.5 per cent in 2007. Growth slowed down to 3.8 per cent in 2008 mainly owing to effects of the post-election crisis and high inflationary pressures and 2009 was no better with a 2.0 per cent growth. In 2010, the sector grew by approximately 4 per cent due to improvements in the East African markets.

Although there is a lot of expectation on the potential of the sector to contribute more to the economic and social transformation of the Country, insiders are cautioning of tough times ahead. According to K.A.M (2009), the sector profiles have highlighted major barriers and aspects that negatively affect their day-to-day operations.

While some of the issues are sub sector specific, others are cross-cutting and tend to affect most if not all the sub sectors. These issues include the cost of electricity, illicit

trade, counterfeits and unaccustomed good, lack or shortage of raw materials, corruption in Government and infrastructural problems among others. The association stresses that these issues must be addressed in order to reduce the cost of doing business and to increase, the level of efficiency in Kenya's manufacturing. Another big challenge facing the manufacturing sector in Kenya is the high environmental compliance costs that greatly increase the cost of production. Environmental compliance also hampers many local manufacturers from accessing affluent markets like the EU member states, the US, Canada and several others.

In fact, according to Bigstein *et al*. (2010), to break into export markets Kenyan firms can benefit from market advantages provided by richer countries. For example, AGOA has provided one form of advantage that has been very beneficial for Kenyan apparel production. Trade agreements with the EU have not been as effective as presumed, since it has tough and complicated rules of origin. The EU had the idea that one should seek to stimulate the production of complete products, but the situation has changed in recent decades. Competition in international markets is less and less in terms of products and more and more in terms of tasks. Therefore the rules of origin become particularly critical. Adoption of environmental processes is one important aspect considered as part of the rules of origin.

1.1.5 Organizational Characteristics for High Performing Firms

Several factors are known to be important in determination of a firm's performance. Research on high performing organizations (HPOs) indicates that they consistently

deliver high quality products and services which culminate to impressive performance (Owen *et al*., 2001). HPOs can be differentiated by their continually superior performance such as higher customer satisfaction, greater customer loyalty and higher productivity (Wiley, 2010). A keen review of literature suggests that HPOs share the following four fundamental characteristics; customer orientation, quality emphasis, innovation and effective leadership.

Customer orientation is the conscious decision by an organization to put customer concerns at the centre of all their activities. As such, no decision is made without considering its implications to the customers (Owen *et al*., 2001). A component of market orientation that focuses on putting the customers at the centre of an organization's strategic focus (Mc Eachern & Warranty, 2005).

Quality emphasis comprises a set of organizational practices put in place to ensure the consistent production of high quality products and services (Powel, 1995). The goods and services produced are differentiated hence aiding a firm to gain a competitive edge. Additionally high quality goods and services, meeting international standards enable a firm to access affluent markets such as the European Union and United States where they can reap high returns. Further high quality products target the discerning customer who is usually willing to pay a premium for the products they value. These lead to higher returns to the firm.

According to Kimberly and Evanisko (2011), innovation is the process of making better or new products, processes, services or ideas first. Innovative firms are able to reap benefits associated with early adoption and possession of processes, technology and skills which are not easily replicable by competitors. These two factors lead to better performance.

According to Wiley (2010), Management effectiveness is a factor of management skills and actions that lead to superior performance. Effective management ensures that a firm's resources are optimally allocated to reap the maximum benefits. Such skill is gained through practice and training Wiley (2010).

1.2 Statement of the Problem

The projected growth of the manufacturing sector in the Vision 2030 will depend on many factors, competitive advantage being key among them. Researchers have over the years shown that competitiveness can be achieved through a firm being customer oriented, innovative, being quality focused and having an effective management.

By being customer oriented, manufacturing firms go all out to please their customers by ensuring that the customers' needs are taken care all. This is done by getting feedback on product quality, improving customer services and anticipating future customer needs and planning on how to meet them. Customer orientation ensures that a firm retains and attracts new royal customers who will support it in to the future by buying its products.

When firms strive to produce products and services of highest quality through adoption of appropriate technologies, capital injection, staff recruitment and training, among others, then it is said to posses the character of quality emphasis (Powel, 1995). Quality emphasis assists firms to differentiate themselves and their products, leading to attracting and retaining a royal client base which leads to organizational performance.

Innovation on the other hand gives a firm head start over competition. The new products and services that result from innovation take time before competitors can replicate. By such time, the innovator firm usually has reaped the benefit by getting high returns (Kimberly & Evanisko, 2011).

Effective leadership on the other hand is key in ensuring that the organization is steered prudently and that resources are allotted rationally to ensure high returns. The four characteristics are been shown to contribute significantly to firm performance.

Little is however known about how this relationship is moderated by factors such as being green. This is important, especially now that the world is grappling with effects of environmental degradation. According to UNEP (2000) if environmental considerations are not effectively integrated into the design of industrial processes, the implications can be manifold. Industries, in general, consume almost 40 per cent of the world's energy and emit about 50 per cent of world's carbon dioxide, 90 per cent of world's sulfur dioxide and nearly all of its toxic chemicals.

Lately, however, the severity of some of the local impacts of industry and the high cost of remediation to the industry is becoming an increasingly sensitive issue. The UNEP report further warns that in the recent years, there has been a structural shift towards increased industrialization. Developing economies with low levels of industrialization are gradually shifting their dependence from agriculture to the industrial sector, while developed economies, with a high level of industrialization, are shifting from the industrial to the service sector. Kenya is no exception. As mentioned in the Introduction, the sector plays an essential role in economic development and the alleviation of poverty in Kenya, a role expected to became more significant towards the achievement of Vision 2030 (Republic of Kenya., 2007).

If short or long term, negative impacts occur, governments and industry should be ready to assume responsibility for population and environmental outcomes. In ideal situations, all stakeholders including the industry, government and private individuals should take up proactive measures to safeguard environmental integrity and hence the future. Unfortunately, this is not the common practice, (Wanjohi, Iravo & Mwambia, 2012).

The main hindrance to adoption of the green environment by industries has been the perceived mismatch between costs and benefits of such undertaking. Rivera, Walley and Whitehead (1994) stated that the high costs associated with environmentally conscious activities and the little competitive advantages obtained can discourage enterprises from taking action.

However, Ja (2005) stated that the enterprises that target the ecologically aware consumer segment can take advantage of being the first to offer less contaminated products.

By observing the trend of some industries in the developed world, some businesses are starting to appreciate that adoption of the green environment is good for business. Today, a number of organizations are striving to demonstrate a good environmental record through ISO 14001 certification, corporate social responsibility actions and setting up environmental policies. Studies on determinants of performance of manufacturing industries in Africa such as those by Soderbomns and Teal (2001) do not place any importance on adoption of green environment as a moderator in performance. This study sought to establish whether adoption of green environment has any moderating effect on performance of manufacturing firms in Kenya.

1.3 Objectives of the Study

The general and specific objectives that guided this study were;

1.3.1 General Objective

To establish the moderation effect of adoption of green environment on the relationship between organizational characteristics and performance of manufacturing firms in Kenya.

1.3.2 Specific Objectives

1. To determine whether adoption of green environment moderates the relationship between customer orientation and performance of manufacturing Firms in Kenya.
2. To examine whether adoption of green environment moderates the relationship between quality emphasis and performance of manufacturing Firms in Kenya.
3. To establish whether adoption of green environment moderates the relationship between innovation and performance of manufacturing Firms in Kenya.
4. To establish whether adoption of green environment moderates the relationship between management effectiveness and performance of manufacturing Firms in Kenya.

1.4 Research Hypothesis

The following null hypotheses were tested:

H_{01}: Adoption of green environment has no significant moderation effect on the relationship between customer orientation and performance of manufacturing Firm.

H_{02}: Adoption of green environment has no significant moderation effect on the relationship between quality emphasis and performance of manufacturing Firm.

H_{03}: Adoption of green environment has no significant moderation effect on the relationship between innovation and performance of manufacturing Firm.

H_{04}: Adoption of green environment has no significant moderation effect on the relationship between management effectiveness and performance of manufacturing Firm.

1.5 Scope of the Study

As indicated above, among human activities that degrade the environment most, is manufacturing. This study focused on this industry in Kenya mainly targeting the large manufacturing firms who are members of KAM as at 2008. Being members of KAM, which has a vision to be a world class business membership organisation effectively delivering services to members wherever they operate, the firms are encouraged to adopt the green environment through energy efficiency, recycling and reduced emissions among others.

1.6 Justification of the Study

This study is important to a number of stakeholders. To the manufacturing firms, the study will give a clear indication as to whether there are performance benefits that can be derived from going green. This will enable manufacturers to carry out an objective cost benefit analysis in the process of adopting green environment. Next are environmental lobby groups. This study will help them in lobbying manufacturers and other business concerns by not only insisting on environmental conservation for sustainability's sake but also as a means of improving performance.

The next group that will benefit from this study is the National Environment Management Authority (NEMA), the government's environmental management arm. NEMA will be at a position to gauge the awareness levels of manufacturers on environmental conservation and their role in it. This will inform NEMAs awareness programming targeting manufacturers. Lastly, this study will impact the lives of all Kenyan, current and future generations. This is by continuing to raise awareness on the need to con-serve the environment and safeguard the live supporting natural systems required for life today and by future generations.

1.7 Limitations of the study

Access to managers with the required information on adoption of green environment was a problem as they lacked the understanding of what it meant to adopt green. This was mitigated by researcher taking the managers through the facets of adoption of green and how the adoption was evidenced in manufacturing firms. They were also guided through the questionnaire to have an in-depth understanding on what they were expected to respond to.

There was a difficulty in getting private companies to freely share their accounting results. This was mitigated by including indirect questions to assist collect data to measure the same performance indicators.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with reviewed literature deemed relevant to the study. It provided a theoretical and empirical grounding for the problem under investigation. The chapter is divided in to three parts. The first part looks at the concept of green manufacturing. Second part identifies and explains the theoretical framework models on which the study was based. Fourth part related the dependent and independent variable in a conceptual framework, which guided the entire study. Next was a look at the study variables and how they would be measured followed by a brief on related empirical studies. The seventh part discusses the research gaps on adoption of green environment in to business processes as a performance enhancing strategy, which this study aimed to fill.

2.2 Theoretical Framework

Several theories have been advanced to explain organizational performance. In this study, several theories will be analysed. These are the stakeholder's theory, natural resource based view theory, the innovation theory, the economic approach theory and the institutional sociology and appreciative management theory.

2.2.1 Stakeholder Theory

According to Freeman (2014b), a stakeholder is any group or individual who can affect or is affected by the achievement of the organization's objectives. Miles (2006) states that the organization itself should be thought of as grouping of stakeholders and the purpose of the organization should be to manage their interests, needs and viewpoints. Freeman (2014a) defines stakeholders as those groups who are vital to the survival and success of the corporation.

The theory is in part concerned with the influence of a wide range of actors in an organization's environment on organizational performance as many researchers have argued (Donaldson &Preston 2005; Freeman 2014; Quin & Thomas, 1995; Mitchell *et al*, 1997). Unlike traditional input-output models of organization performance, stakeholder theory emphasizes the interaction between interest groups such as the organization's employees, members of the social community, shareholders, and other allied organizations, in determining organization performance.

Some stakeholders identified by Friendman and Miles (2006) include, customers, employees, local communities, suppliers and distributors, the media, the public in general, business partners, future generations, past generations (founders of organizations), academics, competitors, non Governmental organizations or activists considered individually, stakeholder representatives such as trade unions or trade associations of suppliers or distributors and financiers, other than stockholders (debt

holders, bondholders, creditors), competitors, government, regulators and policymakers. Modern writers have identified the natural environment as part of an organization's stakeholders. This has been informed by the important role that the natural environment plays in the success of businesses. Most raw materials are found as naturally occurring substances, plants and plant products, animal or animal derivatives and minerals among others. The environment also acts as the sink at the end of the pipe.

It is thus impossible to think of success and performance of manufacturing firms without the natural environment. According to Porter (1980), competitive advantage and hence high performance can be achieved by controlling raw material source. In order to safeguard this important stakeholder, firms have an important role in pollution and emission control through active and proactive measures.

2.2.2 Natural Resource Based View Theory

Researchers in the field of strategic management have long understood that competitive advantage depends on the match between distinctive internal (organizational) capabilities and changing external (environmental) circumstances (Andrews, 2001; Chandler, 1962; Hofer& Schendel, 2008; Penrose, 1959). However, it has only been during the past decade that a bonafide theory, known as the resource-based view of the firm, has emerged, articulating the relationships among firm resources, capabilities, and competitive ad-vantage (Porters, 1980,1990).

Recent environmental challenges facing the world have led to scrutiny of human economic activity, especially manufacturing. Projected population growth in the next 40 years will lead to accelerated production. According to Gore (1992), this growth might not be ecologically sustainable. Such production will stress the earth's natural systems beyond recovery (Commoner, 1992). As such, economic activity must change or risk irreversible damage to the planet's basic ecological systems.

2.2.3 Theory of Innovation

This theory is attributed to Schumpeter (1934, 1939, 1943). The theory had low status until end of 1970s. The economic depression of the 1970s and the subsequent boom lead to the conclusion that innovations are the determinants responsible for most growth when an economic boom begins in a period of depression (Freeman, 1974). Earlier on, Schumpeter (1943) had attributed profit to dynamic changes resulting from an innovation. To start with he takes a capitalist closed economy which is in a stationary equilibrium. This equilibrium is characterized by what Schumpeter calls a "circular flow" which continues to repeat itself for ever. In such a static state, there is perfectly competitive equilibrium. The price of each product just equals its cost of production and there is no profit.

Only exogenous factors like weather conditions can cause changes in the circular flow position. In the circular flow position goods are being produced at a constant rate. This routine work is being performed by the salaried managers. It is the entrepreneur who

disturbs the channels of this circular flow by the introduction of an innovation. Thus Schumpeter assigns the role of an innovator not to the capitalist but to the entrepreneur. He emphasizes creating new value-generating activities as a means of searching for higher profits from innovation. Such value generation can be tapped from adoption of the green environment.

Sundbo (1998) argues that innovations are important to the national economy during periods of depression. He adds that its also key to individual organizations because it portends potential for expansion and future profits. Firms can use the green environment creatively to gain a competitive advantage. Proto and Supino (1999) argued that the quality of the environmental information the enterprise reports about its activities might be its biggest source of competitive advantage when seeking to gain customer loyalty. Furthermore, Zaragoza (2004) state that cost savings from the reduced use of raw materials and energy and the improvement of productive processes can become competitive advantages for enterprises as well. This theory instigated the third specific objective of the study on the effect is adoption of green environment on the relationship between innovation and performance of manufacturing firms in Kenya.

2.2.4 The Economic Approach Theory

The economic approach describes firms' adoption behavior as driven by performance outcomes. A firm will more likely adopt a process or an innovation which will directly lead to improved profitability. This theory seeks to identify the circumstances when it pays to be green and that managers exhibit rational behavior when they adopt beyond

compliance environmental practices also known as environmental proactivity. (Russo & Fouts, 1997; King & Michael, 2001). It will be expected that firms will adopt any practice that results to economic gain. As such, should it be established that adoption of green environment positively affects economic outcomes of a firm, such a firm will willingly adopt such practices to maximize on such gain. The above theory supports the general objective of the study on the adoption of green environment as a moderator of the relationship between organizational characteristics and performance of manufacturing firms in Kenya.

2.2.5 The Institutional Sociology Theory

This theory is rooted in institutional sociology processes through which firms respond to institutional pressures. The institutional sociology framework emphasizes the importance of regulatory, normative and cognitive factors that affect firms' decisions to adopt a specific organization practice, above and beyond the technical efficiency of the practice. Institutional theory places particular emphasis on legitimation processes and the tendency for institutionalized organizational structures and procedures to be taken for granted, regardless of their efficiency implications (Hoffman & Marc, 2002).

As the theory explains the motivation for firms to act in certain ways, the theory supports the general objective of the study on the adoption of green environment as a

moderator of the relationship between organizational characteristics and performance of manufacturing firms in Kenya.

2.2.6 Contingency management theory

The contingency approach to leadership was influenced by two earlier research programs endeavoring to pinpoint effective leadership behavior. During the 1950s, researchers at Ohio State University administered extensive questionnaires measuring a range of possible leader behaviors in various organizational contexts. Although multiple sets of leadership behaviors were originally identified based on these questionnaires, two types of behaviors proved to be especially typical of effective leaders. The first one is consideration. These are leader behaviors that include building good rapport and interpersonal relationships and showing support and concern for subordinates. Second are behaviors that initiate structure. These are leader behaviors that provided structure such as; role assignment, planning and scheduling to ensure task completion and goal attainment.

Later, researchers from the University of Michigan confirmed that the two behaviors deed affect effective leadership. The University of Michigan investigators, however, termed these leadership behaviors as *relation-oriented behavior* and *task-oriented behavior*. This line of research was later extended by Robert Blake and Jane Mouton in 1964 to suggest that effective leaders score high on both these behaviors.

They suggested that previous theories such as Weber's bureaucracy and Taylor's scientific management had failed because they neglected that management style and organizational structure were influenced by various aspects of the environment: the contingency factors. There could not be "one best way" for leadership or organization.

This theory asserts that when a manager makes decisions, they must take in to account all aspects of the current situation and act on those aspects that are key to the situation at hand. Adoption of green environment has become such a contingency. The theory instigates the moderating variable, adoption of green environment as well as the leadership effectiveness variable.

2.2.7 Appreciative Management theory

This theory also known as appreciative inquiry was fronted by David Cooperrider in 1980s. The theory directs management to look at the best practices in a company and expand upon them to solve problems. According to Cooperrider and Srivastva (1987), appreciative inquiry attempts to use ways of asking questions and envisioning the future in order to foster positive relationships and build on the present potential of a given person, organization or situation. The most common model utilizes a cycle of four processes, which according to Cooperrider, Barret and Srivastva (1995) focuses on: DISCOVERING: The identification of organizational processes that work well, DREAMING: The envisioning of processes that would work well in the future, DESIGNING: Planning and prioritizing processes that would work well and DEPLOYING: The implementation (execution) of the proposed design.

According to Bushe and Kassam,(2005), appreciative inquiry advocates collective inquiry into the best of what is, in order to imagine what could be, followed by collective design of a desired future state that is compelling and thus, does not require the use of incentives, coercion or persuasion for planned change to occur. The pressure for adoption of green environment occasioned by climate change is leading to a new thinking in organizations that to survive and prosper, they need to act consciously and conserve the environment through all their processes. On applicability, Barrett and Fry(2005) argues that it is used in organizational development and as a consultancy tool in an attempt to bring about strategic change. Bushe (2013) further says that it has been applied in businesses, health care bodies, social non-profit organizations, educational institutions, and government operations.

Proponents of the theory such as Whitney and Trosten(2010) argue that appreciative management aims to build or rebuild organizations around what works, rather than trying to fix what doesn't. They further the approach can bring about improved performance through generating new ideas and the will to act on them. The challenge of applying the approach according to Bushe (2010) is that for transformational change to occur, the approach must address problems that concern people enough to want to change. This theory supports the innovation variable as well as the leadership effectiveness variable.

2.3 Conceptual Framework

A conceptual framework is a visual or written product explaining graphically or in narrative the main aspects to be studied, the key factors, concepts or variables and the presumed relationships among them.

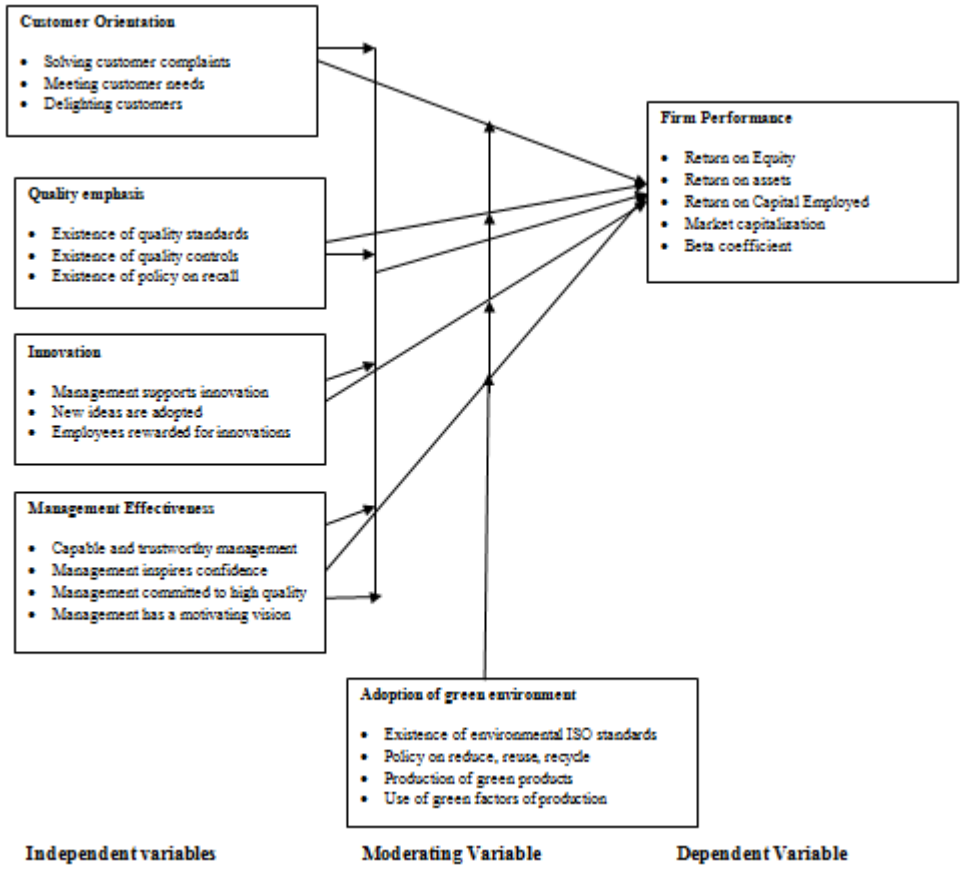

Figure 2.1: Conceptual framework

2.3.1 Customer Orientation

Mc Eachern and Warranty (2005) define customer orientation as a component of market orientation that focuses on putting the customers at the centre of strategic focus. Slater

and Narver (1994) argue that customer orientation is an organization's disposition to continuously deliver superior value to its customers. Nakata and Zhu (2006) assert that customer orientation encompasses the analysis of customers' needs, and responsiveness of organization to such needs.

Studies have provided evidence that supports the link between customer orientation and business performance. According to Nerver *et al*. (2000), organizations are more successful when they embrace a customer-focused orientation. Olalekan (2010) argues that organizations that display this characteristic place the desires and needs of the customers at the centre of the organization, such that for such organizations to achieve appreciable performance, their focus must be the customers. In addition, Apia-Adu and Singh (2008), and Hartnell *et al*. (2011) found that customer orientation is positively related to operational performance such as quality of goods and service, new products' success, sales growth and return on investment.

Although customer orientation and performance are related, studies have shown that that relationship can be moderated. In the Nigerian study by Olalekan (2010), the relationship was found to be moderated by managerial attitude and marketing information systems possessed by the firms. Business leaders have come to terms with this fact. In the recent times, consumers are more demanding than ever those companies maximize their societal and ecological contribution.

