# WASTE MANAGEMENT AND ITS EFFECTS ON ENVIRONMENTAL PERFORMANCE OF COMPLY TIMBER PROCESSING FIRM IN NAKURU COUNTY, KENYA

**Vincent osuga** ✉

School of Human Resource Development

Jomo Kenyatta University of Agriculture and Technology, Kenya

vinnitoh@gmail.com


**Barrack Okello**

School of Human Resource Development

Jomo Kenyatta University of Agriculture and Technology, Kenya

obrackz@gmail.com

**Abstract**

*This study sought to establish the effect of waste management on environmental Performance of Comply timber processing firm located in Nakuru County, Kenya. Comply Company was used as a case for the study. The study was guided by Stakeholder's theory. The study adopted correlational research design. Data was collected from all employees in production, procurement, accounting and finance and marketing departments of Comply Company using structured questionnaires. The collected data was then coded and analyzed using SPSS version 21. Descriptive statistical analysis were used to explain the independent and dependent variables while inferential statistical analysis; correlation analysis conducted to test the effect of sustainable procurement on environmental performance. The results revealed that waste management has positive effect on environmental performance. The study therefore recommends that organizations should have clear written down waste management policies so as to improve on environmental performance. The study recommends further studies to identify the role of end consumer in adoption of waste management strategies and improvement of environmental performance of an organization.*

*Keywords: Procurement, Sustainable development, Environmental Performance, Inbound Logistics and Outbound Logistics*

## INTRODUCTION

Concept of Sustainable procurement can be traced to the Resolutions of World Summit on Sustainable Development (WSSD) in the year 2002; Sustainable Procurement (SP) was identified as one of the pillar for achieving sustainable development. In that spirit governments, private companies and international agencies have increasingly included social and environmental criteria within their procurement processes in order to contribute to broader organizational goals of sustainable development (Brammer & Walker 2011; Preuss, 2009; Nijaki & Worrel, 2012).Consequently, the United Kingdom stated its goal to be among the leading countries in Europe to have implemented SP by the year 2009 (DEFRA, 2005). The interest in SP has become an area of interest for researchers and policy makers all over the world.

SP is the process of pursuing sustainable development goals through the purchasing and supply process of individual businesses and government departments as shown by studies done in private and public sector organization (Meehan & Bryde, 2011; Preuss, 2009; Henri and Journeault, 2008). Sustainable procurement may be defined as the process used to secure the acquisition of goods and services in a way that ensures that there is the least impact on society and the environment throughout the full life cycle of the product and involves balancing the key objectives which are economic, social and environmental in nature (Walker, & Phillips, 2009). SP has lately become a concern in the policies of many countries interested in pursuing overall Sustainable Development. Procurement thus plays a very important role in coming up with policies that ensure that ensures there is Sustainable Development within the wider economy.

According to Meehan, & Bryde, (2011), sustainable policies take into consideration the environmental, social and economic ends of an organization. The policies should be framed in a way that ensures economic, environmental and social objectives are realized. Sustainable policies and practices go beyond an organization boundary by incorporating the whole supply chain. Guidelines on sustainability require that procurement should make decisions that include the environmental, economic and social elements of the triple bottom line (TBL) concept. Procurement activities must be incongruence with the concept of TBL for them to be considered sustainable (Birkin et al., 2009).

In Kenya, not many studies have been undertaken on the contemporary issue of Sustainable Procurement. Few researches undertaken on sustainable procurement in Kenya have tended to use the substitute of Sustainable procurement, Green Procurement, in their studies. The Public Procurement and disposal Act, 2005 and subsequent regulations 2006 and 2009, which are the major points of reference in relation to public procurement in Kenya, have been reviewed. Unfortunately, they make only a very weak reference to sustainable procurement. Some of the studies already done in Kenya include study by Nasiche & Ngugi

(2014) on the Determinants of adoption of green procurement in the public sector: A case study of Kenya Pipeline Company, the study by Nasiche and Ngugi sought to establish factors that impact on the adoption of green procurement in private companies a case of Kenya Pipeline Company

The relationship between SP and the environmental performance is an area of interest. This study intends to relate Sustainable Procurement with Environmental Performance among timber processing firms in Nakuru County. It aims to understand the concept of Sustainable Procurement and its relationship with environmental performance, it is necessary to establish specific Sustainable Procurement activities that will impact on the performance of such organizations. Researches by different scholars all over the world have established number specific Sustainable Procurement activities that may impact on the performance of an organization. For instance, a study done by (Meehan & Bryde, 2010) identified specific SP activities: organization and procurement policies, procurement commitments and targets, integrated procurement, staff training, supplier awareness, and ISO standards as affecting environmental performance of organizations both private and public.

Implementation of sustainable procurement requires Organizational Policy Commitment which is concerned with the Organizational Culture, Value and Vision that guide procurement operations, procurement policy, strategies and decision making so as to achieve sustainability (CIPS & NIGP, 2012) and (Kennard, 2006).the procurement department can set targets for achievement that ensures sustainability. The second ingredient of sustainable procurement is Supply Chain Efficiency which is concerned with the ability of the organization to incur minimum purchasing costs, minimum operational costs and minimum disposal costs as well as achieve enhanced capacity, reduced wastes, innovation and competitiveness (Chkanikova, 2012). The third ingredient is, Risk Management that looks at the comprehensive risk management strategy developed by an organization. It ensures organizations effectively and efficiently manage: legal risks, financial risks, ethical risks, security and supply risks, price volatility risks, organizational reputation risks. The main driver for sustainable procurement is increased Stakeholder's Expectation and Awareness which is all about exerting pressure on organizations to consider economic, environmental and social aspects of business. Meehan & Bryde (2010) suggest involving stakeholders and more specifically the supplier through sensitizing as well as involving them in sustainable practices.