It seems clear that only the best corporate citizens will thrive in tomorrow's marketplace HP (2008). Reputation for integrity and respect can build customer loyalty based on distinct values differentiating the brand from the competition. More than two-thirds (68%) of Canadians take a company's CSR performance into consideration when they make everyday purchases (Scotiabank, 2007).

Seventy to eighty percent of public companies valuation in American and Western stock markets depends on expectations of the company's cash flow beyond the next three years. Companies' reputations strongly shape those expectations and corporate citizenship is the top driver of reputation, according to the Reputations Institute's 2007 global survey Oppenheim (2008). Within a global context, Canada is the third most demanding market after Australia and Great Britain for corporate values to extend beyond financial gain and are the most likely to punish those companies they consider to be socially irresponsible. In Canada, 34% of respondent said they would be more likely to purchase products or services from a company with a good reputation for environmental responsibility.

This compares with the 42% in United States (Tandberg, 2007). The above clearly indicate that adoption of green environment can have strong moderation effect on the relation between customer orientation and firm performance. However, other studies, such as those by Newman, Gorlin and Dhar (2008) indicate that customers can shun

green products if they perceive that greening the products was the main motive of a firm. This is because they feel that resources for improving quality were diverted to greening.

To capture perception on relationship between customer orientation, answers on the following items were sought on a five-point agreement scale: Customer problems get corrected quickly, policies and procedures are designed to make it easy for customers to do business with us, the firm regularly uses customer feedback to improve work processes and overall, customers are very satisfied with the products and services they receive from my organization.

2.3.2 Quality Emphasis

Powell (1995) defines quality emphasis as a set of organizational practices put in place to ensure the consistent production of high quality products and services. Empirical research by Milan *et al*. (2012); Juran (2013) and Powell (1995) have established the link between quality emphasis and organizational performance. Quality emphasis presents an opportunity to develop cutting edge technology and innovative products and services for unmet social or environmental needs that could translate to business uses, patents and proprietary knowledge Juran (2013).

Respondents were asked to rate quality emphasis by indicating their level of agreement to the following items about where they work: The firm has set clear performance standards for product or service quality, The firm’s improvement efforts result in both higher quality and lower costs, the firm is continually improving the quality of its

products and services, all day-to-day decisions demonstrate that quality and improvement are top priorities.

2.3.3 Innovation

Innovation is one of the greatest sources of competitive advantage to a firm. According to Kimberly and Evanisko (2011), innovation is the process of creating better or new products, processes, services, or ideas. Schmookler (1966) suggests that being innovative is when an enterprise produces a good or a service or uses a method or inputs that is new to it or it introduces technical changes.

The enterprise that is first to make a given technical change is an innovator. Geroski *et al*. (2013) stress the importance of firms not only innovating, but also mastering the learning process within the firm associated with innovation. On the other hand, Hall (1993) noticed that the distinction between innovator and its followers – the imitator firms is often unclear. In their attempts to imitate, firms often do things differently (unintentionally or by design) from what was done by the first firm, and thus become innovators in their own way.

Research has shown that organizations that emphasize innovation gain more market share and are more profitable than less innovative organizations (Gopalakrish-nan, 2000). Studies have also shown that an explicitly offensive innovation strategy correlates positively with performance for the innovative service and manufacturing

firms. Further, it has been found out that productivity increases with innovation output for services as well as for manufacturing (Hans & Almas, 2002). This could be for two reasons.

To begin with, Rumelt (1987) argues that the knowledge contained in the innovations is not readily available to competitors and thus protects profit margins, resulting in significant financial benefits. Second is that innovation helps organizations develop products or services at a lower cost than their competitors. This, according to Afuah (2013) enables them to achieve better outcomes.

Hart (2005) pointed out that innovation and repositioning to achieve sustainability are critical undertakings that will also increase shareholder value. As such, businesses can be innovative is by adopting the green environment. Firms that adopt green environment can use that to identify new markets and price premium opportunities. Additionally, they enhance their ability to gain access to new markets and increase their market share through exposure from sustainability approach. Globescan's 2003 CSR Monitor found that 8 in 10 Canadians agree they would be willing to pay more for a product if produced in a socially and environmentally responsible manner. Innovation leads to new products through the application of new technologies and improved understanding of consumer needs. This leads to creation of products to meet unmet social needs and increases differentiation.

This study aimed to bring out whether adoption of green environment has any impact on the relationship between innovation and performance. The following items were assessed; employees receive the support they need to implement innovative ideas, When employees have good ideas, management makes use of them, where I work, we act on promising new or innovative ideas, employees are free to try new ideas on their jobs , even though my efforts may not succeed.

2.3.4 Management effectiveness

Effective management can also be a great source of competitive advantage to any firm. Wernerfelt (1989) argued that a firm's performance is a factor of the quality or quantity of its resources which includes management. Fry (2003) is also of the view that leadership is a strategic process of offering inspiration to enhance the employee's potential for growth and development by the leader. Work by organizational researchers including Cameron (1986) and Steers (1975) support the argument that managers can influence the behavior of their employees (and thus the performance of the organization) by taking into account factors such as the formal and informal structure, the planning, reward, control and information systems, their skills and personalities, and the relation of these to the environment. That is, managers influence organizational outcomes by establishing context, and that context is the result of a complex set of psychological, sociological, and physical interactions.

Other authorities in this area such as Wiley (2010) argue that an organization's success is fundamentally dependent upon the skills and actions of its leaders. This is especially

in highly competitive markets where organizations face the challenges of scarce opportunities and limited resources (Wasserman, 2001). Leadership is important to the effective set up and operation of every organization because leadership is the one force that charts and makes possible the economic accomplishment of a firm's objectives.

It is widely accepted that a 'weak' organization with effective leaders will probably accomplish more than a 'strong' organization with weak leaders. The Leadership Effectiveness Index (LEI) was developed to measure employees' perceptions of their organization's senior leaders. Senior leaders are effective if they are capable and trustworthy, inspire confidence, are committed to high quality products and services, and have communicated a motivating vision. Researchers argue that the quality of executive leaders explains around 45 percent of an organization's performance, (Day & Lord, 2008) and effective leadership positively affects organizational performance outcomes such as labor productivity, return on assets, and outputs of patents (Wang *et al*., 2011). According to Herman (2011) companies with strong management practices in sustain-ability, and who embed them deeply, tend to drive more quantifiable impact and results.

Adoption of green environment was a moderator of this relationship. Highly qualified managers appear to prefer working for socially responsible firms. A survey conducted for the Institute of Canada (2000) found that 71% of employees want to work for companies that commit to social and community concerns. Study by MIT (2008), found that MBA students are expressing more interest in finding work that offers the potential

of making a contribution to society. The study shows that 26% of respondents in 2007 said this was an important factor in their job selection compared with 15% in 2002.

The following items were considered while evaluating employee perceptions of leaders at their organization; senior management at the organization has the ability to deal with the challenges the firm faces, employees have confidence in the organization's senior leaders, Employees trust the senior leaders of the organization, the senior leaders of the organization have communicated a vision of the future that motivates employees.

The study began by considering variables important to performance. From the literature above, the four independent variables were identified as customer orientation, quality emphasis, innovation and effective leadership. Collected data will be used to categorize manufacturing firms. Firms scoring over 50% in the set of questions for a particular variable were deemed as having that characteristic/variable.

2.3.5 Adoption of Green Environment

Adoption of green environment encompasses source reduction, recycling and green product designs (Porter & Van der Linde, 1995). Source reduction includes actions aimed at reducing waste initially generated. Recycling includes using or reusing wastes as ingredients in a process or as an effective substitute to a commercial product, or returning the waste to the original process which generated it as a substitute for raw material feedstock. Green product design involves creating products whose design,

composition and usage minimizes negative environmental impacts throughout the products life cycle (Florida & Atlas, 2007).

According to Hunt and Auster (2010), manufacturing is an economic activity which significantly impacts the natural environment through raw material extraction and release of gases, solid and liquid waste among others. On the flip side, manufacturing can be very adversely affected by a natural environment which cannot meet its raw material needs or act a sink for the wastes it produces (Makower, 2013). The natural disasters being witnessed more often, and which are being linked to environmental degradation are affecting businesses more often.

As such, it is in the manufacturer's interest that the integrity of the natural environment is guaranteed for them to continue enjoying the services of the ecosystems. What is more is that unabated environmental degradation will lead to social ills which can disrupt economic activity. This can be harmful to businesses (Porter & Van der Linde, 1995). According to Florida (2009) manufacturers therefore need to play their role in environmental conservation through green manufacturing.

Beyond taking care of the environment for the environment's sake, few organizations can deny that adopting green environment is good for business. This is very well illustrated by more and more organizations striving to demonstrate a good environmental record through certification and setting up environmental policies. These are often

deliberate and strategic decisions taken to capture the interest of several stakeholders keen on environment conservation.

According to the data available (KAM, 2008), the main industrial categories in Kenya are agricultural, construction and chemical based. Therefore, developing competitiveness in these industries can directly grow the country's GDP. To begin with, competitiveness in the agro-industries is crucial for growth in generation of employment and income opportunities. It also contributes to enhancing the quality of, and the demand for, farm products.

Agro-industries have the potential to provide employment for the rural population not only in farming, but also in off-farm activities such as handling, packaging, processing, transporting and marketing of food and agricultural products (RoK, 2009). There are clear indications that agro- industries are having a significant global impact on economic development and poverty reduction, in both urban and rural communities. However, the full potential of agro-industries as an engine for economic development has not yet been realized in many developing countries, especially in Africa (World Bank, 2007).

The World Development Report 2008 (World Bank, 2007) called attention to the fact that some 800 million people are considered poor, subsisting with incomes of less than US$1 per day. Among the world's poor, 75% live in rural areas, having agriculture as a major source of livelihood. Fighting poverty will require that economic growth and

development are brought to rural areas. Promotion of agriculture and related industries is seen as an important step in this direction. Green agriculture as shown above has an added advantage.

Studies show that there are emerging high-value markets for food and other agricultural products that embody specific certified quality attributes, such as organics, fair trade and origin. Products with such attributes have increasingly become relevant in developed countries and some middle income developing countries. With high rates of demand growth, these markets are regarded as potentially lucrative opportunities for exports of non-traditional products from developing countries (Henson, 2006).

Following Henson's (2006) survey, the world market for organic food and drink products in 2005 was estimated at US$24 billion, the EU accounting for 52% and the USA for 42%, together corresponding to almost 95% of global sales, roughly 40% of which was imported. This indicates existence of a huge untapped market that agro-producers in Kenya can tap in to.

In the construction and related industries, green construction yields a number of benefits to project owner, both tangible and intangible. Sustainably-designed buildings benefit from lifecycle cost savings (including deferred replacement cost), improvements in human performance (including productivity gain, better health), and an increase in prestige (Kwong, 2004). As such, discerning clients will choose green constructed buildings raising demand.

The savings are predominantly realized through reduced utilities costs and savings in operations and maintenance, the calculation for which is a simple act of subtracting the projected utilities and maintenance and operations costs savings over the useful life of the building from the total direct costs associated with the building components and subsystems. Another area of saving according to Lockwood, (2006) is maintenance Savings. Lockwood argues that design and selection of materials for building and site construction may result in lower maintenance costs and longer service lives that reduce the frequency of equipment replacement. For example, native or inert landscaping conserves both water and monthly maintenance. He further argues that, pollution prevention and waste management efforts reduce the ongoing cost of refuse disposal and treatment.

Another importance of green construction is, according to Koga and Lehman, (2008) the 'feel-good' factor. This is the social value - a compound function of public image, marketability, resource conservation, and corporate responsibility of a project. For certain owners, the 'feel-good' factor may tip the scales in favor of sustainability, where "…choices being made to incorporate sustainability into design and construction are a result of value the client sees in the economic and environmental benefits of 'green'."

The other wide category of manufacturing activity according to KAM, (2008) is the chemical processing category. These include manufacturers of house hold products, plastics and chemical raw materials for other industries. World over, the chemical

industry has the largest pollution abatement costs of any manufacturing sector. The cost was estimated to be $5.2 billion in 2005 in the USA.

While it is frequently argued that imposing new standards such as stricter environmental standards on the chemical industry will damage competitiveness and cost the U.S. economy jobs, a report by Heints, Williamson and Pollin, (2011) finds instead that appropriately designed environmental regulations support innovation, productivity, and employment.

In chemical related industries, Green chemistry refers to the design, production, and use of chemical products that reduce or eliminates substances harmful to human health and the environment, and which can be produced in a sustainable way. According to Michael, Chia and Ehler, (2006) the focus of green chemistry is to reduce the costs, often unrecognized, associated with the existing set of products and production practices. Second is to develop innovative new products for driving the economy forward. The costs include health problems, unsafe workplaces, handling of wastes and harmful substances, disposal of by-products, waste, and products which have reached the end of their useful life, and environmental degradation associated with the production and use of chemical products.

To significantly contribute to an organizations performance, the motive for adoption is important. Ru-Jen and Chwen, (2012) argue that internal motives encourage firms to

exploit ISO 9000 as an "organizational resource" to improve operations due to the precise application of explicit, rational, and proven rules. In contrast, external motives drive firms to seek legitimacy. When organizations implemented TQM due to external pressures (from customers or peers), the implementation failed to lead to significant performance improvement. This clearly indicates that motives matter.

2.3.6 Firm Performance

To be said to be performing well, a firm must have met at least some interests of most or all its stakeholders. Objectively, a firm's performance can according to Comincioli *et al*. (2012), be indicated by use of accounting measures and market measures. This study utilized both types of measures as set out below.

2.3.6.1 Accounting Measures

Return on Equity (RoE)

According to Bowman and Haire (1975) and Spicer, (1978) this is one of the most used performance measures. It is calculated by dividing the yearly net income by the total equity (excluding preferred shares) expressed as a percentage. This measure indicates how profitable a firm is. It indicates the efficiency of a firm in generating earnings from every dollar of net equity. It was expected that firms that adopt green environment have a higher RoE than similar firms that do not adopt the green environment.

ROE = *ai/te*……..***Equation* 2.1**

Where;

ROE is Return on Equity,

ai is Annual Income and

te the Total Equity

Return on Assets (RoA)

Mc Williams and Siegel, (2001) argue that this variable measures the contribution of the assets of a company to the revenue generating process. It is given by the ratio of net income and total assets. This ratio gives an indication of "what the firm can do with what it has." Return on assets shows how many dollars/ shillings the firm can earn for every dollar/ shilling of assets owned (Luce *et al*., 2001). It was expected that firms that adopt green environment have a higher RoA than similar firms that do not adopt the green environment. Their RoA is also expected to rise over the years.

ROA = *ni/ta* ……**Equation2.2**

Where;

ROA is Return on Assets

ni is net income and

ta is Total Assets

Return on Capital Employed (RoCE)

This measures the return a firm generates from capital employed. Preston and O,Bannon (1997) argues that this measure can be used to compare performance between businesses and check whether returns generated are enough to pay back the cost of capital. It is generated as a ratio between pre tax operative profits and the employed capital. It was

expected that firms that adopt green environment have a higher RoCE than similar firms that do not adopt the green environment. Similarly, RoCE was expected to rise from year to year.

ROCE = *Pp/ce*…….. **Equation 2.3**

Where;

ROCE is Return on Capital Employed,

Pp is pretax profits and

ce is Capital Employed

2.3.10 Market Measures

These measures are concerned with the value of a firm‘s stocks, which is an indication of how valuable the firm looks to shareholders and potential shareholders. Two measures were considered. These are market capitalization and the beta co-efficient. They are explained below;

Market Capitalization

According to Wright *et al*. (2002) this is the most important market based performance measure. It is generated by the number of outstanding shares multiplied by their market price. It therefore measures the value of the firm in terms of market capitalization. Due to the good image and better accounting performance, It was expected that firms that adopt green environment have a higher market capitalization than similar firms that do not adopt the green environment.

MC = *T s* X *mv*……***Equation* 2.4**

Where;

MC is Market Capitalization,

Ts is Total Shares and

mv is Market Value of a Share

The Beta Co-efficient

Mossin (1966) says that this is part of the Capital Market Pricing model. It describes the relation that links the expected return of a financial portfolio (or a single stock) to the expected results of the whole market. Due to the good image and better accounting performance, It was expected that firms that adopt green environment have a higher beta co-efficient than similar firms that do not adopt the green environment.

The dependent variable is firm performance. This was measured by calculating return on assets (ROA), return on capital employed (ROCE), return on equity (ROE), the beta coefficient(β) and market capitalization using the formulas given above . The above measures were compared year to year from 2002 to 2009 to establish a trend of either performance or non performance. In this study, firms with an annual increase for over 60% of the measures (3 measures), in 2 or more years out of the total 4 were said to have performed well. This also led to categorization of manufacturing firms under study as either having performed with a score (1) or having not performed with a score (0).

Thereafter, the moderating variable was established. According to Livio and Frank (2000) there are 7 elements or steps companies can make to improve Eco-efficiency these are reduce material intensity, reduce energy intensity, reduce dispersion of toxic sub-stances, enhance the ability to recycle, maximize use of renewable resources, extend product durability and increase service intensity. In this study, firms that indicated, from the collected data, to have instituted 60% of the measures were deemed as being adopters of green environment with a score (1). Those that had less than that were categorized as non adopters with a score (0)

2.4 Empirical Review

Goodwin (2005) stated that empirical review is a way of gaining knowledge by analyzing qualitatively and quantitatively previously conducted research. The next section reviewed relevant previous studies.

2.4.1 Customer Orientation

Olalekan (2010) studied Customer Orientation and Firm Performance among Nigerian Small and Medium Scale Businesses. The objective of the study was to examine the relationship between customer orientation and firm performance among the small and medium scale businesses in Nigeria. The study utilized multiple regression analysis, providing cross sectional evidence on the relationship between customer orientation and firm performance.

Results of this study indicated that there was a positive and significant relationship between customer orientation and firm performance among small and medium scale business in Nigeria, and that managerial attitude and marketing in-formation systems possessed by this firms moderated this relationship. He concluded that the adoption of customer orientation, effective marketing information system as well as good managerial attitudes as the antidotes for reducing small and medium scale businesses' failure in Nigeria. The study was silent on whether that relationship could be affected by other factors or not.

2.4.2 Quality Emphasis

A study by Terzioski (2000) titled The Effect of Company Size on the Relationship between TQM strategy and Organizational Performance based on a cross sectional study of manufacturing firms in Australia and New Zealand suggest that total quality management strategy that focuses on increasing customer levels of satisfaction does have a significant and positive impact on performance. The study also concluded that company size impedes the implementation of total quality management. Larger companies tend to gain greater benefits from total quality management than smaller firms.

Another prior study by Kim and Miller (1992) based on a survey of the manufacturing strategies of 111 firms in the U. S. A., showed that activities associated with total quality management (such as conformance quality, product reliability, on-time delivery and

performance quality) together with price were the most important capabilities for manufacturing firms in the 1990s.

Masinati (2008) carried out a national survey involving all the 352 Italian public health-care providers in a bid to establish the relationship between quality management systems and organizational performance in the Italian National Health Service. The study confirmed that the quality elements could be considered critical factors of the quality management systems adopted by Italian health-care providers.

2.4.3 Innovation

Murat (2013) conducted a study titled The Relationship between Innovation and Firm Performance: An Empirical Evidence from Turkish Automotive Supplier Industry. The survey of this study was conducted on top level managers of 113 firms operating in the automotive supplier industry which is one of the most innovative industries in Turkey, as of the year 2011.Results of the study demonstrated that technological innovation (product and process innovation) has significant and positive impact on firm performance, but no evidence was found for a significant and positive relationship between non- technological innovation (organizational and marketing innovation) and firm performance.

Another study by Lutfihak (2011) titled Effects of Innovation Types on Firm Performance, deduced that higher product, process, marketing, and organizational innovation capabilities are associated with increased innovative, production, and market

performances. Their findings also inferred the existence of mediating effects of some innovation types on innovation-performance relationships.

Saman (2013) carried out a study titled Effects of Innovation Types on Firm Performance: an Empirical Study on Pakistan's Manufacturing Sector. In the study, Linear regression analysis was carried out to analyze the effects of four dimensions of innovation on four dimensions of organizational performance. The study looked at a total of 250 manufacturing companies were selected from 9 manufacturing sectors. The study found that innovative performance accounts for major variation in production performance as compared with marketing performance. The significant adjusted R2 depict that innovative performance explained 77.9% & 5.7% of the variance in production and market performance respectively.

Furthermore, standardized coefficient and T values are also significant ($p<0.005$). The results reveal a positive effect of innovation types on firm performance. The results of the said studies indicate a strong positive relationship between innovation and performance. There is also anecdotal evidence that this relationship can be moderated. This study will build on these studies by seeking to establish whether adoption of green environment is one such moderator.

2.4.4 Management Effectiveness

In a study conducted by Durga and Praphu (2011) looking at The Relationship between Effective management and Employee Performance, and where 215 firms were studied

and correlation and Regression Analysis used to analyze the data set. It was found that the employee effectiveness is positively influenced by the leader's charisma and effectiveness. Inspirational motivation is positively correlated with employees' effectiveness and satisfaction at $p < .01$ and $p < .05$ but negatively correlated with dependability.

Albet *et al*. (2014) undertook a study titled *The Effect of Leadership Styles on Firm Performance in Ghana*. This study employed a predictive correlation research de-sign. The study concludes that even though there was no statistically significant predictive relationship observed between the three leadership styles and financial performance, the unique contribution of democratic leadership style (b=-0.222) accounting for more variance in financial performance than autocratic and laissez faire cannot be over looked since the leadership style turn to foster co-operation, motivation, and team spirit among work groups.

The above empirical studies however did not indicate possibility of the relationship between leadership and performance being affected by any external factor such as adoption of green environment.

2.4.5 Adoption of Green Environment

Several studies have been carried out to explain the linkage between adoption green environment as a strategy and business performance. The studies have given mixed results, some supporting existence of a relationship, others non committal whilst others still showing a negative relationship. Some studies have revealed a positive relationship

between environmental engagement and economic performance. A study titled Proactive Corporate Environmental Strategies: Myths and Misunderstandings by Arogon-Correa and Rubio-Lopez (2011) found that corporates that adopt green willingly, without pressure to meet legal or other requirements perform better than those that don't.

Russo and Fouts (1997), in a statistical study of large United States corporations, found a strong positive relationship between return on assets and ratings of environmental performance. They could not, however, rule out reverse causation; in other words, more profitable firms might devote more resources to environmental efforts. Grey and Shadbegian (1993), in a study of nearly 300 plants, found that efforts to comply with environmental regulations had a large negative impact on productivity and market growth.

One of the reasons for this is that environmental efforts, especially if driven by tightened regulation, can enable a accompany gain competitive advantage through differentiation. Porter & Van der Linde, 1995 in their paper titled Americas Green Strategy argue that firms that adopt green gain from cost free controls such as waste reduction and energy conservation. This view is supported by Palmer, Oates and Portney (1995) with their only point of departure being that the latter advocates for an empirical analysis of the costs and benefits as the basis of showing the economic attractiveness of adopting green.

Rugman & Verbeke (1998) in their work, corporate strategies and environmental regulations: An organizing framework concluded developed a standard international business model for analyzing the green capabilities of multinational organizations concurred with Porter & Van der Linde, 1995 that some aspects of green adoption like energy efficiency and conservation, waste reduction contribute to a firm's bottom line. Other studies refute this optimistic approach (Hart & Ahuja, 2006). Still, others do not find a specific correlation between them (Walley & Whitehead, 1994).

Other studies have found an indirect relationship that relies on the mediating effect of firm's intangible resources (Surroca *et al*., 2010). Benito and Benito (2006) argued that there exists economic opportunities from the adoption of green proactive strategy. Sometimes the economic opportunities represent important drivers toward ecological responsiveness. Companies can lower production costs through activity such as reducing the cost of input and waste (Cordano & Frieze, 2000, Porter & Van der Linde, 1995). Additionally, a company can gain from green marketing which increases product quality and corporate reputation.

An 11 year study of corporations by Harvard University, which emphasized stake-holder management, found socially responsible and sustainable corporations had sales growth 4 times and employment growth 8 times that of "shareholder first" companies (KPMG, 2001). Further, a report by investment bank Goldman Sachs found that companies that

are considered leaders in environmental, social and governance (ESG) policies also lead the pack in stock performance by an average of 25% (Sachs, 2007).

Innovest Strategic Value Advisors conducted a study in March 2008 and found that their Global 100, which represents 100 leaders from the MSCI World Index that demonstrate exceptional capacity to address sector-specific environmental, social and governance risks and opportunities, outperformed the MSCI World Index by 7.2%. It also outperformed the Dow Jones Industrial Average by 7.5% and the Dow Jones Global Titans by 8.8%.

Elsewhere, Business in the Community (BITC) in the UK contracted a statistical analysis of financial data for a group of 33 companies who participated in the BITC CSR Index each year 2002 – 2007 and were listed on the London Stock Exchange. The objective of the analysis was to look for a correlation between the extent to which these companies' corporate responsibility performance (as measured by their Corporate Responsibility Index scores) and their financial performance may be linked. The performance of this group of 33 companies was compared to the FTSE All-Share and FTSE 350 Groups. They found that companies consistently participating in the CR Index outperform the FTSE 350 on total shareholder return 2002 – 2007 by between 3.3% and 7.7% per year.

They also found that higher levels of performance in the management and integration of environmental and social issues and associated governance factors, as measured in the CR Index, are associated with lower levels of stock price returns volatility. The research demonstrated the higher the company scored on the CR Index, and therefore the better the company manages its environmental and social impacts, the less volatile the stock price returns (MORI, 2008). The Researcher did however not find any study relating adoption of green environment to organizational characteristics of high performing firms, locally or anywhere else.

2.5 Critique of Existing Literature

Strandberg (2009), found that companies that are listed on the Dow Jones Sustainability Index or Goldman Sachs' SUSTAIN Focus outperformed industry averages during economic downturns. The 2011 Sloan Management Review by the Massachusetts Institute of Technology found similar results, demonstrating that companies implementing sustainability at the core of their business strategy not only practices, but that they are also more resilient during economic downturn of Technology MIT(2011).

Furthermore, a study by (Weber, 2012) found that 60 per cent of a company's market value is attributable to its reputation and over two-thirds of US consumers avoid products made by companies they do not like and check labels to ascertain the identity of the parent company. Being a polluter is one reason that a company can lose

credibility. Certainly, adopting green practices increases performance. The studies did however not show how this happens.

Further, results over a 5 year period showed that DJGSI performed an average of 36.1% better than did the traditional Dow Jones Group Index (World Economic Forum, 2005). The DJSI 2008 report, affirmed a positive strategically significant correlation between corporate sustainability and financial performance, citing that a number of its indexes have outperformed their comparative benchmarks in relation to total returns since the launch of the respective indices.

The report found that sustainability strategies had a significant impact on the cost of external financing, return on invested capital, sales growth, and the fade-rate of a firm's competitive advantage." (As reported in BITC: The Value of Corporate Governance, October 2008, p. 4). These observations were in a developed market where consumers are knowledgeable and have a wide option.

There is the dissenting side to this, supported by facts. (E.P.A., 2011) reported that pollution control costs accounted for 2% of the GNP of the United States of America. It also reported that environmental costs were up to 20% of corporate capital costs. These facts, according to Gautuam (1996) indicate a tradeoff between environmental and economic goals. Among the supporters of this view are Portney (1994). Such data is not

readily available in developing countries like Kenya. Manufacturers rely on perception to gauge the impact of adopting green practices to their performance.

2.6 Summary of the Literature

The above theories and empirical literature have set a stage for understanding the ingredients for organizational performance. In a nutshell, organizational performance is a function of several variables. These include customer orientation, quality emphasis, innovation and management effectiveness. Additionally there can be other moderating variables that can affect the relationship between the above organizational characteristics and firm performance. Such include adoption of the green environment. The pressure exerted by different stakeholders on organizations to be conscious of their impact on the environment means that those that are proactive in adoption of green environment will reap performance benefits.

2.7 Research Gaps

The empirical research available clearly shows that enough research in the area of organizational characteristic-which are the focus of any strategy developed, has not been done in an all inclusive approach. Several researchers have carried out studies on different aspects of corporates and their role in sustainable development. Wanjohi *et al*. (2012) studied whether listed companies at the Nairobi Securities Exchange adopt natural environment concerns in their strategies. Show study focus, model and how they were different from one used here

McLaughlin (2006) investigated the impact of the public announcements of firms that won environmental awards or experienced environmental crises on a firm's stock market returns. The authors found that the firm's strong environmental management, as indicated by environmental performance awards, is associated with significant positive returns in market value and the firm's weak environmental management, as indicated by environmental crises, is associated with significant negative returns. Melnyk *et al*. (2003) investigated the impact of environ-mental management systems (EMSs) on organizational performance and found that EMSs have a strong positive impact on operational performance.

However, not all studies have found positive relationship between adoption of green and performance. Elsayed and Paton (2005) found that environmental performance has a neutral impact on firm performance. Some argue that improving environmental performance leads to a drastic increase in cost without any economic payback.

Additionally, firms mainly concentrate on strengthening the traditional organizational characteristics, known to directly relate with high performance. The four are customer orientation, quality emphasis, innovation and leadership effectiveness. Most organizations easily identify some characteristic that they have developed over the years. Their wide acceptance means that any issue that rides on them stands a good chance of mobilizing stakeholders. This study was designed to address this gap by relating

adoption of green environment to the relationship between organizational characteristics and firm performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design and data collection method that were employed in the study. The chapter is organized in ten sections. The first section looked at the design to be used the second looked at the population and third at the sampling frame. Sample and sampling technique were dwelt with in fourth section while section six operationalized variables. Section seven dealt with data collection instruments and eight will tackle data collection procedure further, section nine looked at validity and reliability testing while the last section concluded with data processing and analysis.

3.2 Research Design

This study was guided by nominalist/relativist research philosophy. According to Klenke (2008) argues that it is not possible to conduct a rigorous research without understanding it's philosophical underpinning. Creswell (2007) further adds that it is important to make the philosophical paradigms within which the study is situated explicit. Nominalist/relativist philosophy takes a subjective view that there is no single viewpoint of the world.

This study adopted a descriptive design. It was descriptive because it sets out to describe weather adoption of green environment is related to organizational characteristics and performance of manufacturing firms in Kenya. (Cohen & Manion, 1994). Bryman and Bell (2003) defined research design as a framework for the collection and analysis of data that is suited to the research questions. According to them, a descriptive design is suited to answer research questions; who, where, when and how. Lavrakas (2008) argues that a descriptive survey research design is a systematic research method for collecting data from a representative sample of individuals using instruments composed of closed-ended and/or open-ended questions, observations, and interviews. Orodho (2003) and Kothari (2004) describe a descriptive survey design as a design that seeks to portray accurately the characteristics of a particular individual, situation or a group.

According to Polit and Beck (2003) in a descriptive study, researchers observe, count, delineate, and classify. This design is one of the most widely used non-experimental research designs across disciplines to collect large amounts of survey data from a representative sample of individuals sampled from the targeted population. The researcher adopted the design as it helped describe the situation as it exists.

Earlier, related studies had also utilized descriptive research design such as those by Rukia (2015) and Ngumi (2013) who studied the effect of bank innovations on financial performance of commercial banks in Kenya, Moodley (2007) used it to investigate the impact of employee satisfaction levels on customer service in the service utility at Telkom

South Africa. In view of the above definitions, descriptions and strengths, descriptive survey was the most appropriate design for this study.

3.3 Population

The population targeted by this study consisted of all manufacturing firms that are members of the Kenya Association of Manufacturers (KAM). The Association has been proactively encouraging its members to conserve the natural environment by bringing their attention to benefits which accrue from activities like energy efficiency. Currently, there are 642 such firms registered with KAM.

3.4 Sampling Frame

According to Creswell (2003), a sampling frame is the list consisting of the units of the population. it is the device used to determine the study's population of interest. The study's sampling frame was the KAM register of members as of 2008. The register lists all paid up members. It is estimated that all large manufacturers are members of KAM. Currently, there are 642 manufacturers registered with KAM as members.

3.5 Sample and Sampling Technique

According to Saunders *et al*. (2009), a sample is deemed suitable if it captures the characteristics of the population sufficiently. To achieve this, the following formula was used to calculate the sample size as advanced by Cochran (1977). The formula is suitable for categorical data (Bartlett *et al*., 2001).

$$no = \frac{z^2 p(1-P)}{e^2} \quad \textit{Equation.3.1}$$

Where,

n_0 is the required sample size.

Z is the confidence level at 95%(standard value of 1.96)

p is estimated rate of adoption of green environment by manufacturing firms and

e is the margin of error at 5%(standard value of 0.05).

The study estimated that 80% of manufacturing firms adopt green environment in their processes. Using the formula above,

$$n_o = \frac{z^2 p(1-P)}{e^2} = \frac{1.96^2 * 0.8 * (1-0.8)}{0.05^2} = 246$$

resulted to the required sample as 246 firms. This was 38.3% of the population. Cochran further suggested that if calculated sample size exceeds 5% of the total population, the below formula should be used to correct it.

$$n1 = \frac{no}{1 + \frac{n_o}{Population}} \quad \text{.....} \textbf{\textit{Equation.3.2}}$$

$$n1 == \frac{246}{1 + \frac{246}{462}} = 177$$

This gave;

Where;

n_1 is the corrected sample size and n_0 the >5% sample calculated above .This gave a sample of 177.

3.5.2 Sampling Technique

Stratified sampling was then be used to identify the firms that will be studied. The firms will be stratified according to categories (sub sectors) which are 13. Using proportional allocation, the proportion of each category which was to be studied was worked out as shown in the Table 3.1.

Table 3.1: Sample size determination

No.	Categories	No. of firms	% composition	working	category size
1.	Food, beverages and tobacco	158	24.6	177(158/642)	45
2.	Textiles and Garments	64	10	177(64/642)	18
3.	Metal and Allied	57	8.9	177(57/642)	16
4.	Leather products and foot ware	9	1.4	177(9/642)	3
5.	Paper and paperboard	43	6.7	177(43/642)	12
6.	Timber and products	13	2.0	177(13/642)	4
7.	Chemical and Allied	48	7.5	177(48/642)	13
8.	Building and Construction	14	2.2	177(14/642)	4
9.	Plastics and rubber	57	8.9	177(57/642)	15
10.	Pharmaceutical and Medical equipment	23	3.6	177(23/642)	6
11.	Motor Vehicle Assembly	22	3.4	177(22/642)	6
12.	Electrical and Electronics	71	11	177(71/642)	19
13	Others	63	9.8	177(63/642)	16
	TOTAL	642	100		177

In the next stage, each manufacturing firm in each category was given a serial number. Simple random sampling was then employed to identify the firms to be studied

(Cooper&Emory, 2014). The above process is seen by Kothari (2004) as being efficient, representative, reliable and flexible and takes care of systematic bias that may result from non respondents.

3.6 Pilot Study

The pilot study was conducted to detect weaknesses in design and instrument, as well as provide proxy data for selection of a probability sample. Cooper and Schindler (2011) view a pilot study as the study in small scale research project that collects data from respondents similar to those that will be used in the full study. Bryman and Bell (2003), advocate for the conduct of a pilot before administering the questionnaire to the sample.

They argued that piloting helps to pre test the questionnaire and get feedback as to whether the questionnaire is effective and understood. Zikmund (2010) adds that a pilot test serves as a guide for a larger study or examines specific aspects of the research to establish whether the selected procedure will actually work as intended by increasing the response rates, reducing missing data and obtaining more valid responses. Muus and Baker-Demaray (2007) noted that a pilot test should draw subjects from target populations and simulate the procedures and protocols that have been designed for data collection.

Before the full study, the researcher undertook a pilot test on 18 firms. According to Mugenda (2008), a pilot should have at least 10% of the study elements. The pilot subjects would not be included in the final study to avoid bias.

3.6.1 Validity and Reliability Test

According to Berg (2001), validity is the degree by which a sample of test items represents the content the test is designed to measure. Patton (2002) defines validity as the best available approximation to the truth or falsity of a given inference, proposition or conclusion. To test the goodness of data, which leads to its credibility and reliability Cronbach's coefficient alpha test was carried out as proposed by Sekaran (2003).

3.7 Data Collection Procedure

The questionnaires were targeted to the Chief Operations Officers or other senior managers with thorough knowledge on the goings on in the firms. Each sampled firm was requested to fill one questionnaire. The questionnaires were self administered and the respondents were allowed 2 weeks from the date of dropping to have completed the questionnaires.

This test measures how well a set of items (variables) measure a single uni-dimensional latent construct. When a data set has a multidimensional structure, Cronbach's alpha will be low. Cronbach's alpha can be written as a function of the number of test items and the average inter-correlation among them (Cronbach, 1951,Gliem&Gliem, 2003).

$$\alpha = \frac{N.C}{V + (N-1).C} \quad \text{.....} \textit{Equation 3.3}$$

Where;

N is the number of items

C is the average inter-item covariance among the items

$\bar{V}$ is the average variance

Alpha levels of 0.7 or above are accepted (Cronbach, 1951).

3.7.1 Administration of Research Instruments

A structured questionnaire with both open and close ended questions was to be used. According to William and James (2006), structured questionnaires are efficient as they allow respondents ease of response and the researcher, a facility for accumulation and summarization of responses. The questionnaire consisted of open ended questions and questions on a likert scale.

According to Uebersax (2006), a Likert scale is a psychometric response scale used in questionnaires to obtain participants preferences or degree of agreement with a statement or set of statements. Likert was recommended in this study because it is easy to the respondents and helps accumulate and summarize responses more efficiently (Montgomery *et al*., 2001).

To ensure that the questionnaire will be reliable in collection of the required data, a pretest was carried out in randomly selected 18 firms. The researcher then incorporated changes that were deemed necessary to improve the quality of the tool.

Additionally, secondary data was also analysed. This will be sourced from historical documents like annual financial reports, newspaper articles and other publications. Secondary data helped in filling data gaps that might arise and to check authenticity of the respondents' response.

3.8 Data Analysis and Presentation

The researcher considered several analysis methods. Among them, the Baron and Kenny's causal steps approach. Literature however showed that the method suffers from low statistical power in most situations (Fritz and MacKinnon, 2007; MacKinnon *et al.*, 2002). This means that if X imparts its influence on Y partly through M, this approach is least likely among the tested methods to be able to detect the effect (Hayes, 2009). Another criticism of this approach is that it is not based on quantification of the very thing it tries to test the moderated effect. Rather, it nests in a series of tests based on inferring each path in the hypothesis diagram and a failure to establish one leads one to claim an absence of evidence of moderated effect (Hayes *et al.*, 2011). It makes more sense to minimize the number of tests to support a claim.

MacKinnon *et al.*, (2002) further argue that in following causal steps criteria, one may not be able to detect the inconsistent moderated model. There is clear evidence that it does not have to be a statistically significant relation between X and Y even for a consistent moderated model. In some cases, the direct test on moderation has more power than the test of the total effect between X and Y. Additionally, the test of the X to

Y relation in the sample is a test in a sample just like any other statistical test, thus, it can contain sample error (Hayes, 2009). Therefore, it does not have to have the effect to be moderated.

Finally, the Baron and Kenny method over emphasizes the importance of an effect existing before being moderated, resulting in its limited application to a multi-moderated model (Hayes, 2009).

In this study, evidence for mediation was established by applying the criteria described by Judd and Kenny (1981) and further elaborated by MacKinnon (1994). According to their work, four conditions must be satisfied to establish moderation. To begin with, the independent variable must be significantly associated with the dependent variable; secondly, the independent variable must be significantly associated with the hypothesized mediator. Next, the moderated must be significantly associated with the dependent variable when controlling the effects of the independent variable; and lastly, the moderated effect is statistically significant.

The formula was applied on the following multiple logistic regression models

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ ……***Equation 3.4***

Where;

Y is odds of Performance of manufacturing firms in Kenya

β_0 is the Y intercept

β_i; i = 1; 2; 3; 4 and represents the independent variable coefficients to be estimated.

X_1 is customer orientation

X_2 is quality emphasis

X_3 is innovation

X_4 is effective leadership

ε is the error term

To capture the moderated effect of adoption of green environment on each of the performance variables, a moderated multiple regression (MMR) was applied. The models were;

$Y=\beta_0+\beta_i X_i+\beta_z Z+\varepsilon$ …….. ***Equation 3.5***

and

$Y=\beta_0+\beta_i X_i+\beta_z Z+ \beta_{iz} X_i Z+\varepsilon$ ……..***Equation 3.6***

Where;

Y is the odds performance of manufacturing firms in Kenya

β_0 is the Y intercept

β_z is the coefficient of the moderating variable

β_{iz}; $_{i=1;2;3;4}$being the slope coefficient representing the moderated influence of the performance variables

X_1Z is the is moderated customer orientation

X_2Z is the moderated quality emphasis

X_3Z is moderated innovation

X_4Z is the moderated effective management and

ε the error term.

Condition (1) for establishing moderation is supported by a test of statistical significance of β_1 in equation (3.4). Condition (2) is supported when βz is significant in equation (3.5). Condition (3) is supported when β_{iz} is significant in equation (3.6) which provides evidence for moderation.

The models were advanced on the assumption that there exists a linear relationship between the variables. After data collection, its normality was tested before analysis was done. Mugenda (2008), argues that some data sets rarely meet the assumption of normality. When researchers proceed with statistical tests on such data assuming normality, they end up with questionable inferences (Chandrakandan, 2011). Chandrakandan (2011), further says that Shapiro-Wilk test is the most powerful normality test. As such, the Researcher employed it in this study. Had normality been absent, non parametric statistical tools would have to be applied.

3.8.1 Operationalization of Study Variables

The concepts that formed the independent variable in this study are organizational characteristics. According to Bryman and Bell (2003), concepts are mental images or perceptions and therefore, their meaning varies from person to person. To be useful in the study, concepts need to be converted in to variables which can be measured. William and James (2006), further argue that concepts are first converted in to indicators which are then converted to variables. These are characteristics which have been found to impact a firm's performance directly. They include customer orientation, quality emphasis, innovation and effective leadership.

The study collected data on aspects that enabled the Researcher to categorize manufacturing firms as either having the organizational characteristics for performance or not. This information was compared to the performance of the firms over a period of time to determine how the two related.

Table 3.3: Operationalization of Study Variables

Concept name	Indicators	Variables	Working definition
Dependent Variable			
1. Firm performance	Annual Earnings	ROE ROA ROCE Market capitalization Beta coefficient	<5% <5% <5% <10% Annual growth <1
Independent variables			
1. Customer orientation	Timely solution of customer complaints Meeting customer needs Delighting customers	Time taken to resolve customer complaints Customer feedback and commendations Meeting latent customer needs	>72 hours <10% of clients Positive feedback by 2% clients < 5% of clients
2. Quality emphasis	Existence of quality standards Existence of quality controls Existence of a policy	Adopted ISO14001 Developed and Implemented controls Developed and implemented policy	-do- -do- -do-
3. Innovation	Management supports innovations New ideas are encouraged Employees rewarded for innovation	Number of innovations supported in last 1 years Number of ideas considered in last 1 year Number rewarded in last 1 year	< 3 <10 < 3
4. leadership effectiveness	Capable and trustworthy management Management vision inspires confidence management is committed to high quality	Average educational levels of management Existence of a working strategic plan Existence of feedback forums on quality	Degree and above -do- -do-
Moderating			

variable			
1. Adoption of green environment	Existence of ISO 14001 standards	Acquisition of ISO 14001 standards	-do-
	Existence of a policy of 3Rs	Developed and working policy on 3Rs	-do-
	Use of green factors of production	Use of green factor in production	<1 factor
	production of green products	Production of green products	<1 product

Table 3.4: Linking study variables to research objective and Survey tool

Variable name	Research objective	Item on survey tool
Dependent Variable		
1. Firm performance	What was the firm's performance trend On the following from 2012 to 2014? a. ROE b. ROA c. ROCE d. Market capitalization e. Beta coefficient	See page 52 item 1 & 2 under performance
Independent variables		
1. Customer orientation	Find out whether adoption of green environment has significant moderating effect on relationship between customer orientation and performance of manufacturing firms.	See section on customer orientation
2. Quality emphasis	Find out whether adoption of green environment has significant moderating effect on relationship between quality emphasis and performance of manufacturing firms.	See section on Quality emphasis
3. Innovation	Find out whether adoption of green environment has	See section on innovation

	significant moderating effect on relationship between innovation and performance of manufacturing firms	
4. Leadership effectiveness	Find out whether adoption of green environment has significant moderating effect on relationship between leadership effectiveness and performance of manufacturing firms	See section on management effectiveness

Although the organizational characteristics directly affect performance, their effect can be moderated by adoption of green environment. Adoption of green environment is the intentional consideration of a firm's activities viz-a-viz their impact on the environment and taking proactive and reactive measures to reduce negative impacts to the environment. To identify adoption of green environment, one has to look at the entire value addition chain of a manufacturing firm.

In this study, a firm that scored above average on aspects of environmental conservation through its strategies or actions was said to have adopted the green environment. This information was gathered from observation, secondary sources like press reports and Company's annual reports and from interviewing key staff. Those that scored less than average will be deemed as non adopters

The dependent variable, firm performance was measured by return on equity, return on assets, return on capital employed, and market capitalization and beta coefficient. They were measured by use of the already established formulas shown in Chapter 1 using primary and secondary data over a period of 3 years to establish trends.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter describes the actual findings derived from the questionnaires and secondary data forms and links them to the objectives of the study. The purpose of this descriptive study was to establish the moderating effect of adoption of green environment on the relationship between organizational characteristics and performance of manufacturing firms in Kenya. In order to assess whether there was a relationship between performance measurement and effective procurement management of public universities, several types of analyses were done using SPSS 16.0. The in-depth discussion of the results follows the description of how missing data were addressed, the discussion of the sample demographics, and how data screening was processed.

Descriptive statistics was used to describe the study variables from the sample profile. The ANOVA test was used to examine the existence of significant differences relationship between in the naïve system measurements, multiple objective systems measurements, efficiency oriented measurement systems, and effectiveness oriented measurement systems and the procurement management in public universities in Kenya. Regression analysis was used to test the research hypotheses, determine the existence of a significant relationship between the variables under study and to ascertain whether adoption of green environment moderates the relationship between organizational

characteristics and performance of manufacturing firms in Kenya. Attempts are made to explain why the findings are the way they are and to what extent they are consistent with or contrary to past empirical findings and theoretical arguments. The discussion of the findings is guided by objectives of the study

4.2 Study Preliminaries

4.2.1 Response Analysis

The study had targeted a sample of 177 manufacturing firms. Two hundred and thirty three (233) questionnaires were distributed. This number was informed by a previous study in a related area, by Rukia (2015) whose response rate(R) was 76%. On this study, the researcher adjusted the number of questionnaires in line with the above response rate in order to ensure a higher response rate;

nx100/76 …… ***Equation 4.1***

Giving,

177x100/76 = 232.6

Of the 233 questionnaires distributed, 152 organizations responded by accepting to take part in the study and submitted their responses. After analyzing the data more closely, four of the participants submitted a response that did not answer over half of the questions on the questionnaire. It was deemed appropriate to eliminate those additional four participants from the overall analysis; thus, reducing the sample size to 148 participants. Based on the target sample size, the response rate was;

R/n×100, ……..Equation 4.2

Giving;

148/177×100;

This translated to 83.6% of the target sample size. This response rate is considered adequate given the recommendations by, Saunders, Lewis and Thornhill (2009) who suggested a 30-40% response rate, Sekaran (2010) who documented 30% and Mugenda & Mugenda (2003) who advised on response rates exceeding 50%.

4.2.3 Products Produced

Respondents were asked what the main product of their manufacturing is. This question helped the Researcher to establish whether all sub-sectors of the manufacturing industry were represented. It also assisted to establish whether sub sector representation agreed with available data from KAM and the Kenya National Bureau of Statistics. It was established that agro-based industries form the majority of manufacturing enterprises in Kenya. These include livestock feeds at 13%, timber products 10%, edible oils at 7%, agricultural chemicals and allied products at 6%.

Table 4.1 sample spread based on products

Firm products	Frequency	Percent
Packaging material	3	2.0
Tires	2	1.4
Steel	3	2.0
solar systems	5	3.4
Edible oils	10	6.8
Cement	8	5.4
Foot ware and accessories	6	4.1
Livestock feeds	19	12.8
Processed food	8	5.4
Motor Vehicle Assembly	6	4.1
Apparels	8	5.4
Timber products	15	10.1
Agricultural chemicals and allied products	9	6.1
Motor vehicle repairs	2	1.4
pharmaceutical drugs	7	4.7
Building Construction	2	1.4
Beauty products	4	2.7
Catering services	3	2.0
Dairy products	3	2.0
Household products	10	6.8
Agricultural and construction equipment	8	5.4
Real estate development	4	2.7
soft drinks	3	2.0
Total	148	100.0

To establish the rate of adoption of green environment among the sampled manufacturing firms, the data was split using green adoption criteria set out in chapter three. The likert questions measuring adoption of green environment were aggregated and firms that scored a mean of above 3 were termed as adopters while those that scored less than three were termed as non adopters. The table 4.2 shows that 62.2% of the firms were adopters while 37.8% were non adopters.

Table 4.2: Firms categorization based on adoption of green environment

		N	Percent
Below Average	non adopters	56	37.8%
Above Average	adopters	93	62.2%

In addition, the study established the existence of five ownership categories. These were local investors, foreign investors, local and foreign investors, publicly owned and a combination of all.

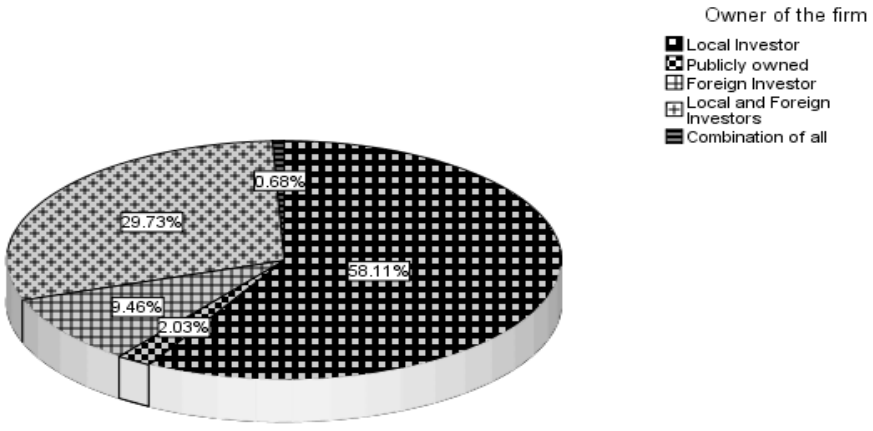

Figure 4.1 Pie Chart showing Firm Ownership

Firm ownership is important as it is considered a factor of how firms operate and treat stakeholders. Multinationals are more likely to adopt socially responsible behavior than small local firms. It is also possible for multinationals to move to developing countries which have weak regulations and set up operations there. Additionally, drawing on the basic tenets of public economics it is argued that private firms solely focus on the profit maximization and do not heed to the environmental damages and other negative externalities (Baumol & Oates,1988). Friedman (1970) argues that the sole objective of business is to maximize profit.

Consequently, private firms are believed to be the bad performers compared to the public firms whose basic objective is to maximize the social benefits. In contrast, it is asserted that publicly owned plants are quite likely to be older, less efficient and therefore more pollution-intensive than their private counterparts. We might expect lower pollution intensity for public plants operating under soft budget constraints because they do not confront the full cost of abatement.

However, bureaucratic control may also shield state-owned facilities from local pressure. Empirical finding of Pargal and Wheeler (1996) reveal that public ownership is strongly associated with dirty production and hence the bureaucratic shielding effect seems to outweigh any leverage from soft budgets.

4.2.4 Year of establishment

The respondents were asked how long their firm's had been in operation. This is an important indicator of a firm's maturity. Firms that have been in existence for long would easily identify important variable in their environment such as the green environment and organizational characteristics of high performing organizations. On the other hand, newly established firms utilize newer more efficient technologies which tend to be environmentally friendlier that those used by older firms. The table below shows the responses got.

Table 4.2 Responses on year of first operation

Year	Frequency	Percent
1924-1964	7	4.8
1968-1978	11	4.1
1980-1990	23	15.1
1991-2001	49	32.7
2002-2012	59	39.7

Table 4.2 reveals that forty four firms (30%) of the sampled firms were over 20 years old. Ninety two firms were over 10 years old comprising 62% of the sample. One hundred and thirty six firms (92%) were over five years old. As such, based on age, the firms were deemed fit to understand the importance of green environment as a stakeholder as well as organizational characteristics for high performing firms.

4.3 Descriptives for study variables

The purpose of descriptive statistics is to enable the researcher to meaningfully describe a distribution of scores or measurements using indices or statistics. The type of statistics

or indices used depends on the type of variables in the study and the scale of measurement. Measures of central tendency are used to determine the typical or expected score or measure from a sample of measurements or a group of scores in a study. Measures of central tendency are used to give expected summary statistics of variables being studied.

The commonly used measures of central tendency are mode, mean and median. This study particularly used mean/average, percentages and standard deviation to analyze the objectives which were to establish how adoption of green environment affects the relationship between organizational characteristics and performance of manufacturing firms in Kenya as shown in sections below.

Table 4.2 indicates that 36% of sampled firms had an environmental policy in place. According to Rayment *et al*. (2009) existence of an environmental policy is a clear indication of a firm's awareness of its impacts to the environment and measures that it can employ to mitigate the impacts. Dingwerth (2008) further says that an environmental policy is an indication to stakeholders of how serious a firm is on environmental conservation. It allows a firm to benefit from association of clients who mind the environment.

Table 4.2 Responses on Year of First Operational Policy

Response	Frequency	Percent
No	86	54.4
Yes	57	36.1
Total	143	90.5

Seven intervention areas were most frequent in environmental policies. These included energy efficiency, use of environmental friendly materials, pollution prevention, and proper waste disposal among others. These interventions according to Rayment *et al*. (2009) can contribute to a firm's profitability by lowering cost of production, reducing resource use and improving image which attracts potential clients. Table 4.4 shows the interventions captured in the environmental policy and their frequencies.

Table 4.4: Areas Covered in Environmental Policy

Response	Frequency	Percent
Energy efficiency	56	98.2
Use of environmental friendly materials	40	70.2
waste disposal	55	96.5
e waste disposal	25	43.9
Pollution prevention	50	87.7
Clean power	44	77.2
Pollution control	57	100

The most common areas in environmental policy were pollution control, energy efficiency, waste disposal, pollution prevention and use of clean power. Proper disposal of e waste was the least common practice.

Table 4.5: Frequency of ISO certified firms

Response	Frequency	Percent
No	129	91.5
Yes	14	9.8
Total	143	100

A majority of firms do consider their impact to the environment as a result of their marketing activities, as shown in Table 4.6. The main impacts were identified as air pollution by marketing and transportation vehicles and solid waste pollution caused by improper disposal of containers and wrappers. This is shown on table 4.9. Table 4.10 shows results of responses given on mitigation measures the firms employ to conserve the environment. Recycling and using re-usable materials are the most frequent

responses at 68% and 40% respectively. Use of biodegradable materials and bulk transportation were also popular initiatives.

Table 4.6: Response on firms considering their impacts to environment in marketing

Response	Frequency	Percent
No	21	14
Yes	127	86
Total	148	100

Table 4.7 indicates that a majority of sampled firms were aware of their impact on air quality during marketing at 99% and solid waste disposal at 77%. According to Naver (1998), to be proactive in environmental conservation, firms must be aware of their impacts.

Table 4.7: Environmental consideration during marketing

Response	Percent
Air pollution	99
solid waste disposal	77

On being interrogated on the strategies they use to counter their negative impacts during marketing, recycling waste, use of biodegradable materials and bulk transportation were the most popular as shown on Table 4.8.

Table 4.8: How negative impacts are minimized

Response	Percent
Use of biodegradable materials	28
bulky transportation by rail	22
sending products via parcel services	10
Using reusable wrappers	40
Disposing wrappers for our clients	7
recycling waste	68

On considering environmental impacts while sourcing for raw materials, Table 4.9 shows that a majority, 71.5% of firms responded that they are conscious of their impacts. A minority, 21.5% were not aware of their impacts.

Table 4.9: Response as to whether firms consider their impacts while sourcing raw materials

Response	Frequency	Percent
No	34	21.5
Yes	113	71.5

Table 4.10 below indicates that the three impacts that firms have to the environment during sourcing of raw materials are air pollution, destruction of biodiversity, land degradation and release of toxins to water bodies and the air.

Table 4.10: Impacts from firms while sourcing raw materials

Response	Percent
Air pollution	40
destroying diversity through encouraging monoculture	10
Land degradation by limestone mining	8
release of toxic fumes	8
release of toxics to water bodies	12

Response was then sought on the strategies employed to check the above impacts by the firm. Results were as shown on table 4.11.

Table 4.11: How impacts are mitigated

Response	Percent
Bulk importation	54
Supporting conservation of indigenous forests	10
Using environmentally friendly chemicals	10
Sourcing locally	85
Recycling	92
Land reclamation and reforestation	78
Adopting safe technologies	25

Table 4.11 shows the main interventions by firms as recycling raw materials at 92%, sourcing raw materials locally at 85%, land reclamation and reforestation at 78%, bulk importation at 54%, using safe technologies at 25% and supporting conservation of indigenous forests.

Response was then sought on whether manufacturers should adopt green environment voluntarily. The Table 4.12 outlines the responses.

Table 4.12: whether firms should invest in green environment voluntarily

Response	Frequency	Percent
No	12	7.6
Yes	133	84.2
Total	145	91.8

Table 4.12 shows the responses got on whether firms should invest in green environment voluntarily. There was unanimity that firms should voluntarily invest in green environment.

Table 4.13: Why firms should invest in green environment voluntarily

Response	Frequency	Percent
To reverse climate change	15	9.5
To avoid legal action	28	17.7
To safeguard future generations	31	19.6
To protect local communities from harm	16	10.1
To build good image	14	8.9
To attract discerning customers	15	9.5
To conserve the environment	14	8.9
Total	133	84.2

On the reasons that should make firms to invest in green environment voluntarily, Table 4.13 shows that responders identified safeguarding future generations, avoid legal action and protect surrounding communities from harm as important reasons among others. This was an important discovery. Researchers have found that the motives as to why organizations implement certain management practices does affect the outcome of such practices. Studies by Anderson *et al*., (1999) Ketokivi and Schroeder,(2004) Prajogo, (2011) found that the motives of implementing certain management practices such as TQM and ISO9000 could actually influence the performance of those practices.

For instance, Ru-Jen and Chwen, (2012) posit that internal motives encourage firms to exploit ISO 9000 as an "organizational resource" to improve operations due to the precise application of explicit, rational, and proven rules. In contrast, external motives drive firms to seek legitimacy. When organizations implemented TQM due to external pressures (from customers or peers), the implementation failed to lead to significant performance improvement. This clearly indicates that motives matter.

The reasons advanced on why firms should adopt green environment in this case are mainly external pressure driven. This implies that the implementation of the practices was not driven by a search for efficiency. Instead, firms were seeking social legitimacy and submitting to pressure of business sustainability. Zhu and Sarkis (2007) and Yang *et al*. (2010) support this observation by adding that the organizations' green practices could be embedded within institutions and interconnected organizational networks including competitors, suppliers, customers, professional associations, and government and not on the need to maximize productivity.

Table 4.14: whether it matters if employer conserves environment

Response	Frequency	Percent
No	31	19.6
Yes	116	73.4
Total	147	93.0

Respondents were asked whether it matters to them whether or not their employers conserves the environment. Table 4.14 shows that an overwhelming majority, 73.4% agreed that it matters to them.

Table 4.15: Why it matters whether employer is a polluter

Response	Frequency	Percent
Image and reputation is everything	62	39.2
Legal penalties	28	17.7
Can't work for a polluter	17	10.8
Total	107	67.7

As a follow up on the above question, respondents were asked the reason as to why it mattered that their employer was not a polluter. Table 4.15 shows that to a majority, 39.2%, image of the organization they worked for was important. Avoidance of legal penalties was next at 17.7%. These results also indicate that organizations are under a lot of pressure to be green for image reasons, not performance. Zhu and Sarkis (2007) note that being green is not viewed as an internal resource that can contribute to performance directly. This is the perception that management in the organizations have, which can hinder their organizations from fully benefiting from adopting green environment.

4.3.1 Reliability and Validity of tool in capturing the study variables

The validity and reliability of the tools resulted from the extent to which responses of the field reflected theories and empirical evidence of other scholars who have studied similar variables. The main tool of data collection used was the Likert-scale questionnaire. A pilot study was conducted to pretest the tool used in data collection.

Fourteen questionnaires were administered to 14 manufacturing firms which were randomly selected. Among fourteen manufacturing firms that were piloted only ten responded translating to a response rate of 83.3%. In this study, an internal consistency was done using Cronbach's Alpha to measure how well the items were correlated to each other for all the questionnaires issued to different groups of pilot respondents. The instrument was reviewed and tested by the researcher using Cronbach's alpha test.

Nachmias and Nachmias (2006) have explained that a Cronbach's alpha test confirms the reliability and consistency of a tool. The 93 rule of the thumb for Cronbach Alpha is that the closer the alpha is to 1 the higher the reliability (Sekaran, 2010) and a value of at least 0.7 is recommended. The table below shows the Cronbach's reliability coefficients for the different variables under consideration.

Table 4.16 Summary of Cronbach's Alpha Reliability Coefficient

Reliability Statistics	Number of items	Cronbach's Alpha	Comment
1 Adoption of green environment (Z)	7	0.866	Accepted
2 Innovation (X_1)	7	0.884	Accepted
3 Effective Management (X_2)	8	0.748	Accepted
4 Quality emphasis (X_3)	7	0.856	Accepted
Customer orientation(X_4)	7	0.763	Accepted
5 Firm performance(Y)	7	0.799	Accepted

Table 4.16 indicates adoption of green environment had a Cronbach's Alpha of 0.866, innovation 0.884, effective management, 0.748. All the measures had Cronbach's Alpha values greater than 0.7 which fall in the acceptable limit. This indicated a strong internal consistency among measures of variable items.

This implied that respondents who tended to select high scores for one item were likely to select high scores for the others. Similarly, those who select low scores for one item were likely to select low scores for the others. The data collection instrument was therefore reliable and acceptable for the purposes of the study. This enhanced the ability to predict outcomes using the scores and just the aggregation of the arithmetic mean.

The researcher then analysed the likert scale items representing the dependent, independent and moderating variable to get a feel of the spread of the responses. Median

scores were worked out to assist in identifying where the responses lied. The section below discuses the responses.

Customer orientation

In this question, respondents were asked to indicate the extent of their agreement with given statements as shown in table 4.6 shows seven statement questions that represent issues the extent to which customer orientedness affect performance of manufacturing firms in Kenya. The responses were tabulated in table 4.17 and analyzed using median on a likert scale ranging from 1-5. In the likert scale where 5 represented strongly agree and 1 represented strongly disagree (Likert, 1932). The findings indicated that we regularly organize customer forums to meet and dialogue had highest median of 4.980 followed by customer complaints always get priority with a median of 4.879 then followed by our policies make it easy for customers to work with us with a median score of 4.816. Customers are regularly consulted on matters touching them had 3.436 while customers are not satisfied with our services and products and we never use customer feedback to improve our performance had median scores of 0.972 and 0.818 respectively.

Table 4.17: Influence of customer orientation on firm performance

	Customer orientation	1	2	3	4	5	median
1.	Customer complaints always get priority	12	16	0	0	78	4.879
2	Our policies make it easy for customers to work with us	0	0	8	12	86	4.816
3.	We never use customer feedback to improve our performance	54	52	0	0	0	0.818
4	Customers are not satisfied with our services and products	64	30	0	12	0	0.972
5	Customers are regularly consulted on matters touching them	0	0	0	74	32	3.684
6	Market surveys are regularly carried out to gauge customer perceptions	0	0	0	55	51	3.436
7	We regularly organize customer forums to meet and dialogue	0	0	0	38	68	4.980

Quality emphasis

On quality emphasis, results indicated that we are ISO certified and our operations do not conform to KEBS standards had the highest median scores of 3.814 each followed by our procedures adhere to the documented quality standards with a score of 3.754. The firm has set clear performance standards for product/service quality, our improvement efforts result in both higher quality and lower costs, we never improve the quality of our products and services and our day-to-day decisions demonstrate that quality and improvement are top priorities, all had a median score of 3.517. Availability of power and road/rail/sea transport infrastructure is important in choosing new site had the lowest median score of 2.970.

Table 4.18: Effect of quality emphasis on firm performance

No	Quality emphasis	1	2	3	4	5	Median score
1	The firm has set clear performance standards for product/service quality	0	0	0	60	46	3.517
2	Our improvement efforts result in both higher quality and lower costs	0	0	0	60	46	3.517
3	We never improve the quality of our products and services	0	0	0	60	46	3.517
4	Our day-to-day decisions demonstrate that quality and improvement are top priorities	0	0	0	60	46	3.717
5	Availability of power and road/rail/sea transport infrastructure is important in choosing new site	0	12	12	46	36	2.970
6	Our operations do not conform to KEBS standards	0	0	12	70	24	3.814
7	We are ISO certified	0	0	12	70	24	3.814
8	Our procedures adhere to the documented quality standards	0	0	0	82	24	3.754

Innovation

Results on innovation as shown on table 4.19 below revealed that A new product has been developed in the last 6 months as a result of innovation had highest median score of 5.114 followed by the firm is always looking for better more efficient ways to carry out processes with 4.936. Staff feel free to try new things on their jobs, even though their efforts may not succeed was next with 4.846. The firm adequately rewards staff who suggests new effective ways of doing things had a score of 4.262 followed by product lifecycle is often extended by innovatively re-inventing products with 3.546. Lastly were employees are encouraged to think about new ways of doing things had median score of 3.539

Table 4.19: Effect of innovation on firm performance

	Innovation	1	2	3	4	5	Median score
1	Employees are encouraged to think about new ways of doing things	12	0	10	36	48	3.539
2	The firm is always looking for better more efficient ways to carry out processes	0	12	0	22	72	4.936
3	The firm adequately rewards staff who suggest new effective ways of doing things	0	0	0	58	48	4.262
4	The firm never uses its resources to fund new ideas and support research	0	0	0	58	48	4.262
5	Staff feel free to try new things on their jobs, even though their efforts may not succeed	0	0	0	24	82	4.846
6	Product lifecycle is often extended by innovatively re-inventing products	0	12	0	48	46	3.546
7	A new product has been developed in the last 6 months as a result of innovation	0	0	0	48	58	5.114

Management Effectiveness

Response was sought on aspects of effective management known to influence firm performance. Table 4.20 below shows the results. Our senior management team has capacity to deal with challenges which had highest median score of 5.114 followed by management does not consider best practices in its conduct of business and I have confidence in our senior management team with median scores of 4.957 and 4.916 respectively. Next were our senior management team has communicated a vision that motivates me, our management has a unique way of mobilizing us to perform and our management is hands on which motivates us to work, all of which had a median score of

3.517. Last was completely distrust our senior management team which had a score of 0.819.

Table 4.20: Management Effectiveness

	Management effectiveness	1	2	3	4	5	Median score
1	Our senior management team has capacity to deal with challenges	0	0	0	48	58	5.114
2	I have no confidence in our senior management team	0	0	4	28	74	4.916
3	I completely distrust our senior management team	54	12	0	40	0	0.819
4	Management does consider best practices in its conduct of business	0	0	0	36	70	4.957
5	Our senior management team has communicated a vision that motivates me	0	0	0	60	46	3.517
6	Our management has a unique way of mobilizing us to perform	0	0	0	60	46	3.517
7	Our management is hands on which motivates us to work	0	0	0	60	46	3.517

Adoption of green environment

Questions were asked to gauge the level of adoption of green environment by target firms. The median scores for the questions were; there are adequate dust bins in all places to ensure environment is not polluted 4.957, the firm constantly audits its suppliers and business associates 4.253, the firm supports research geared towards energy efficiency, waste reduction and emission reduction, 3.770. Others were the firm has invested in environmental friendly technology and adopts best practices that safeguard the environment and the firm has gone beyond regulatory requirements to safeguard the environment with 3.486 respectively while the firm regularly publishes and makes public its environmental performance report and the firm has not adequately invested in proper waste disposal system with 2.794 and 1.856 respectively. This is shown on the table 4.21 below.

Table 4.21 Items on Adoption of Green Environment

No.	Adoption of green environment	1	2	3	4	5	Median score
1	There are adequate dust bins in all places to ensure environment is not polluted	0	0	0	36	70	4.957
2	The firm has not adequately invested in proper waste disposal system	22	36	0	0	48	1.856
3	The firm has gone beyond regulatory requirements to safeguard the environment	0	0	0	58	48	3.486
4	The firm constantly audits its suppliers and business associates	12	0	36	34	24	4.253
5	The firm regularly publishes and makes public its environmental performance report	12	12	36	22	24	2.794
6	The firm supports research geared towards energy efficiency, waste reduction and emission reduction	0	12	12	46	36	3.770
7	The firm has invested in environmental friendly technology and adopts best practices that safeguard the environment	0	0	0	58	48	3.486

Firm performance

Several items were included to help in measuring how the firms had performed in the last five years. There has been a steady improvement on Return on Equity (ROE) and there has been a steady improvement on Return on Assets (ROA) had maximum median scores of 5. There has been a steady growth of branch network had a median score of 3.928 while there has been a steady improvement on Sales had a median of 3.863.

There has been a steady improvement on Market share has a median score of 3.817 and There has been a steady improvement on Customer base had 3.597 while there has been a steady improvement on Market capitalization had 3.546. The next item was there has

been a steady growth of Expenditure which had a median score of 3.530 while there has been a steady improvement on Return on Capital Employed (ROCE) and there has been a steady improvement on Assets scored 3.419 each. The scores indicate that on average, the target firms recorded positive performance in the period under review.

Table 4.22 Items on firm performance

No	Firm Performance	1	2	3	4	5	Median score
1	There has been a steady improvement on Sales	24	0	0	54	28	3.863
2	There has been a steady improvement on Market share	18	0	0	60	28	3.817
3	There has been a steady growth of Expenditure	0	0	6	54	46	3.530
4	There has been a steady improvement on Customer base	0	0	0	66	40	3.597
5	There has been a steady improvement on Assets	0	0	0	54	52	3.419
6	There has been a steady improvement on Profits	0	0	0	60	46	3.517
7	There has been a steady improvement on Market capitalization	0	12	0	48	46	3.546
8	There has been a steady growth on Branch network	0	12	24	36	34	3.928
9	There has been a steady improvement on Return on Assets (ROA)	0	0	0	48	58	5.114
10	There has been a steady improvement on Return on Capital Employed (ROCE)	0	0	0	54	52	3.419
11	There has been a steady improvement on Return on Equity (ROE)	0	0	0	48	58	5.114

Descriptive Statistics of the Independent Variables

This section analyses the descriptive statistics of the independent variable. The results are presented in tables below.

Table 4.23: Descriptive Statistics of Independent variable

Independent variable	N	Minimum	Maximum	Mean	Std. Deviation
Customer orientation(X1)	148	1.71	5.00	4.0898	.83037
Quality emphasis(X2)	148	2.25	5.00	4.0407	.65657
Innovation(X3)	148	2.14	5.00	4.1709	.69621
Leadership effectiveness(X3)	148	1.83	5.00	3.8436	.78408

From table 4.23, customer orientation had a mean value of 4.0898 with minimum and maximum values of 1.71 and 5.0 respectively. It also had standard deviations of .8304 indicating a spread of within one standard deviation from the mean. Quality emphasis had a mean of 4.0407 and minimum and maximum values of 2.25 and 5.00 respectively. On the other hand, innovation had a mean of 4.1709 and minimum and maximum values of 2.14 and 5.00 respectively. Lastly, management effectiveness had a mean of 3.8436 with minimum and maximum values of 1.83 and 5.00 respectively.

Table 4.24: Descriptive Statistics of dependent variable

dependent variable	N	Minimum	Maximum	Mean	Std. Deviation
Firm performance (Y)	148	1.45	5.00	3.8767	.73502

Table 4.24 shows that firm performance had a mean of 3.8767 and minimum and maximum values of 1.45 and 5.00.

Diagnostic Test

Diagnostic testing has become an integral part of model specification in econometrics. There have been several important advances over the past 20 years. Various diagnostic tests were conducted to ensure that the coefficients of the estimates were consistent and could be relied upon in making economic inferences. As argued by Greene (2002)

regression can only be accurately estimated if the basic assumptions of multiple linear regressions are observed.

Normality test

A normal distribution is not skewed and is defined to have a coefficient of kurtosis. Jarque-Bera formalizes this by testing the residuals for normality and testing whether the coefficient of skewedness and kurtosis are zero and three respectively (Brooks 2008). The study used Jarque-Berra's statistic to determine whether the sample data have the skewedness and kurtosis matching a normal distribution. It is a test based on residuals of the least squares regression model. For normal distribution JB statistics is expected to be zero (Guajarati, 2007). In this study JB statistics values were: Customer orientation(X1) (skewedness 0.196, kurtosis 0.623); Quality emphasis (X2) (skewedness 0.196, kurtosis 0.623), Innovation (X3) (skewedness 0.196, kurtosis 0.623) Leadership Effectiveness (X4) (skewedness 0.196, kurtosis 0.623) and Adoption of green environment(Z)(skewedness 0.196, kurtosis 0.623). Thus, the JB is very close to zero and that the variables are very close to normal distribution. This implies that the research variables are normally distributed.

Table 4.25 Results of Normality Diagnostic Test

Variable	Descriptive Statistical	Statistical Values	Std. Error	Comment
Adoption of green environment(Z)	Skewedness Kurtosis	.196, .623	.133	Normally distributed Normally distributed
Customer orientation(X1)	Skewedness Kurtosis	.196 .623	.132	Normally distributed Normally distributed
Quality emphasis (X2)	Skewedness Kurtosis	.196 .623	.123	Normally distributed Normally distributed
Innovation (X3)	Skewedness Kurtosis	.196 .623	.155	Normally distributed Normally distributed
Leadership Effectiveness (X2)	Skewedness Kurtosis	.196 .623	.155	Normally distributed Normally distributed

Multi-collinearity Test

Multi-collinearity is a problem in multiple regressions that develops when one or more of the independent variables are highly correlated with one or more of the other independent variables. If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect collinearity, and it cannot be estimated by OLS (Brooks 2008). Failure to account for perfect multi-collinearity results into determining regression coefficients and infinite standard errors while existence of imperfect multi-collinearity results into large standard errors. Large standard errors affect the precision and accuracy of rejection or failure to reject the null hypothesis. During estimation, the problem is not lack of multi-collinearity but rather its severity. According to Gujarati (2004), the standard statistical method for testing data for multi-collinearity is analyzing the explanatory variables correlation coefficients

(CC); condition index (CI) and variance inflation factor (VIF). Therefore in this study, to determine multi-collinearity variance inflation factors (VIF) and tolerance were used. For tolerance, values of less than 0.1 suggest multi-collinearity while for values of VIF that exceed 10 are often regarded as indicating multi-collinearity. The average data for 43 commercial banks in the last 5 year period (2009-2013) was used.

Table 4.25: Multi-collinearity Test

Variables	Collinearity Statistics	
	Tolerance	VIF
Adoption of green environment(Z)	0.328	3.044
Customer orientation(X1)	0.233	4.291
Quality emphasis (X2)	0.434	2.306
Innovation (X3)	0.189	5.297
Leadership Effectiveness (X4)	0.253	3.950
Mean	0.2874	3.7776

The results was that VIF for Adoption of green environment had VIF of 3.044 and tolerance of 0.328 ; Customer orientation(X1) had VIF of 4.291 and tolerance of 0.233 ; Quality emphasis(X2) had tolerance of 0.433 and VIF of 2.306,While Innovation(X3) had VIF of 5.297 and tolerance of 0.0189 . Leadership effectiveness(X4) VIF of 3.950 and tolerance of 0.253 The mean VIF for all variables is 3.7776 and tolerance of 0.2874. This shows that the variables had a VIF that is less than 10 and tolerance value of more than 0.1 ruling out the possibility of multi-colliearity (Field, 2009). Therefore, the results imply that there was no multi-collinearity problem among independent variables.

4.4 Correlation matrix and explanations

Correlation analysis gives the Pearson's coefficient value (correlation test) and the significance value (measuring significance of the association). In this study, the Pearson r statistic is used to calculate bivariate correlations Values between 0 and 0.3 (0 and -0.3) indicate no correlation (variables not associated), 0.3 and 0.5 (-0.3 and -0.5) a weak positive (negative) linear association, Values between 0.5 and 0.7 (-0.5 and -0.7) indicate a moderate positive (negative) linear association and Values between 0.7 and 1.0 (-0.7 and-1.0) indicate a strong positive (negative) linear association. The significance of the relationship is tested at 95% level with a 2-tailed test where a statistically significant correlation is indicated by a probability value of less than 0.025. This means that the probability of obtaining such a correlation coefficient by chance is less than 2.5 times out of 100, so the result indicates the presence of an association.

Table 4.26: Correlation matrix of study variables

			Customer orientation	Quality emphasis	Innovation	leadership effectiveness	Adoption of Green Environment	Firm Performance
Customer orientation	Pearson Correlation	1						
	Sig. (2-tailed)		.000					
Quality emphasis	Pearson Correlation	.587**	1					
	Sig. (2-tailed)	.000						
Innovation	Pearson Correlation	.626**	.689**	1				
	Sig. (2-tailed)	.000	.000					
Leadership effectiveness	Pearson Correlation	.694**	.694**	.673**	1			
	Sig. (2-tailed)	.000	.000	.000				
Adoption of Green Environment	Pearson Correlation	.583**	.673**	.664**	.614**	1		
	Sig. (2-tailed)	.000	.000	.000	.000			
Firm performance	Pearson Correlation	.464**	.309**	.442**	.403**	.314**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	148	148	148	148	148	148	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The section below discuses the results of correlational analysis on the relationship between organizational characteristics and performance of manufacturing firms in Kenya.

4.4.1 Correlation summary between Independent and dependent variables

Results showed that customer orientation had R value of 0.365 with performance at 95% confidence levels. This lies between 0.3 and 0.5 and indicates a weak linear relationship. On quality emphasis, the R value was .456 with performance at 95% confidence level.

This also lies between 0.3 and 0.5 and indicates a weak linear relationship. Weak linear relationships were also found between innovation and management effectiveness and performance at 95% confidence levels with R values of .362 and .369 respectively.

4.4.2 Effect of Customer orientation on performance of manufacturing firms

To establish the effect of organizational characteristics to firm performance, a regression equation model was used. The indicators of the model fitness are shown on Table 4.26 below. R is the correlation coefficient which shows the relationship between the study variables, from the finding indicate that the correlation coefficient (R) is 0.464 which is a positive medium relationship between variables and firm performance. Coefficient of determination explains the extent to which changes in the dependent variable are explained by the independent variables. The study had R Square of 0.216 indicates that the model can explain 21.6% of the variations or changes in the dependent variable, performance of manufacturing firms in Kenya.

Table 4.26: Model fitness of Customer orientation with performance of manufacturing

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.464[a]	.216	.210	21.45895

a. Predictors: (Constant), X1(customer orientation)

Table 4.27 presents the analysis of variance (ANOVA) on the influence of customer orientation on firm performance. The results of the ANOVA test show a P-value of

0.000 is more than the set level of significance of 0.05 for a normally distributed data. The results further revealed that the model had an F-ratio of 40.142 which was significant at 5% level of significance

The results indicate that the model is statistically significant in explaining the impact of customer orientation to performance of manufacturing firms in Kenya. Put differently, it means that the ANOVA results indicate that the combined effect of customer orientation is statistically significant in explaining variations in firm performance at a level of significance of 0.05 we conclude that being customer oriented has a positive influence on firm performance of manufacturing firms in Kenya.

Table 4.21: ANOVA of Customer orientation and performance of manufacturing firms

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	18484.875	1	18484.875	40.142	.000[a]
	Residual	67231.014	146	460.486		
	Total	85715.889	147			

a. Predictors: (Constant), X_1

b. Dependent Variable: Y

X_1 *customer orientation*

Y *Firm performance*

Table 4.22 shows the coefficients on the influence of the individual independent variables on the dependent variable. The Beta coefficients indicate the extent to which firm performance changes due to a unit change in the independent variable. The positive Beta coefficients indicate that a unit change in the independent variable leads to a positive change in firm income. For example a unit change in debit and customer

orientation led to .464 units of positive change in performance of manufacturing firms, indicating a positive relationship between the two variables.

Table 4.22 Coefficients of Customer orientation

Model		Un-standardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.699	8.894		-.079	.937
	X1	13.504	2.131	.464	6.336	.000

a. Dependent Variable: Y

X_1 *customer orientation*
Y *Firm performance*

Multiple Regression model and test of hypothesis on effect of the variable as a joint predictor

$Y_o = \beta_o + \beta_1 X_{1+} \varepsilon$ this becomes

$Y_o = -.699 + 13.504 X_1$

This implies that a unit change in customer orientation leads to 13.504 units rise in performance of manufacturing firms.

Table 4.23: Model fitness quality emphasis and performance of manufacturing firms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.309[a]	.096	.089	23.04216

a. Predictors: (Constant), X2

X_2 *Quality Emphasis*

Table 4.23 reveals that the correlation coefficient (R) between the quality emphasis and firm's performance of manufacturing firms is .309 which is a positive medium relationship. The coefficient of determination (R Square) of .096 indicates that the model can explain 9.6% of the variations or changes in the dependent variable, performance of manufacturing firms in Kenya.

Table 4.24: ANOVA of quality emphasis with firm performance

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8198.512	1	8198.512	15.441	.000[a]
	Residual	77517.377	146	530.941		
	Total	85715.889	147			

a. Predictors: (Constant), X2

b. Dependent Variable: Y

X_2 *Quality Emphasis*

Y Firm performance

Result from table 4.24 revealed that quality emphasis with ROA has F statistic of 15.441 and the P-value is 0.000. This P-value is less than 0.05 implying that the mean

difference of customer orientation is statistically significant to performance at a level of significance of 0.05.

Table 4.25: Coefficients of quality emphasis and firm performance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.571	11.848		.723	.471
	X_2	11.374	2.895	.309	3.930	.000

a. Dependent Variable: Y

X_2 *Quality Emphasis*
Y *Firm performance*

From the table above, the logistic model

$Y_o = \beta_o + \beta_2 X_{2+} \varepsilon$,

with quality emphasis variable (X2), while holding other factors constant, becomes

$Y_o = 8.571 + 11.374 X_2$

The regression equation above has established that taking quality emphasis to be constant performance of manufacturing firms will be 8.571. Quality emphasis had positive value of 11.374 and the P value of was .000(which show is statistically significant). This translates to a unit rise in quality emphasis leading to 11.3745units change in the index performance of a firm

4.4.4 Effect of innovation on performance of manufacturing firms

The table 4.26 shows the effect of innovation on performance of manufacturing firms in Kenya.

Table 4.26: Effect of innovation on performance of manufacturing firm

Model fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.442[a]	.196	.190	21.72983

a. Predictors: (Constant), X3

X_3 *Innovation*

Table 4.26 reveals that the correlation coefficient (R) between the innovation and firm's ROE is .442 which is a positive medium relationship. The coefficient of determination (R Square) of .196 indicates that the model can explain 19.6% of the variations or changes in the dependent variable, ROE of manufacturing firms in Kenya.

Table 4.27: ANOVA of Innovation and performance of manufacturing firms

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16776.830	1	16776.830	35.530	.000[a]
	Residual	68939.059	146	472.185		
	Total	85715.889	147			

a. Predictors: (Constant), X3

b. Dependent Variable: Y

X_3 *Innovation*
Y *Firm performance*

Result from table 4.27 revealed that innovation with performance has F statistic of 35.530 and the P-value is 0.000. This P-value is less than 0.05 implying that the mean

difference of innovation is statistically significant to performance at a level of significance of 0.05.

Table 4.28: Coefficients of innovation and ROE of manufacturing firms in Kenya

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.162	8.965		.241	.810
	X3	13.625	2.286	.442	5.961	.000

a. Dependent Variable: Y

X_3 *Innovation*
Y *Firm performance*

$Yo= \beta_o+\beta_3X_3+\varepsilon$, holding all other factors constant, this becomes,

Yo=2.162+13.625X3

The regression equation below has established that taking innovation to be constant performance of manufacturing firms will be 2.162. Customer innovation had positive value of 13.625 and the P value of was .000(which show is statistically significant). The foregoing implies that a unit change in innovativeness leads to 13.625 change in the index of performance of a manufacturing firm.

4.4.5 Effect of management effectiveness on performance of manufacturing firms

Analysis results on the effect of management effectiveness on performance of manufacturing firms are shown on Table 4.29.

Table 4.29: Effect of Management effective on performance of manufacturing firms

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.403[a]	.162	.157	22.17550

a. Predictors: (Constant), X4

X_4 Management Effectiveness

Table 4.29 reveals that the correlation coefficient (R) between the management effectiveness and firm's performance is .403 which is a positive medium relationship. The coefficient of determination (R Square) of .162 indicates that the model can explain 16.2% of the variations or changes in the dependent variable, performance of manufacturing firms in Kenya.

Table 4.30: ANOVA of Management effectiveness and performance of manufacturing firms

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13919.986	1	13919.986	28.307	.000[a]
	Residual	71795.902	146	491.753		
	Total	85715.889	147			

a. Predictors: (Constant), X4

b. Dependent Variable: Y

X_4 *management effectiveness*
Y *Firm performance*

Result from table 4.30 revealed that leadership effectiveness with performance has F statistic of 28.307 and the P< 0.001. This P-value is less than 0.05 implying that the mean difference of leadership effectiveness is statistically significant to performance at a level of significance of 0.05.

Table 4.31: Coefficients of Management effectiveness and firm performance

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	-3.767	11.108		-.339	.735
	X4	13.977	2.627	.403	5.320	.000

a. Dependent Variable: Y

X_4 *management effectiveness*
Y *Firm performance*

The regression model,

$Y= \beta_o+\beta_4X_{4+}\varepsilon,$

holding all other factors constant, this becomes;

$Y=-3.767+13.977X_{4,}$

The regression equation above has established that taking Management effectiveness to be constant performance of manufacturing firms will be 8.571. Management effectiveness had positive value of 11.374 and the P value of was .000(which show is statistically significant). Meaning that a unit change in leadership effectiveness leads to 13.977 change in performance of a manufacturing firm.

4.3 Moderation effect of Adoption of Green environment

The main objective of the study was to establish the moderating influence of adoption of green environment on the relationship between organizational characteristics and performance of manufacturing firms in Kenya. In satisfying this, data was gathered through questionnaires and analysis presented in form of frequencies. Further tests on the moderating effect were done using inferential coefficients as presented later in this section.

4.3.1 Moderation on Relation between Customer Orientation and Firm Performance

To start with, the data was used to establish whether adoption of green environment actually mediates the relationship between customer orientation and performance of

manufacturing firms in Kenya. The data was used to produce the scatter diagram Fig. 4.1 below.

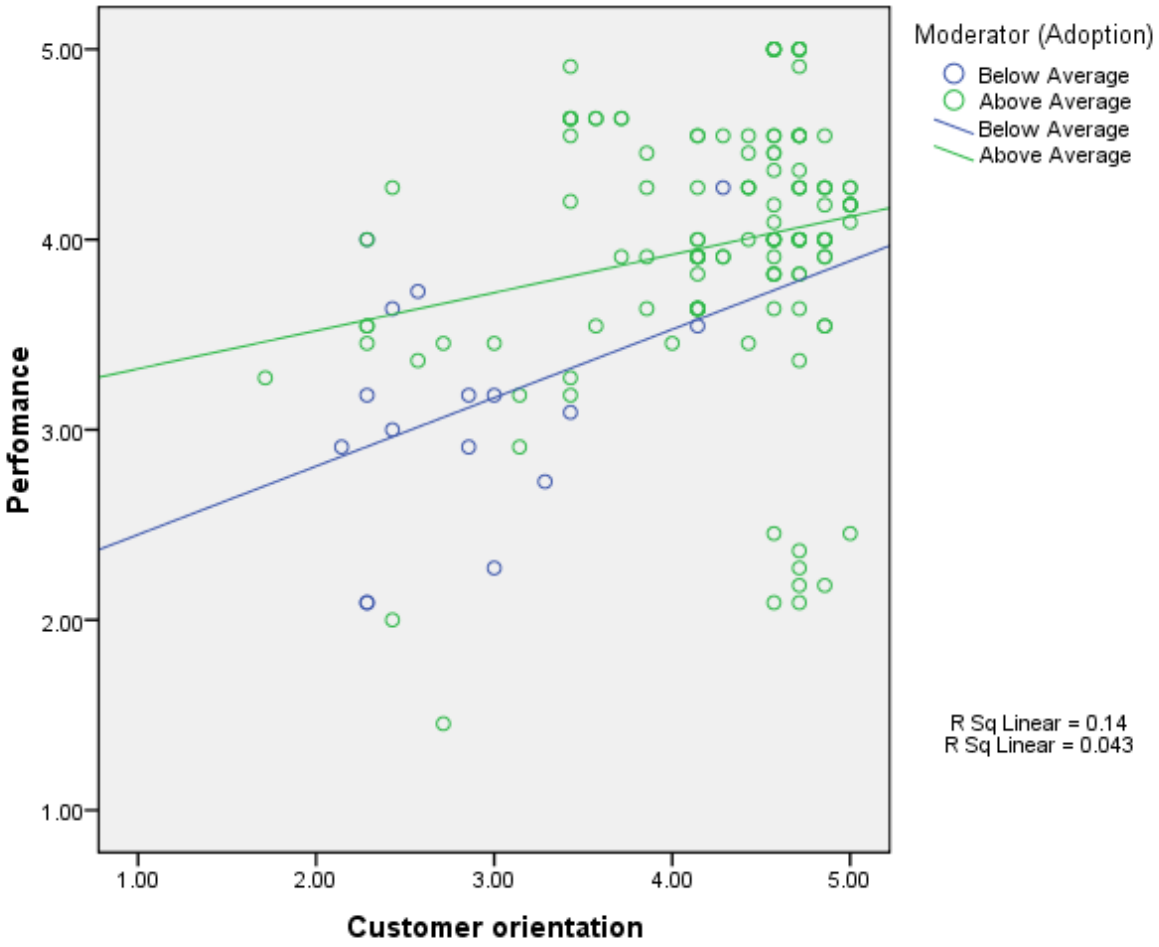

Fig. 4.2 Scatter diagram showing existence of moderation effect on customer orientation

The figure shows that customer orientation and performance, moderated by adoption of green environment as the two lines are not parallel. The figure shows that a rise in customer orientation in firms that have adopted green environment (above average

firms) raises performance moderately. On the other hand, a rise in customer orientation in below average firms in adoption of green environment raises performance significantly. To confirm the level of moderation, the model analysis shown on Table 4.32 was done.

Table 4.32 Model Summary of Customer orientation before and after moderation by adoption of green environment (Z)

Model	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.134	.128	.68653	.134	22.498	1	146	.000
2	.134	.122	.68888	.000	.002	1	145	.960
3	.192	.175	.66773	.058	10.335	1	144	.002

a. Predictors: (Constant), X_1c *customer orientation before moderation*

b. Predictors: (Constant), X_1c, Zc *customer orientation during moderation*

c. Predictors: (Constant), X_1c, Zc, X_1Z *customer orientation after moderation*

Table 4.32 presents the results of tests conducted on the moderating effect of adoption of green environment relationship between customer orientation and firm performance of manufacturing firms in Kenya. The results indicate existence of moderation effect with adoption of green environment. R2 changed from .192 by .058 after moderation, a 13.02% change, with p- value of .002. The results indicate that adoption of green environment has a high moderation effect of on the relationship between customer orientation and firm performance.

Table 4.33 ANOVA of Customer orientation before and after moderation by adoption of green environment (Z)

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.604	1	10.604	22.498	.000[a]
	Residual	68.813	146	.471		
	Total	79.417	147			
2	Regression	10.605	2	5.303	11.174	.000[b]
	Residual	68.811	145	.475		
	Total	79.417	147			
3	Regression	15.213	3	5.071	11.374	.000[c]
	Residual	64.203	144	.446		
	Total	79.417	147			

a. Predictors: (Constant), X_1c *customer orientation before moderation*

b. Predictors: (Constant), X_1c, Zc *customer orientation during moderation*

c. Predictors: (Constant), X_1c, Zc, X_1Z *customer orientation after moderation*

d. Dependent Variable: Y *Firm performance*

Moderated customer orientation has an F statistic of 11.374 and the P<0.001 which is greater than 0.05 implying that the mean difference of moderated customer orientation and performance of manufacturing firms is statistically significant at a level of significance of 0.05.

Table 4.34 Coefficients of determination for moderated relationship between customer orientations

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	4.022	.064		62.608	.000		
	X_1c	.323	.068	.365	4.743	.000	1.000	1.000
2	(Constant)	4.022	.065		62.293	.000		
	X_1c	.326	.084	.368	3.869	.000	.660	1.515
	Zc	-.005	.101	-.005	-.050	.960	.660	1.515
3	(Constant)	4.057	.064		63.871	.000		
	X_1c	.036	.122	.041	.299	.766	.298	3.360
	Zc	-.041	.098	-.039	-.417	.677	.651	1.535
	X_1Z	-.389	.121	-.423	-3.215	.002	.324	3.088

a. Dependent Variable: Y

a. Predictors: (Constant), X_1c *customer orientation before moderation*

b. Predictors: (Constant), X_1c, Zc *customer orientation during moderation*

c. Predictors: (Constant), X_1c, Zc, X_1Z *customer orientation after moderation*

d. Dependent Variable: Y *Firm performance*

The regression model for moderated customer orientation,

$Y= \beta_0 Z+ \beta_1 X_{1+} \beta_1 Z+ \beta_1 Z X_1 Z_{+} \varepsilon,$

Holding all other factors constant, becomes;

$Y=4.057+.036\ X_1-0.041Z-3.89X_1Z$

The moderation converts the relationship between organizational characteristics and firm performance inversely. A rise in the interaction term-moderated customer orientation reduces firm performance.

4.3.2 Moderation on relation between Quality Emphasis and Firm Performance

The analysis began by establishing whether adoption of green environment moderates the relationship between quality emphasis and performance of manufacturing firms. Using a scatter diagram shown in fig. 4.2 below, it was established that adoption of green environment did moderate the relationship between quality emphasis and performance of manufacturing firms in Kenya.

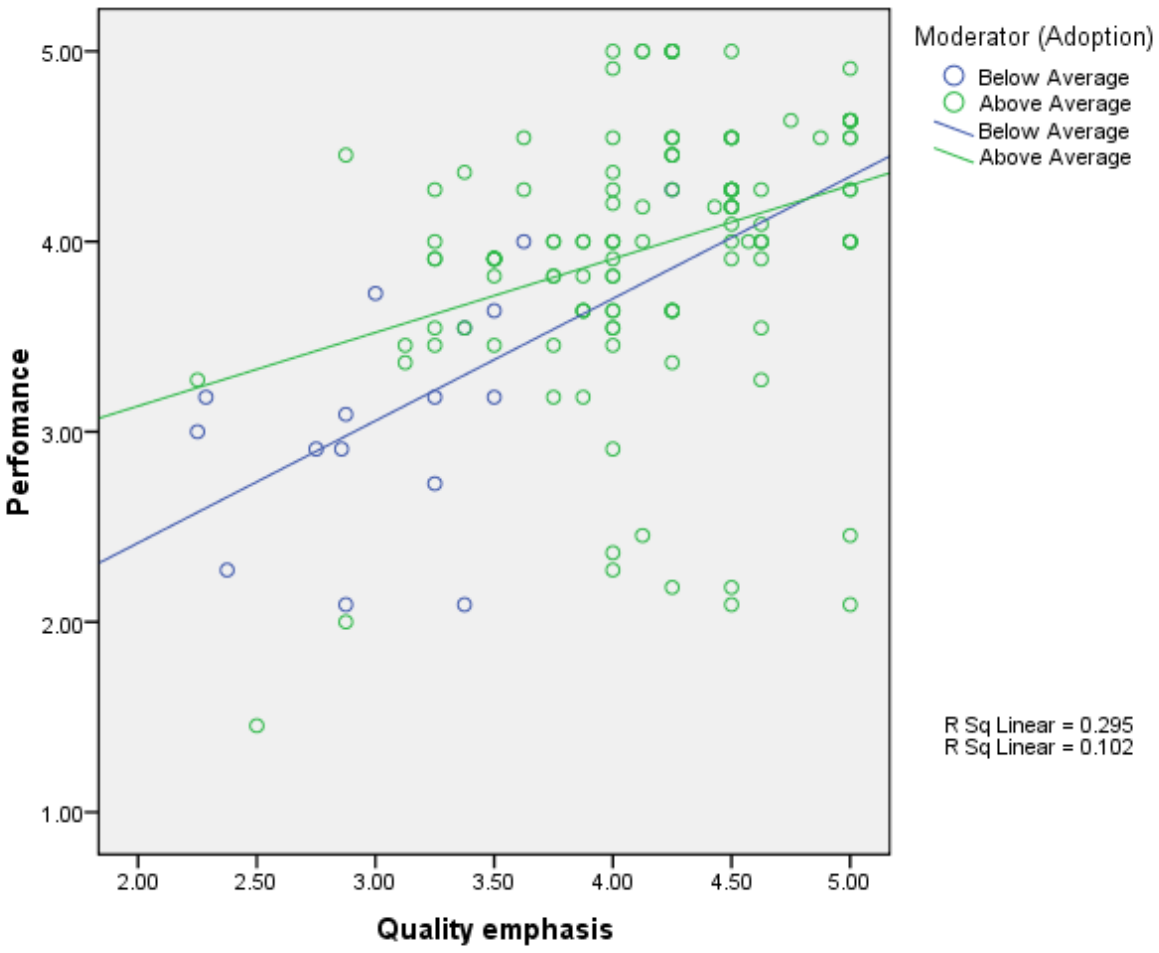

Fig. 4.3 Scatter diagram indicating the moderation effect of adoption of green environment on quality emphasis

Fig. 4.2 shows that, as quality emphasis rises, performance of the firms rises for both the below average and above average adopters of green environment. However, the rate of increase of performance is greater in the below average green environment adopting firms, overtaking the above average green environment adopting firms at some point.

To establish the exact effect of adoption of green environment on the relationship between quality emphasis and performance, the following analysis, presented in tables, were done.

Table 4.35 Model Summary of quality emphasis before and after moderation by adoption of green environment

Model Summary

Model	R	R Square	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.456[a]	.208	.208	38.349	1	146	.000
2	.475[b]	.225	.017	3.235	1	145	.074
3	.528[c]	.279	.054	10.739	1	144	.001

a. Predictors: (Constant), X_2c

b. Predictors: (Constant), X_2c, Zc

c. Predictors: (Constant), X_2c, Zc, X_2Z

a. Predictors: (Constant), X_2c *quality emphasis orientation before moderation*

b. Predictors: (Constant), X_2c, Zc *quality emphasis orientation during moderation*

c. Predictors: (Constant), X_2c, Zc, X_2Z *quality emphasis orientation after moderation*

d. Dependent Variable: Y *Firm performance*

Table 4.35 summarizes the moderation effect of adoption of green environment on the relationship between quality emphasis and performance of manufacturing firms in Kenya. The results show that R^2 changed from .279 by .054, a 19.4% change at p-value .001. This result indicates that adoption of green environment has a high moderation effect of on the relationship between customer orientation and firm performance.

Table 4.36 ANOVA of quality emphasis before and after moderation by adoption of green environment (Z)

ANOVA[d]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.521	1	16.521	38.349	.000[a]
	Residual	62.896	146	.431		
	Total	79.417	147			
2	Regression	17.893	2	8.947	21.086	.000[b]
	Residual	61.523	145	.424		
	Total	79.417	147			
3	Regression	22.163	3	7.388	18.581	.000[c]
	Residual	57.254	144	.398		
	Total	79.417	147			

a. Predictors: (Constant), X2c

b. Predictors: (Constant), X2c, Zc

c. Predictors: (Constant), X2c, Zc, X2Z

d. Dependent Variable: Y

a. Predictors: (Constant), X_2c *quality emphasis orientation before moderation*

b. Predictors: (Constant), X_2c, Zc *quality emphasis orientation during moderation*

c. Predictors: (Constant), X_2c, Zc, X_2Z *quality emphasis orientation after moderation*

d. Dependent Variable: Y *Firm performance*

According to table 4.36, moderated quality emphasis has F statistic of 18.581 and the P<0.001 which is greater than 0.05 implying that the mean difference of moderated quality emphasis and performance of manufacturing firms is statistically significant at a level of significance of 0.05.

Table 4.37 Coefficients of determination of quality emphasis before and after moderation adoption of green environment (Z)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	4.082	.063		64.439	.000		
	X2c	.511	.082	.456	6.193	.000	1.000	1.000
2	(Constant)	4.088	.063		64.936	.000		
	X2c	.645	.111	.576	5.824	.000	.546	1.830
	Zc	-.189	.105	-.178	-1.799	.074	.546	1.830
3	(Constant)	4.132	.062		66.205	.000		
	X_2c	.336	.143	.300	2.356	.020	.308	3.244
	Zc	-.219	.102	-.207	-2.152	.033	.542	1.846
	X_2Z	-.433	.132	-.376	-3.277	.001	.380	2.630

a. Dependent Variable: Y

a. Predictors: (Constant), X_2c *quality emphasis orientation before moderation*

b. Predictors: (Constant), X_2c, Zc *quality emphasis orientation during moderation*

c. Predictors: (Constant), X_2c, Zc, X_2Z *quality emphasis orientation after moderation*

d. Dependent Variable: Y *Firm performance*

Table 4.37 shows that the regression model for moderated quality emphasis,

$Y= \beta_0 Z+ \beta_2 X_2+\beta_2 Z+\beta_2 Z+\beta_2 Z X_2 Z_+ \varepsilon,$

becomes;

$Y=4.132-0.336\ X_2-0.219Z-0.433X_2Z$

Assuming all other factors remains constant. This implies that a unit change in the interaction term- moderated quality emphasis leads to reduction in firm performance index.

4.3.3 Moderation effect on relation between innovation and firm performance

The researcher began by plotting a scatter to establish whether adoption of green environment moderates the relationship between innovation and firm performance. The scatter diagram is shown below on fig. 4.3.

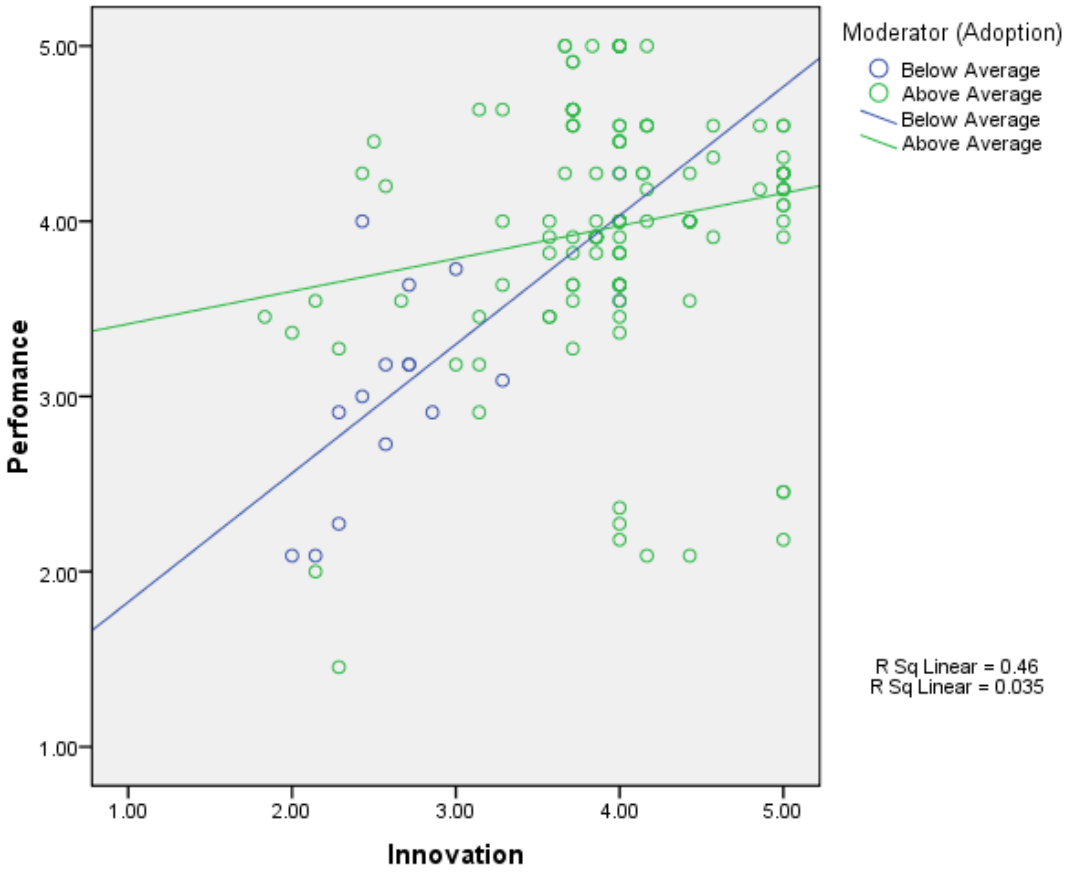

Fig. 4.4 Scatter diagram showing the moderation effect of adoption of green environment on innovation

The diagram indicates that adoption of green environment moderates the relationship between innovation and firm performance. This is evidenced by the meeting of the two lines. Parallel lines indicate lack of moderation. Next was to establish the exact moderation effect done below.

Table 4.38 Model Summary on effect of adoption of green environment on relation between innovation and firm performance

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.362[a]	.131	.125	.68762	.131	21.963	1	146	.000
2	.376[b]	.141	.130	.68577	.011	1.791	1	145	.183
3	.479[c]	.230	.214	.65180	.088	16.504	1	144	.000

a. Predictors: (Constant), X_3c

b. Predictors: (Constant), X_3c, Zc

c. Predictors: (Constant), X_3c, Zc, X_3Z

a. Predictors: (Constant), X_3c *innovation before moderation*

b. Predictors: (Constant), X_3c, Zc *innovation during moderation*

c. Predictors: (Constant), X_3c, Zc, X_3Z *innovation after moderation*

d. Dependent Variable: Y *Firm performance*

Table 4.38 summarizes the moderation effect of adoption of green environment on the relationship between innovation and performance of manufacturing firms in Kenya. The results show that R^2 changed from .230 by .088, a 19.4% change at p-value .001. This result indicates that adoption of green environment has a high moderation effect of on the relationship between customer orientation and firm performance.

Table 4.39 ANOVA on effect of adoption of green environment on relation between quality emphasis and firm performance

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.385	1	10.385	21.963	.000[a]
	Residual	69.032	146	.473		
	Total	79.417	147			
2	Regression	11.227	2	5.613	11.936	.000[b]
	Residual	68.190	145	.470		
	Total	79.417	147			
3	Regression	18.238	3	6.079	14.310	.000[c]
	Residual	61.178	144	.425		
	Total	79.417	147			

a. Predictors: (Constant), X_3c

b. Predictors: (Constant), X_3c, Zc

c. Predictors: (Constant), X_3c, Zc, X_3Z

d. Dependent Variable: Y

a. Predictors: (Constant), X_3c *innovation before moderation*

b. Predictors: (Constant), X_3c, Zc *innovation during moderation*

c. Predictors: (Constant), X_3c, Zc, X_3Z *innovation after moderation*

d. Dependent Variable: Y *Firm performance*

Table 4.39 shows that moderated innovation has F statistic of 14.310 and the P<0.001 which is greater than 0.05 implying that the mean difference of moderated innovation and performance of manufacturing firms is statistically significant at a level of significance of 0.05.

Table 4.40 Coefficients of determination on effect of adoption of green environment on relation between quality and firm performance

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	4.012	.063		63.230	.000		
	X_3c	.339	.072	.362	4.686	.000	1.000	1.000
2	(Constant)	4.014	.063		63.414	.000		
	X_3c	.453	.112	.484	4.053	.000	.416	2.405
	Zc	-.169	.127	-.160	-1.338	.183	.416	2.405
3	(Constant)	4.136	.067		61.516	.000		
	X_3c	.190	.124	.203	1.530	.128	.303	3.296
	Zc	-.120	.121	-.113	-.992	.323	.412	2.429
	X_3Z	-.417	.103	-.386	-4.063	.000	.592	1.690

a. Dependent Variable: Y

a. Predictors: (Constant), X_3c *innovation before moderation*

b. Predictors: (Constant), X_3c, Zc *innovation during moderation*

c. Predictors: (Constant), X_3c, Zc, X_3Z *innovation after moderation*

d. Dependent Variable: Y *Firm performance*

From Table 4.40 above, the regression model for moderated innovation,

$Y= \beta_0Z+ \beta_3X_2 +\beta_3Z+ \beta_3ZX_3Z +\varepsilon,$

Becomes,

$Y=4.136+0.190X_3-0.120Z-0.417X_3Z$

Assuming all other factors hold constant. This implies that a unit rise in the interaction term-moderated innovation reduces performance.

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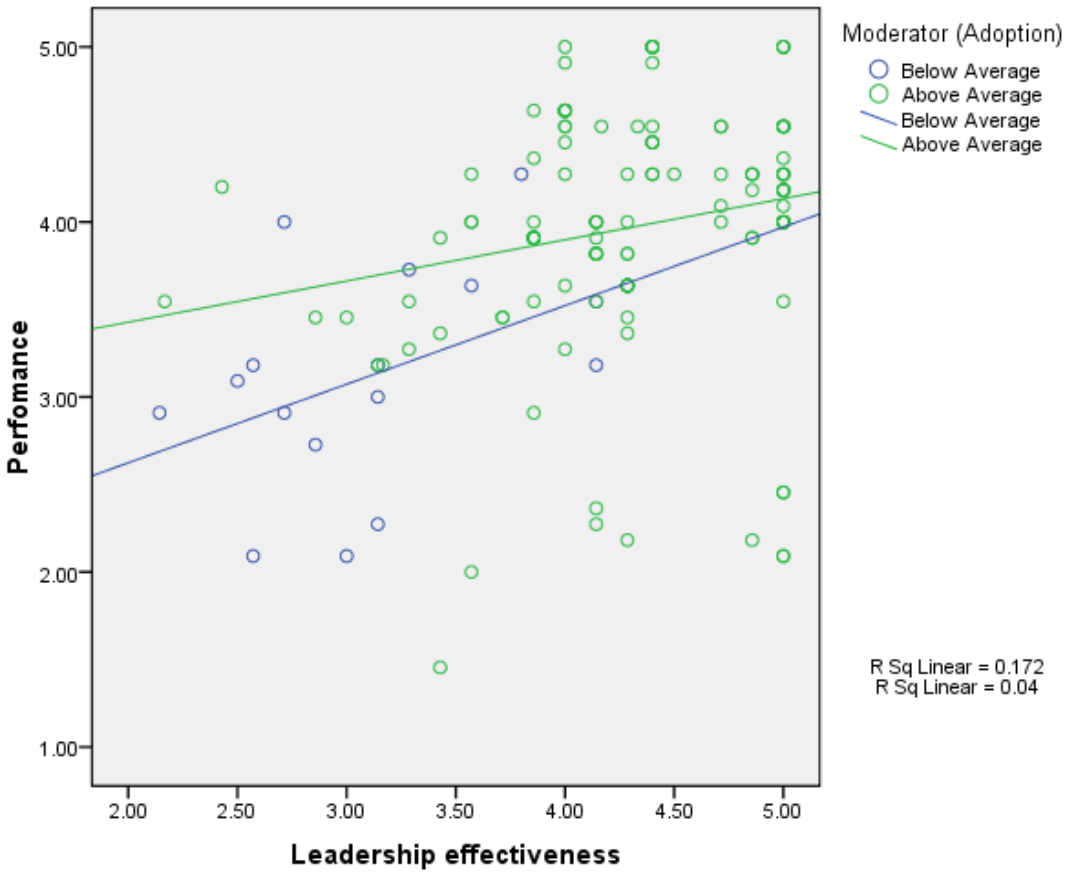

Fig. 4.5 Moderation effect on relationship between leadership effectiveness and firm performance

The figure 4.3.4 confirms the existence of a moderation effect between leadership effectiveness and performance. A rise in leadership effectiveness raises performance. At higher levels of adoption of green environment, performance grows but moderately compared to lower level of adoption.

Table 4.41 summarizes the moderation effect of adoption of green environment on the relationship between management effectiveness and performance of manufacturing firms in Kenya. The results show that R^2 changed from .218 by .077, a 35.3% change at $p < .001$. This result indicates that adoption of green environment has a high moderation effect of on the relationship between management effectiveness and firm performance.

Table 4.41 Model Summary effect of adopt of green environment on relationship between leadership effectiveness and firm performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.369[a]	.136	.130	.68562	.136	22.944	1	146	.000
2	.376[b]	.142	.130	.68569	.006	.971	1	145	.326
3	.467[c]	.218	.202	.65654	.077	14.159	1	144	.000

a. Predictors: (Constant), X_4c

b. Predictors: (Constant), X_4c, Zc

c. Predictors: (Constant), X_4c, Zc, X_4Z

a. Predictors: (Constant), X_4c *management effectiveness before moderation*

b. Predictors: (Constant), X_4c, Zc *management effectiveness during moderation*

c. Predictors: (Constant), X_4c, Zc, X_4Z *management effectiveness after moderation*

d. Dependent Variable: Y *Firm performance*

According to table 4.42 below, moderated management effectiveness has an F statistic of 13.413 and the P<0.001 which is greater than 0.05 implying that the mean difference of moderated management efficiency and performance of manufacturing firms is statistically significant at a level of significance of 0.05.

Table 4.42 ANOVA for moderated management effectiveness and firm performance

ANOVA[d]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.786	1	10.786	22.944	.000[a]
	Residual	68.631	146	.470		
	Total	79.417	147			
2	Regression	11.242	2	5.621	11.955	.000[b]
	Residual	68.175	145	.470		
	Total	79.417	147			
3	Regression	17.345	3	5.782	13.413	.000[c]
	Residual	62.071	144	.431		
	Total	79.417	147			

a. Predictors: (Constant), X_4c *management effectiveness before moderation*

b. Predictors: (Constant), X_4c, Zc *management effectiveness during moderation*

c. Predictors: (Constant), X_4c, Zc, X_{4Z} *management effectiveness after moderation*

d. Dependent Variable: Y *Firm performance*

From the table 4.43 below, the regression model for moderated management effectiveness,

$Y= \beta_0 Z+ \beta_4 Z X_4+\beta_4 Z+\beta_4 Z X_4 Z_+ \varepsilon,$

holding all other factors constant, becomes,

$Y=4.1+0.113X_4-0.056Z-0.473X_4Z$

This indicates that a rise in the interaction term-moderated management effectiveness reduces firm performance.

The results in this section have shown that though the relationship between the individual organizational characteristic; customer orientation, quality emphasis, innovation and leadership effectiveness are significantly related to firm performance and that on their own, the relationship is positive, when green environment is adopted as part of each, they still significantly influence performance. Their influence however reduces performance.

Table 4.43 Coefficients on the relationship between management effectiveness and firm performance

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1(Constant)	4.003	.062		64.338	.000		
X_4c	.389	.081	.369	4.790	.000	1.000	1.000
2(Constant)	4.000	.062		64.219	.000		
X_4c	.471	.116	.446	4.058	.000	.490	2.039
Zc	-.115	.117	-.108	-.985	.326	.490	2.039
3(Constant)	4.100	.065		62.820	.000		
X_4c	.113	.146	.107	.769	.443	.283	3.536
Zc	-.056	.113	-.053	-.501	.617	.481	2.078
X_4Z	-.473	.126	-.410	-3.763	.000	.457	2.190

a. Dependent Variable: Y

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a. Predictors: (Constant), X_4c *management effectiveness before moderation*

b. Predictors: (Constant), X_4c, Zc *management effectiveness during moderation*

c. Predictors: (Constant), X_4c, Zc, X_{4Z} *management effectiveness after moderation*

d. Dependent Variable: Y *Firm performance*

Test of Hypotheses

To draw inferences about the population from the sampled data, the study used a regression model. T -test is widely adopted for hypothesis testing. This test-of-significance method is to verify the truth or falsity of a null hypothesis by using sample results, showing that the means of two normally distributed populations are equal. As a result, the key idea behind tests of significance is that of a test statistic (estimator) and the sampling distribution of such a statistic under the null hypothesis (Gujarati, 2004).

In the case of t-test, t distribution is used, and a statistic is considered to be statistically significant if the value of the test statistic lies in the critical region, in which case the null hypothesis is rejected. The test could either be one-tail or two-tail. When the alternative hypothesis is composite rather with a certain direction, the test will be made two-tail or two-side. Very often such a two-side alternative hypothesis reflects the fact that there is no strong priori or theoretical expectation about the direction in which the alternative hypothesis should move from the null hypothesis.

There were four types of relationships to be tested using one-way analysis of variance (ANOVA). In all the tests, the decision rule was if the P value observed (calculated P) is less than the s*et al*pha (α) that is the confidence level of 0.05, then reject the null hypothesis and if the P value observed is greater than the s*et al*pha of 0.05, do not reject the null hypothesis. The testing of these hypotheses was done at level of significance of 0.05. The hypotheses tested in this study were as below;

H_{01}: Adoption of green environment has no significant effect on relationship between customer orientation and performance of manufacturing Firm.

Moderated customer orientation has an F statistic of 11.374 and the P<0.001 which is greater than 0.05 implying that the mean difference of moderated customer orientation and performance of manufacturing firms is statistically significant at a level of significance of 0.05. As such, the null hypothesis is rejected. It is concluded that adoption of green environment has a significant influence on the relationship between customer orientation and performance of manufacturing firms in Kenya.

H_{02}: Adoption of green environment has no significant effect on relationship between quality emphasis and performance of manufacturing Firm.

The ANOVA results indicate that moderated quality emphasis has F statistic of 18.581 and the P<0.001, which is greater than 0.05 implying that the mean difference of moderated quality emphasis and performance of manufacturing firms is statistically significant at a level of significance of 0.05. The null hypothesis is thus rejected.

Adoption of green environment does significantly affect the relationship between quality emphasis and performance of manufacturing firms.

H_{03}: Adoption of green environment has no significant effect on relationship between innovation and performance of manufacturing Firm.

Moderated innovation had F statistic of 14.310 and the P<0.001 which is greater than 0.05 implying that the mean difference of moderated innovation and performance of manufacturing firms is statistically significant at a level of significance of 0.05. The ANOVA results lead to the rejection of the null hypothesis as adoption of green environment does affect the relationship between innovation and performance of manufacturing firms.

H_{04}: Adoption of green environment has no significant effect on relationship between management effectiveness and performance of manufacturing Firm.

Moderated management effectiveness had an F statistic of 13.413 and the P<0.001 which is greater than 0.05 implying that the mean difference of moderated management effectiveness and performance of manufacturing firms is statistically significant at a level of significance of 0.05. As such, the null hypothesis is rejected. It is concluded that adoption of green environment has a significant influence on the relationship between management effectiveness and performance of manufacturing firms in Kenya.

4.3.5 The combined moderated organizational characteristics and firm performance

Table 4.46 Model summary on the effect of adoption of green environment on the combined organizational characteristics and firm performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.473[a]	.223	.202	.65669	.223	10.289	4	143	.000
2	.512[b]	.263	.237	.64222	.039	7.519	1	142	.007
3	.556[c]	.309	.264	.63055	.047	2.326	4	138	.059

a. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c

b. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c, Zc

c. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c, Zc, X_{3Z}, X_{4Z}, X_{2Z}, X_{1Z}

a. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c Organizational characteristics before moderation

b. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c, Zc Organizational characteristics during moderation

c. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c, Zc, X_{3Z}, X_{4Z}, X_{2Z}, X_{1Z} Organizational characteristics after moderation

Model summary in table 4.46 shows the output for model fitness of combined organizational characteristics and firm performance. The combined organizational characteristics and firm performance before moderation had value of adjusted R squared was 0.202. This shows that the combined organizational characteristics tested explain of 20.2 % on the firm performance in Kenya at 95% confidence interval and R is the correlation coefficient 0.223. This shows there was a weak positive relationship between the study variables.

The combined organizational characteristics and firm performance after moderation had value of adjusted R squared was 0.262. This shows that the combined organizational

characteristics tested after moderation explain of 26.2 % on the firm performance in Kenya at 95% confidence interval and R is the correlation coefficient 0.309. This shows there was a weak positive relationship between the study variables.

Table 4.46 further presents the effect of moderation adoption of green environment on organizational characteristics and performance of manufacturing firms in Kenya. The moderation was tested by using the coefficient of determination which is used to explain the power of regression predictors in explaining the outcome variable. The R square demonstrates the power of the predictor variables in explaining the outcome. There slight change R square before (0.202) and after (0.264) moderation. There significant moderating effect on the relationship between the firm performance and its determinants

Table 4.47 ANOVA on the effect of adoption of green environment on the combined organizational characteristics and firm performance

ANOVA[d]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.748	4	4.437	10.289	.000[a]
	Residual	61.668	143	.431		
	Total	79.417	147			
2	Regression	20.849	5	4.170	10.110	.000[b]
	Residual	58.567	142	.412		
	Total	79.417	147			
3	Regression	24.548	9	2.728	6.860	.000[c]
	Residual	54.868	138	.398		
	Total	79.417	147			

a. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c *Organizational Characteristics before moderation*

b. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c, Zc *Organizational Characteristics during moderation*

c. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c, Zc, X_{3Z}, X_{4Z}, X_{2Z}, X_{1Z} *Organizational Characteristics after moderation*

d. Dependent Variable: Y *Firm performance*

The ANOVA test of the combined organizational characteristics and firm performance before moderation shown in table 4.47 indicate that P-value was 0.000 is more than the set level of significance of 0.05 for a normally distributed data. This means that the alpha level is less than the p-value. The results further revealed that the model had an F-ratio of 10.289 which was significant at 1% level of significance. This result indicates that the overall regression model is statistically significant and is useful for prediction purposes at 10% significance level.

The ANOVA test combined organizational characteristics and firm performance after moderation shown in table 4.47 indicated that P-value was 0.000 is more than the set level of significance of 0.05 for a normally distributed data. This means that the alpha level is less than the p-value. The results further revealed that the model had an F-ratio of 6.860 which was significant at 1% level of significance. This result indicates that the overall regression model is statistically significant and is useful for prediction purposes at 10% significance level. According to Table 4.47, the overall model has F statistic of 6.860 and the P<0.001 which is greater than 0.05 implying that the mean difference of

moderated combined organizational characteristics and firm performance is significant at 0.05 level

Table 4.48 Coefficients on the effect adoption of green environment on the combined organizational characteristics and firm performance

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	4.104	.065		63.203	.000		
	X_1c	.170	.129	.192	1.314	.191	.254	3.940
	X_2c	.437	.123	.390	3.564	.000	.453	2.208
	X_3c	-.055	.139	-.058	-.394	.694	.247	4.052
	X_4c	-.010	.147	-.010	-.071	.943	.282	3.547
2	(Constant)	4.117	.064		64.648	.000		
	X_1c	.067	.132	.075	.504	.615	.233	4.291
	X_2c	.506	.123	.452	4.132	.000	.434	2.306
	X_3c	.152	.155	.162	.977	.330	.189	5.297
	X_4c	.122	.151	.116	.807	.421	.253	3.950
	Zc	-.366	.133	-.345	-2.742	.007	.328	3.044
3	(Constant)	4.195	.073		57.436	.000		
	X_1c	.071	.171	.081	.418	.677	.134	7.456
	X_2c	.328	.153	.293	2.136	.034	.267	3.747
	X_3c	.136	.158	.145	.862	.390	.177	5.659
	X_4c	-.024	.182	-.022	-.130	.897	.168	5.938
	Zc	-.288	.140	-.271	-2.056	.042	.288	3.478
	X_{1Z}	.223	.244	.242	.911	.364	.071	14.096
	X_{2Z}	-.195	.204	-.169	-.956	.341	.160	6.254
	X_{3Z}	-.174	.206	-.161	-.845	.400	.137	7.297
	X_{4Z}	-.263	.226	-.228	-1.163	.247	.130	7.675

a. Dependent Variable: Y

a. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c *Organizational Characteristics before moderation*

b. Predictors: (Constant), X_4c, X_2c, X_1c, X_3c, *Organizational Characteristics during moderation*

c. Predictors: (Constant), X_{3Z}, X_{4Z}, X_{2Z}, X_{1Z} *Organizational Characteristics after moderation*

d. Dependent Variable: Y *Firm performance*

To capture the mediating effect of adoption of green environment on each of the performance variables, a moderated multiple regression (MMR) was applied. The models were

$Y = \beta 0 + \beta_1 X_1 Z + \beta_2 X_2 Z + \beta_3 X_3 Z + \beta_4 X_4 Z + \varepsilon$.

Becomes, $Y=0.223-0.223X_1 Z -0.174X_2 Z -0.055X_3 Z -0.263X_4 Z$

Assuming all other factors hold constant.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study investigated the effect of adoption of green environment on the relationship between organizational characteristics and performance of manufacturing firms in Kenya. In this chapter, the following discussions, conclusion and recommendations were made from the data analysis in chapter four above. The conclusion and recommendations were based on the objectives of the study. First, focus is on the summary of the findings and hypotheses confirmation as derived from this thesis by referring to the research proposition. Additionally, policy and further study recommendations which should be of interest to both management and policy makers are covered. Suggestions for further study are also captured as a way of filling the gaps identified in the study.

5.2 Summary of Findings

Evidence from previous studies on whether adoption of green environment influenced performance of firms had mixed results. Some researchers concluded that adoption of green had a positive significant influence on performance. Some concluded that it had no effect while others reported a negative relationship.

5.2.1 Preliminary Findings

The findings of the study confirmed that the four organizational characteristics were significantly related to firm performance. This confirms results of the study by Appiah-Adu and Singh (2008).

Results further revealed that adoption of green environment influenced a firm's performance significantly. In addition, the study revealed that adoption of green environment significantly moderated the relationship between organizational characteristics and firm performance. The moderation of the relationship between organizational characteristics and firm performance by adoption of green environment however led to a decrease of performance as the organizational characteristic increased.

This went contrary to expectation. Literature on adoption and implementation of management practices however shows that there is a possibility of such an occurrence. Studies by Zhu and Serkan, (2007), Yang, *et al* (2010), Ru-Jen and Chwen (2012), Ketokevi and Schrinder (2004), Progojo (2011) and Anderson *et al* (1999), all indicate that when management practices are adopted to satisfy external pressures and expectations, the practices may not result to improved performance. They argued that the adoption might instead lower performance. The study results indicated that the adoption was mainly aimed at improving the organizations' image and to satisfy legal requirements as well as being part of corporate social responsibility.

The responses provided on several questions gauging the motive for adoption clearly indicate that organizational efficiency which leads to improved performance was not among the reasons for adoption of green environment. There is a feeling that organizations wish to be termed green as it is what is expected of them.

Additionally, the study established that adoption of green is a relatively new concept. The response received indicated that most firms became environmentally conscious in the last 10 years. Measures to mitigate their impacts, which are their environmental investments, were instituted thereafter. Such investments are capital intensive at first, adding to costs of production. According to Nalewaik and Venters, (2008), it takes time, at times the whole lifecycle of some green investments for returns to be recouped.

These findings were supported by the frequencies of the responses from the respondents which were presented in the form of percentages and mean scores. The section below summarizes the study findings by objective.

5.2.2 To determine whether adoption of green environment moderates the relationship between customer orientation and performance of manufacturing Firms in Kenya

The first objective of the study was to set to establish whether adoption of green environment has any significant effect on relationship between customer orientation and performance of manufacturing Firms in Kenya. The findings revealed that adoption of

green environment has significant effect on relationship between customer orientation and performance of manufacturing Firms in Kenya. This finding is supported by the coefficient of determination which shows that variations in the relationship between organizational characteristics and firm performance are explained by adoption of green environment, holding other factors constant. Some manufacturing firms in Kenya have, for a while now, been integrating green environment in their customer offerings as a differentiation strategy. As revealed in Chapter four, this strategy has helped them improve their performance.

5.2.3 To examine whether adoption of green environment moderates the relationship between quality emphasis and performance of manufacturing Firms in Kenya.

The second objective of the study sought for establish whether adoption of green environment has any significant effect on relationship between quality emphasis and performance of manufacturing Firms in Kenya. Results revealed that adoption of green environment had positive influence on relationship between quality emphasis and performance of manufacturing Firms in Kenya. This is supported by the coefficient of determination which shows that adoption of green environment explain the variations in relationship between quality emphasis and performance of manufacturing Firms in Kenya, holding other factors constant. The test for significance also showed that the influence was statistically significant and hence the alternate hypothesis was accepted. This means that integrating green environment in quality improvement decisions improves a firm's performance.

5.2.4 To establish whether adoption of green environment moderates the relationship between innovation and performance of manufacturing Firms in Kenya.

The third objective of the study was to establish whether adoption of green environment has any significant effect on relationship between innovation and performance of manufacturing Firms in Kenya. The results showed that adoption of green environment has an influence on the relationship between innovation and performance of manufacturing Firms in Kenya.

Data analysis produced a coefficient of determination which showed the percentage of variations in relationship between innovation and performance of manufacturing Firms is explained by adoption of green environment, holding other factors constant. The significance test showed that influence of adoption of green environment on the relationship between innovations and firm performance was statistically significant and hence the alternate hypothesis was accepted. Majority of the respondents agreed that adoption of green environment in to innovations had a positive influence on firm performance.

5.2.5 To establish whether adoption of green environment moderates the relationship between management effectiveness and performance of manufacturing Firms in Kenya.

The fourth objective of the study sought to establish whether adoption of green environment has any significant effect on relationship between management

effectiveness and performance of manufacturing Firms in Kenya. Results revealed that adoption of green environment had moderate positive influence on relationship between management effectiveness and performance of manufacturing Firms in Kenya. This was supported by the coefficient of determination which shows that adoption of green environment explain the variations in relationship between management effectiveness and performance of manufacturing Firms in Kenya, holding other factors constant. The test for significance also showed that the influence was statistically significant and hence the alternate hypothesis was accepted. This means that integrating green environment in management decisions improves a firm's performance.

5.3 Conclusion

Based on the findings of the study, it can be concluded that adoption of green environment has significant effect on relationship between organizational characteristics and performance of manufacturing Firms in Kenya. However, due to the external motives which have led to adoption of green environment, the moderation effect has been negative. This means that adoption of green leads to decrease in performance.

The adoption of green environment by manufacturing firms has a high potential of improving financial performance and hence better returns to the shareholders. The versatility of possible areas of adoption of green environment has made their application rate to be high among manufacturing firms. To achieve this, organizations should

ensure that their motivation for adopting green environment is internal efficiency and not image or perception from external sources.

5.4 Recommendations

The recommendations are based on the findings on the objectives of the study.

5.4.1 Moderated Customer Orientation and Firm performance

Manufacturers should continue to strive to integrate green environment in their customer delight strategies. This can be in combination with the other strategies they employ such as improving product offering as a result of customer feedback. As customer consciousness on environmental conservation and effects of human activity on climate change rise, customers will feel more appreciated by manufacturers who show concern for the environment. Communication on green products must also be sensitive. As discussed earlier, consumers will shun green products if they perceive that resources for quality improvement were used to green the product.

5.4.2 Moderated Quality Emphasis and Firm performance

To be competitive, manufacturers have to ensure they produce high quality products always. Adoption of green is one way of helping manufacturing firms to maintain high quality. Natural and green products are today considered as being of high quality. The high value clients are today known for their prevalence of natural and environmentally friendly products. In fact, some markets are out of reach to polluters and those that use environmentally unfriendly technologies.

5.4.3 Moderated Innovation and Firm performance

Manufacturers should ensure that they integrate green environment in their innovations. This can be done by ensuring their innovations are environmental friendly or that their inventions utilize green components. Many are already reaping benefits by producing natural products and adding herbal components to their product lines.

5.4.4 Moderated Management Effectiveness and Firm performance

To attract top notch managers, manufacturing firms will need to have a good reputation. Adoption of green environment is one act that improves an organization's image to its publics. No reputable manager will wish to be associated to a firm that is always in court on pollution charges or one that has constant conflict with surrounding communities due to pollution.

Additionally, for adoption of green environment to improve organizational performance, organizations must align the adoption to their internal needs for efficiency, innovation and cost reduction. When motivation is external driven, waste and inefficiencies easily take away performance benefits that could have been achieved.

It is also recommended that universities and other training institutions integrate adoption of green environment and sustainable development in such courses as business management, marketing, production and operations management as well as supply chain management. Additionally professional societies such as the Kenya Institute of Management, the marketing Society, Kenya institute of Supplies Management and the Directors Association, among others, should ensure that adoption of green environment

becomes an important agenda in all their dealings, including becoming an important category in their annual awards.

5.5 Areas for Further Research

This study concentrated on the manufacturing sector of the Kenyan economy. There is need to carry out a similar study in other sectors of the economy, especially the service sectors such as the financial sector. A more detailed study can also be carried out to establish whether similar results can be reported among the non-governmental, not for profit organizations.

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APPENDECES

Appendix i: Letter Of Authorization

Peter Wanjohi
P.O Box 620000-0200 Nairobi
0722253267

The Chief Executive,

Organization's Name.....

Address.....

Dear Sir/Madam,

Reference: Questionnaires

I am a student at Jomo Kenyatta University of Agriculture and Technology undertaking a degree in Doctorate of Philosophy in Business Administration. As part of the academic requirements, am supposed to undertake a research proposal in fulfillment of the degree. My research study is titled; *The Moderation Effect of Adoption of Green Environment on the Relationship between Organizational Characteristics and Performance of Manufacturing Firms in Kenya*. I recognize your role as the Head of this organization and wish to request your permission and help in carrying out this study. Please, find attached a questionnaire form for you to fill and return to me as soon as possible.

Thank you for your help.
Yours Sincerely,

Peter Wanjohi

Appendix iii: Questionnaire
Introduction

This study aims to establish weather adoption of green environment is related to performance of manufacturing concerns. I kindly request you to take a few moment of your time to fill this questionnaire. The information received will be used for research purposes only. For any clarifications, please contact me (Peter Wanjohi) on 0722 253 267. Thank you.

Company bio data

What does your firm manufacture?_____

Who owns your firm? [ ]Local Investor [ ] Publicly owned [ ] Foreign investor [ ]Local and foreign investors [ ] Combination of all

Year of first operation _____

Kindly answer the following questions by ticking in the appropriate box as shown below;

SA=strongly agree **A**=Agree **N**=Neutral **D**=Disagree **SD**= Strongly disagree

	SA	**A**	**N**	**D**	**SD**
Customer complaints always get priority					
All our policies make it easy for customers to work with us					
We never use customer feedback to improve our performance					
Overall, customers are not satisfied with our services and products					

Customers are regularly consulted on matters touching them					
Market surveys are regularly carried out to gauge customer perceptions					
We regularly organize customer forums to meet and dialogue with customers					
Our senior management team has capacity to deal with all					
challenges we can get					
I have no confidence in our senior management team					
I completely trust our senior management team					
Management does not consider best practices in its conduct of business always					
Our senior management team has communicated a vision that motivates me					
Our management has a unique way of mobilizing us to perform					
Our management is hands on which motivates us to work					

Kindly answer the following questions by ticking in the appropriate box as shown below;

	SA	**A**	**N**	**D**	**SD**
Employees are always encouraged to think about new ways of doing					

things					
The firm is always looking for better more efficient ways to carry out processes					
The firm always adequately rewards staff who suggest new effective ways of doing things					
The firm never uses its resources to fund new ideas and support research					
Staff feel free to try new things on their jobs, even though their efforts may not succeed					
Product lifecycle is often extended by innovatively re-inventing products					
A new product has been developed in last 6 months as a result of innovation					

Kindly answer the following questions by ticking in the appropriate box as shown below;

	SA	**A**	**N**	**D**	**SD**
The firm has set clear performance standards for product/service quality					
All our improvement efforts result in both higher quality and lower costs					
We are never improve the quality of our products and services					
All our day-to-day decisions demonstrate that quality and improvement are top priorities choosing new sites					

Availability of power and road/rail/sea transport infrastructure is always important					
Our operations do not always conform to KEBS standards					
We are ISO certified					
All our procedures adhere to the documented quality standards					
There are adequate dust bins in all strategic places to ensure environment is not polluted with waste					
The firm has not adequately invested in proper waste disposal system					
The firm has gone beyond regulatory requirements to safeguard the environment					
The firm constantly audits its suppliers and business associates to ensure their processes do not harm the environment					
The firm regularly publishes and makes public its environmental performance report					
The firm supports research geared towards energy efficiency, waste reduction and emission reduction					
The firm has invested in environmental friendly technology and adopts best practices that safeguard the environment					

Kindly answer the following questions;

Does your firm have an environmental policy? [ ] Yes [ ] No.

If yes, what areas does it cover?

Is your firm ISO 1400 certified? [ ] Yes [ ] No,

if yes, When? _____

What are your firm's 4 major considerations in development of new product?

Does your firm consider its negative impact to the environment during marketing? [ ] Yes [ ] No If yes, what are the impacts?

How are these impacts minimized?

Does your firm consider its impact to the environment during sourcing of raw? [ ]Yes [ ]No,

If yes, what are the impacts?

How are these impacts mitigated?

Kindly tick on the appropriate boxes on when activities on the rows started and have been continuing

Activity\Year	**2012**	**2013**	**2014**
Refuse bins in strategic areas			
Tree planting			
ISO 1400 certification			
Environmental policy			
Green supply chain			
Green marketing			
Monitoring suppliers on impact to environment			
Design for environment			
Using green technology			
Proper waste disposal			
Tapping renewable energy			
Water harvesting/recycling			
Waste reduction			
Environmental audits			
Developing environmental friendly products			
Prioritizing environment over finances			
Funding environmental conservation			

In your opinion, which five of the above measures has your firm put more emphasis on?

How do you consider your firm's performance in the last 5 years?

[ ] Excellent [ ] Very good [ ] Good [ ] Fair [ ] Poor [ ] Very poor

Expound the answer above

Kindly fill the table below with figures in millions of Kenya shillings.

Year/Variable	**2012**	**2013**	**2014**
Total Sales			
Total Assets			
Total expenditure			
Share Capital			

In your opinion, do you think businesses should invest in green environment voluntarily?

If so, why?

Would it matter to you whether your employer is sensitive to environmental conservation or not?

If yes, how?

Kindly answer the following questions;

SA=strongly agree **A**=Agree **N**=Neutral **D**=Disagree **SD**=Strongly disagree

	SA	**A**	**N**	**D**	**SD**
In the last 3 years, has there been a steady improvement on the following;					
Sales					
Market share					
Expenditure					
Customer base					
Assets					
Profits					
Market capitalization					
Branch network					
Return on Assets (ROA)					
Return on Capital Employed (ROCE)					
Return on Equity (ROE)					

In your opinion;

Does being customer oriented affect performance?

Yes [ ] No [ ] Don't know [ ]

Does being quality oriented affect performance?

Yes [ ] No [ ] Don't know [ ]

Does being innovation oriented affect performance?

Yes [ ] No [ ] Don't know [ ]

Does management's orientation affect performance? Yes [ ] No [ ]
Don't know [ ]

Does adopting green practices affect performance?
Yes [ ] No [ ] Don't know [ ]

Does adopting green practices affect relationship between customer orientation and firm performance?
Yes [ ] No [ ] Don't know [ ]

Does adopting green practices affect relationship between quality orientation and firm performance?

Yes [ ] No [ ] Don't know [ ]

Does adopting green practices affect relationship between innovation orientation and firm performance?

Yes [ ] No [ ] Don't know [ ]

Does adopting green practices affect relationship between management effectiveness and firm performance?

Yes [ ] No [ ] Don't know [ ]

THANK YOU

Appendix iv: Sampling Frame

Below is the sampling frame as borrowed from the member's register of KAM in 2013

Company Listing by Sector (Source, KAM, 2011)

1. Building, construction & mining

1. Athi River Mining
2. East African Portland Cement
3. Bamburi Cement
4. Bamburi Special products
5. Central Glass Industries
6. Homaline Company
7. Karsen Murji Company
8. Kenbro Industries Ltd
9. Kenya Builders and Concrete
10. Krystalline Salt
11. Malindi Saltworks
12. Manson Hart Kenya
13. Orbit Enterprises
14. Saj ceramics

2. Chemicals and Allied

1. Anffi Kenya Ltd
2. Kenya Tanning Extract Company Ltd
3. Ariman Technologies Ltd/Oasis Ltd
4. Magadi Soda Company Ltd
5. Basco Products (K) Ltd
6. Metoxide Africa Ltd
7. Bayer East Africa Ltd
8. Milly Glass Works Ltd
9. Beiersdorf East Africa Ltd
10. Orbit Chemical Industries Ltd
11. BOC Kenya Limited
12. Osho Chemicals Ltd
13. Buyline Indutries Ltd
14. PolyChem East Africa Ltd
15. Carbacid (CO2) Limited
16. Procter & Gamble East Africa Ltd
17. Central Glass Industries Limited
18. Pyrethrum Board of Kenya
19. Coates Brothers (E.A.) Limited
20. PZ Cussons & Company Limited
21. Coil Products (K) Limited
22. Reckitt Benckiser (E.A.) Ltd
23. Colgate Palmolive (E.A.) Ltd
24. Rosin Kenya Ltd
25. Desbro Kenya Limited
26. Sadolin Paints (E.A.) Ltd
27. Diamond Industries Limited
28. Sara Lee Household and Body Care Kenya Ltd
29. East Africa Heavy chemicals (1999) Ltd
30. Saroc Ltd
31. Eastern Chemicals Industries Ltd
32. Soilex Chemicals Ltd
33. Galaxy Paints & Coating Co. Ltd
34. Stripes Industries Limited
35. Gopitech Kenya Ltd
36. Supa Brite Ltd
37. Grand Paints Ltd
38. Super Foam Ltd
39. Henkel Kenya Ltd
40. Synresins Limited
41. JohnsonDiversey East Africa Limited
42. Thika Wax Works Ltd
43. Kapi Limited
44. Tri-Clover Industries (K) Ltd

3. Energy, electronics and Electricals

1. Libya Oil Kenya Limited.
2. Kenya Petroleum Refineries Ltd
3. Kenya Power & Lighting Co. Ltd
4. Kenya Shell Ltd
5. IberaAfrica Power (EA) Ltd
6. Nationwide Electrical Industries Ltd
7. East African Cables Ltd
8. Eveready Batteries East Africa Limited
9. Eveready Batteries East Africa Limited
10. Metsec Ltd
11. Power Technics Ltd
12. Amedo Centre Kenya Ltd

13. Kenwest Cables Ltd
14. Reliable Electricals Engineers (Nrb) Ltd
15. Specialised Power Systems Ltd
16. Avery (East Africa) Ltd
17. Baumann Engineering Limited
18. Digitech East Africa Limited
19. Holman Brothers (E.A) Ltd
20. International Energy Technik Ltd
21. Marshall Fowler (Engineers) Ltd
22. Mustek East Africa
23. PCTL Automation Ltd
24. Sollatek Electronics (Kenya) Limited
25. Assa Abloy East Africa Ltd
26. Aucma Digital Technology africa Ltd
27. Centurion Systems Limited
28. Metlex International Ltd
29. Ourupower Limited
30. Modulec Engineering Systems Ltd
31. Optimum Lubricants Ltd
32. Pentagon Agencies
33. Socabelec (EA) Ltd
34. Virtual City Ltd
35. Biogas Power Holdings (EA) Ltd
36. Synergy-Pro
37. Tea Vac Machinery Limited

4. Food and beverage

1. Bidco Oil Refineries Ltd
2. Breakfast Cereal Company (K) Ltd
3. British American Tobacco Kenya Ltd
4. Buzeki Dairy Ltd
5. Brookside Dairy Ltd
6. C. Dormans Ltd
7. Coca-Cola East Africa Ltd
8. East African Seed Co. Ltd
9. Del Monte Kenya Ltd
10. Edible Oil Poducts
11. Kapa Oil Refineries Ltd
12. Gold Crown Beverages (K) LTD
13. Kenafric Industries Limited
14. Insta Products (EPZ) Ltd
15. Kenya Seed Company Ltd
16. Jambo Biscuits (K) Ltd
17. Kenya Tea Packers Ltd (KETEPA)
18. Karirana Estate Ltd
19. London Distillers (K) Ltd
20. Kenya Sweets Ltd
21. Mastermind Tobacco (K) Ltd
22. Kevian Kenya Ltd
23. Mumias Sugar Company Limited
24. Krish Commodities Ltd
25. Nairobi Bottlers Ltd
26. Milly Fruit Processors Ltd
27. Pwani Oil Products Ltd
28. Mzuri Sweets Ltd
29. Spin Knit Dairy Ltd
30. Patco Industries Limited
31. East African Breweries Ltd
32. Proctor & Allan (E.A.) Ltd
33. Chemelil Sugar Company Ltd
34. Sigma Supplies Ltd
35. Farmers Choice Ltd
36. Spectre International Ltd
37. James Finlay Kenya Ltd
38. Spectre International Ltd
39. Kenchic Ltd
40. ValuePak Foods Ltd
41. Kenya Wine Agencies Limited
42. Africa Spirits Ltd
43. Mombasa Maize Millers Ltd
44. Alpine Coolers Ltd
45. Mount Kenya Bottlers Ltd
46. Arkay Industries Ltd
47. Premier Flour Mills Ltd
48. Bio Food Products Limited
49. Rift Valley Bottlers Ltd
50. Blue Nile Wire Products Ltd
51. United Millers Ltd
52. Carlton Products (EA) Ltd
53. West Kenya Sugar Company limited
54. Coast Silos Kenya Ltd
55. Wrigley Company (E.A.) Ltd
56. Eastern Produce Kenya Ltd(Kakuzi)
57. Broadway Bakery Ltd
58. Erdemann Co. (K) Ltd
59. Cadbury Kenya Ltd
60. Gonas Best Ltd
61. Coastal Bottlers Limited

62. Highlands Canners Ltd
63. East African Sea Food Ltd
64. Jetlak Foods Ltd
65. Eldoret Grains Ltd
66. Kamili Packers Ltd
67. Excel Chemicals Ltd
68. Kwality Candies & Sweets Ltd
69. Frigoken Ltd
70. Mafuko Industries Ltd
71. Gold Crown Foods (EPZ) Ltd
72. Miritini Kenya Ltd
73. Kenblest Limited
74. Nicola Farms Ltd
75. Kensalt Ltd
76. Njoro Canning Factory(Kenya) Ltd
77. Kenya Tea Development Agency
78. Palmhouse Diaries Ltd
79. Keroche Industries Ltd
80. Promasidor (Kenya) Ltd
81. Menengai Oil Refineries Ltd
82. Razco ltd
83. Mini Bakeries (Nbi) Ltd
84. Spice World Ltd
85. NAS Airport Services Ltd
86. Usafi Services Ltd
87. Nestle Foods Kenya Ltd
88. Al-Mahra Industries Industries Ltd
89. Rafiki Millers Ltd
90. Belfast Millers Ltd
91. Unga Group Ltd
92. C.Czarnikow Sugar(EA) ltd
93. W. E. Tilley (Muthaiga) Ltd
94. Candy Kenya Ltd
95. Agro Chemical & Food Company Ltd
96. Centrofood Industries Ltd
97. Capwell Industries Ltd
98. Chirag Kenya Limited
99. Corn Products Kenya Ltd
100. Europack Industries Limited
101. Corn Products Kenya Ltd
102. Melvin Marsh International
103. Crown Foods Ltd
104. Pearl Industries Ltd
105. Crown Foods Ltd
106. Pearly Waters Limited
107. Deepa Industries Ltd
108. Re-Suns Spices Limited
109. Diamond Industries Limited
110. Agriner Agricultural Development
111. Diamond Industries Limited
112. Alliance One Tobacco Kenya Ltd
113. Equator Bottlers Ltd
114. Bunda Cakes & Feeds Ltd
115. Giloil Company Limited
116. Chai Trading Company Limited
117. Global Tea & Commodities (K) Ltd
118. Global Fresh Ltd
119. Highlands Mineral Water Co. Ltd
120. Happy Cow Ltd
121. Kenya Nut Company Ltd
122. Kabianga Dairy Ltd
123. Kisii Bottlers Ltd
124. Kibos Sugar and Allied Industries
125. Manji Food Industries Ltd
126. Koba Waters Ltd
127. Mjengo Limited
128. Lari Dairies Alliance Ltd
129. Nairobi Flour Mills Ltd
130. Sunny Processors Ltd
131. Pembe Flour Mills Ltd
132. Wanji Food Industries Limited
133. Premier Food Industries Limited
134. Western Kenya Express Suppliers
135. Softa Bottling Co. Ltd
136. Xpressions Flora Ltd
137. Super Bakery Ltd
138. Agricultural & Veterinary Supplies Ltd
(Agrivet)
139. Trufoods Ltd
140. Green Forest Foods Ltd
141. Uzuri Foods Ltd
142. Kenshop Supermarket (TI) Hot Bread Section
143. Valley Bakery Ltd
144. Kuguru Food Complex Ltd
145. Wanainchi Marine Products (K) Limited

146. NesFoods Industries Ltd
147. Alpha Fine Foods Ltd
148. Aquamist Ltd
5. Leather and footwear
1. Alpharama Ltd
2. Bata Shoes Ltd
3. Budget Shoes Ltd
4. C&P Shoes Industries Ltd
5. Dog Bones Ltd
6. E.A Tanners Ltd
7. Leather Industries Kenya Ltd
8. Sandstorm Africa Ltd
9. Umoja Rubber Ltd
6. Metal and Allied
1. Corrugated Sheets Limited
2. Steelwool (Africa) Ltd
3. Devki Steel Mills Ltd
4. Wire Products Limited
5. Mabati Rolling Mills Limited
6. African Marine & General Engineering Co. Ltd
7. Tononoka Steel Ltd
8. Alloy Steel Castings Ltd
9. ASL Ltd
10. Crystal Industries Ltd
11. Steelmakers Ltd
12. East Africa Spectre Limited
13. Greif Kenya Limited
14. Elite Tools Ltd
15. Insteel Limited
16. General Aluminium Fabricators Ltd
17. Kaluworks Limited
18. Gopitech (Kenya) Ltd
19. Metal Crowns Limited
20. Heavy Engineering Ltd
21. Nampak Kenya Ltd
22. Kens Metal Industries Ltd
23. Standard Rolling Mills Ltd
24. Laminate Tubes Industries
25. Steel Structures Limited
26. Manufacturers & Suppliers (K) Ltd
27. Athi River Steel Plant Ltd
28. Napro Industries Limited
29. Booth Extrusions Limited
30. Warren Enterprises Ltd
31. Brollo Kenya Limited
32. Welding Alloys Ltd
33. Doshi Enterprises Limited
34. Tarmal Wire Products Ltd
35. Friendship Container Manufacturers Ltd
36. City Engineering Works Ltd
37. Kenya General Industries Ltd
38. Davis & Shirtliff Ltd
39. Khetshi Dharamshi & Co. Ltd
40. Farm Engineering Industries Ltd
41. Narcol Aluminium Rolling Mills Ltd
42. Hobra Manufacturing Ltd
43. Rolmil Kenya Ltd
44. Kitchen King Ltd
45. Apex Steel Ltd - Rolling Mill Division
46. Mecol Limited
47. ASP Company Ltd
48. Orbit Engineering Ltd
49. Cook 'N Lite Limited
50. Soni Technical Services Ltd
51. East African Foundry Works (K) Ltd
52. Specialised Engineering Co. (EA) Ltd
53. Nails & Steel Products Ltd
54. Eldoret Farm Machinery
55. Sheffield Steel Systems Ltd
56. Ndume Ltd
57. Southern Engineering Co. Ltd
58. Viking Industries Ltd
59. Super Steel & Tubes Ltd
7. Motor Vehicle and Accessories
1. General Motors East Africa Limited
2. Pipe Manufacturers Ltd
3. Toyota East Africa Ltd
4. Varsani Brakelinings Ltd
5. Kenya Grange Vehicle Industries Ltd
6. Chui Auto Spring Industries Ltd
7. Associated Battery Manufacturers (E.A.) Ltd
8. Mann Manufacturing Co. Ltd
9. Impala Glass Industries Ltd
10. Megh Cushion Industries Ltd

11. Associated Vehicle Assemblers Ltd
12. Alamdar Trading Company Ltd
13. Banbros Ltd
14. Theevan Enterprises Ltd
15. Bhachu Industries Ltd
16. Autofine Filters & Seals Ltd
17. Labh Singh Harnam Singh Ltd
18. Igo Holdings Ltd
19. Auto Ancilliaries Ltd
20. Sohansons Ltd
21. Auto Springs Manufacturers Ltd
22. Mutsimoto Motor Company Ltd
23. Automotive & Industrial Battery Manufacturers (K) Limited
24. Pipe Manufacturers Ltd
25. Kenya Vehicle Manufacturers Limited
26. Unifilters Kenya Ltd
27. King-Bird (K) Ltd
8. Paper and Paper Board
1. Chandaria Industries Limited
2. Modern Lithographic (K) Ltd
3. Pan African Paper Mills (E.A) Limited (closed)
4. Mufindi Paper Ltd
5. Standard Group Ltd
6. Paper House of Kenya Ltd
7. Tetra Pak Ltd
8. Printpak Multi Packaging Ltd
9. Twiga Stationers & Printers Ltd
10. Punchlines Ltd
11. Allpack Industries Limited
12. Regal Press Kenya Ltd
13. Dodhia Packaging Limited
14. Uchumi Quick Suppliers Ltd
15. East Africa Packaging Industries Limited
16. Associated Paper & Stationery Ltd
17. English Press Limited
18. Colour Packaging Ltd
19. General Printers Limited
20. Elite Offset Ltd
21. Nation Media Group Ltd
22. Flora Printers Ltd
23. Bags & Bailers Manufacturers Ltd
24. Icons Printers Ltd
25. Carton Manufacturers Ltd
26. Kenafric Diaries Manufacturers Ltd
27. Kenya Litho Ltd
28. L.A.B International Kenya limited
29. Paperbags Limited
30. National Printing Press Limited
31. Pressmaster Ltd
32. Packaging Manufacturers (1976) Ltd
33. Ramco Printing Works Ltd
34. Printwell Industries Ltd
35. Statpack Industries Ltd
36. Rodwell Press Ltd
37. Uneeco Paper Products Ltd
38. Taws Limited
39. Autolitho Ltd
40. United Bags Manufacturers Ltd
41. Bag and Envelope Converters Ltd
42. Creative Print House
43. Cempack Ltd 44. Graphics & Allied Ltd
45. Colour Labels Ltd
46. Guaca Stationers Ltd
47. Colourprint Ltd
48. Highland Paper Mills Ltd
49. D. L. Patel Press (Kenya) Limited
50. Phoenix Matches Ltd
51. Ellams Products Ltd
52. Adpak International Limited
53. Ellams Products Ltd
54. Andika Industries Ltd
55. International Paper & Board Supplies Ltd
56. Brand Printers
57. Jomo Kenyatta Foundation
58. Interlabels Africa Ltd
59. Kartasi Industries Ltd
60. Stallion Stationary Manufacturers
61. Kenya Stationers Ltd
62. Cartubox Industries (E.A.) Ltd
63. Kim-Fay East Africa Ltd
64. East African Paper Converters Ltd
65. Kul Graphics Ltd
66. Franciscan Kolbe Press

67. Label Converters
68. Printing Services Ltd

9. Pharmaceutical and medical equipment

1. Glaxo Smithkline Kenya Ltd
2. Pharmaceutical Manufacturing Co. (K) Ltd
3. Cosmos Limited
4. Bulk Medicals Ltd
5. Dawa Limited
6. Novelty Manufacturing Ltd
7. Laboratory & Allied Limited
8. Revital Healthcare (EPZ) Ltd
9. African Cotton Industries Ltd
10. Gesto Pharmaceuticals Ltd
11. Elys Chemicals Industries Ltd
12. Global Merchants Ltd
13. Regal Pharmaceuticals Ltd
14. Oss.Chemie (K)
15. Universal Corporation limited
16. Biopharma Ltd
17. Alpha Medical Manufacturers Ltd
18. Manhar Brothers (K) Ltd
19. Biodeal Laboratories Ltd
20. Pharm Access Africa Ltd
21. KAM Industries Limited
22. Beta Healthcare International Limited
23. Medivet Products Ltd

10. Plastics and Rubber

1. Haco Industries Kenya ltd
2. Sumaria Industries Ltd
3. Sameer Africa Ltd
4. Super Manufacturers ltd
5. Blowplast Ltd
6. Thermos Limited
7. General Plastics Limited
8. Uni-Plastics Ltd
9. Packaging Industries Ltd
10. Wonderpac Industries Ltd
11. Polly Propelin Bags Ltd
12. Afro Plastics (K) Ltd
13. Umoja Rubber Products Ltd
14. Betatrad (K) Ltd
15. Bobmil Industries Ltd
16. Dune Packaging Ltd
17. Elgon Kenya Ltd
18. Laneeb Plastic Industries Ltd
19. Kentainers Ltd
20. Packaging Masters limited
21. Metro Plastics Kenya Limited
22. Princeware Africa (Kenya) Ltd
23. Polythene Industries Ltd
24. Signode Packaging Systems Ltd
25. Techpak Industries Ltd
26. Singh Retread Ltd
27. Treadsetters Tyres Ltd
28. Elgitread (Kenya) Ltd
29. ACME Containers Ltd
30. Jamlam Industries Ltd
31. Cables & Plastics Ltd
32. Kamba Manufacturing (1986) Ltd
33. Complast Industries Limited
34. Keci Rubber Industries Ltd
35. Doshi Ironmongers Ltd
36. Nav Plastics Limited
37. Eslon Plastics of Kenya Ltd
38. Plastic Electricons
39. Hi-Plast Ltd
40. Plastics & Rubber Industries Ltd
41. Kenpoly Manufacturers Ltd
42. Polyblend Limited
43. Kenya Suitcase Manufacturers Limited
44. Springbox Kenya Ltd
45. King Plastic Industries Ltd
46. Vyatu Ltd
47. Kingsway Tyres & Automart Ltd
48. Dynaplas Limited
49. L.G. Harris & Co. Ltd
50. Five Star Industries Ltd
51. Mombasa Polythene Bags Ltd
52. Ombi Rubber Rollers Ltd
53. Nairobi Plastics Ltd
54. Prosel Ltd
55. Polyflex Industries Ltd
56. Pyramid Packaging Ltd
57. Premier Industries Ltd
58. Qplast Industries Ltd
59. Raffia Bags (K) Ltd

60. Solvochem East Africa Ltd
61. Safepak Limited
62. Rubber Products Ltd
63. Sanpac Africa Ltd
64. Shiv Enterprises (E) Ltd
65. Silpack Industries Limited
66. Zaverchand Punja Ltd
67. Styroplast Limited

11. Textiles and Apparels

1. Kenya Trading EPZ Ltd
2. Leena Apparels Ltd
3. Spinners & Spinners Ltd
4. Mega Spin Ltd
5. Spin Knit Limited
6. New Wide Garments Kenya EPZ LTD
7. Sunflag Textile & Knitwear Mills Ltd
8. Silver Star Manufacturers Ltd
9. Alltex EPZ Ltd
10. Straightline Enterprises Ltd
11. Alpha Knits Limited
12. Blue Bird Garments (EPZ) Kenya Ltd
13. Bedi Investments Limited
14. Embalishments Ltd
15. Ken-Knit (Kenya) Ltd
16. Image Apparels Ltd
17. Kenya Shirts Manufacturers Company Ltd
18. Mirage Fashionwear EPZ Ltd
19. Midco Textiles (EA) Ltd
20. Nakuru Industries Ltd
21. Ngecha Industries Ltd
22. Protex Kenya (EPZ) Ltd
23. Summit Fibres Ltd
24. Ricardo EPZ International Co. Ltd
25. Tarpo Industries Limited
26. Senior Best Garment (EPZ) Kenya Ltd
27. Teita Estate Ltd
28. Shin-Ace Garments Kenya (EPZ) Ltd
29. Thika Cloth Mills Ltd
30. Sinolink Kenya Garments Manufacturers
(EPZ) Ltd
31. Vaja Manufacturers Limited
32. Fantex (K) Ltd33. Apex Apparels (EPZ) Ltd
34. Kavirondo Filments Ltd
35. Kema E.A. Ltd
36. Kikoy Co. Ltd
37. Le-Stud Limited
38. Lalesso Ltd
39. United Aryan (EPZ) Ltd
40. Lifeworks Shukrani Limited
41. Yoohan Kenya EPZ Ltd
42. Penny Galore Ltd
43. Ashton Apparel EPZ Ltd
44. Rupa Mills Ltd
45. Bogani Industries Ltd
46. Soko International
47. Dharamshi & Co. Ltd
48. Squaredeal Uniforms Centre Ltd
49. Fulchand Manek & Bros Ltd
50. Wildlife Works (EPZ) Ltd
51. Kamyn Industries Limited
52. World of Kikoys
53. Kenya Knit Garment (EPZ) Ltd

12. Timber, wood and furniture

1. Rai Plywoods (Kenya) Ltd
2. WoodMakers Kenya Ltd
3. TimSales Ltd
4. Eldema (Kenya) Limited
5. Comply Industries Ltd
6. Kenya Wood Limited
7. PG Bison Ltd
8. Panesar's Kenya Ltd
9. Economic Housing Group Ltd
10. Shamco Industries Ltd
11. Furniture International Limited
12. Woodtex Kenya Ltd
13. Newline Ltd
14. Fine Wood Works Ltd
15. Rosewood Office Systems Ltd
16. Timber Treatment International Ltd
17. Shah Timber Mart Ltd