Environmental performance of an organization on the other hand is a concept that is derived from the wider organizational performance of an organization; it is a segment of the broader organizational performance. Environmental performance describes a performance of the organization in relation to ecological effects of goods procured by an organization by taking

to less environmentally damaging activities (Preuss, 2009). Environmental Performance is concerned with Fitness for Purpose, Biodegradability, Design and Disassembly of the products purchased and supplied by the organization. It is the extent to which purchased or supplied products give value for money for the organization and its customers. Indicators of Environmental Performance include: Minimum Use of Virgin and Non-renewable Materials by the organization, Resource, Energy and Water efficiency, Fault and Waste Prevention and Maximum Durability. In addition, environmental performance can be indicated by the level of Reusability and Recyclability of products and Associated Materials, Minimum Packaging, Maximum use of Post-Consumer Materials and Minimum Pollution of products purchased and supplied by the organization (Meehan & Bryde, 2011).

## Statement of the Problem

Sustainable Procurement is an emerging concept from the traditional Procurement. In practical business environment and procurement operations, many organizations adopt sustainable procurement as a strategic approach to take care of environmental, economic and social demands originating from the government, social and environmental bodies and the general public according to Kennard (2012). In ideal environment, adoption of sustainable procurement practices is directly linked with improved organizational performance such as reduced costs, enhanced productivity and reduced wastages. A number of studies have been done to relate sustainable procurement with other variables such as economic performance, social performance and operational performance. Some of these studies have concentrated on drivers of sustainable procurement and challenges facing adoption of sustainable procurement. For instance, a study by Meehan and Bryde (2010) on Sustainable Procurement Practice focused on the effects of Sustainable Procurement on the environmental performance of firms in the social housing firms of United Kingdom. It is important to note that most of these studies have been conducted in Western and Eastern parts of the world. In Africa and specifically Kenya, very limited studies have been conducted to relate sustainable procurement and environmental performance. A knowledge gap therefore exists as to the effect of sustainable procurement on environmental performance especially in Kenyan manufacturing industry. It is upon this environmental consciousness and concern that the study seeks to establish the effect of waste management and environmental performance of timber manufacturing firms in Nakuru County.

## Objective of the study

The study's main objective was to establish the effect of waste management on environmental performance of comply company in Nakuru county, Kenya.

## Hypothesis of the study

Ho: Waste Management has no effect on Environmental Performance of Comply Company in Nakuru County, Kenya.

## LITERATURE REVIEW

### Theoretical Framework

Theoretical review brings understanding of the variable studied and the expected relationship with other variables under certain conditions. This study was guided by the stakeholder's theory of organizations.

### *Stakeholder Theory*

A stakeholder is any individual or group of individuals who affect or are affected by operations of an organization (Danson and Preson, 1995). In practical business environment, the common stakeholders are customers, employees, local communities, the government, financiers and suppliers.  According to stakeholder theory, an organization is looked at a as a group of stakeholders. As such, the organization must meet the interest of all the stakeholders even as it strives to meet its goals and objectives. For this reason, stakeholder management becomes part and parcel of management (Fontaine et al., 2006). Stakeholder's interests are very critical especially when it comes to adoption of new strategies or initiation of changes. Stakeholders may resist change embrace it based on their perception about the change. Stakeholders' perception about change will depend on how involved they are in the change process and how much they know about the proposed change. It is therefore the duty of management to ensure there is free flow of information between the stakeholders (Argandoña, 2011).

According to Mitchell et al. (1997), stakeholders can be categorized into three categories; latent stakeholders who exhibit dormant, discretionary and demanding behavior, expectant stakeholders who exhibit dominant and are dangerous if not handled well. They also tend to be dependent in their decisions and conduct. The last category is highly salient stakeholders who tend to need definite answers and actions. In management environment, an organization may exhibit coercive power based on resources, threats, violence or force, utilitarian power based on financial or material resources or normative power based on symbolic resources such as the ability to command attention. It is important that the management of any organization knows which stakeholders it interacts with and so as to decide on the appropriate management styles to adopt. Prior studies reveal that involvement of stakeholders in business management areas especially change can lead to value creation (Argandoña, 2011).

According to Ayadi and Pesqueux (2007), management of an organization must be ready to build and maintain positive relationship with all the stakeholders. Secondly, the stakeholders' interests must be identified and met where possible. This is because stakeholders' interests have direct relationship with organizational social, economic and operational performance. Management of an initiative like sustainable procurement requires active involvement of stakeholders not only within the organization but also from outside. This is because procurement functions have a bearing on the entire supply chain (Olga, 2012).

### *Waste Management*

Business operations generate wastes in the form of solid liquid or gases. These wastes may have adverse effects on the environment and human health. They may also affect negatively affect operations of a business. Amemba et al. (2013) points out that solid waste management involves collection, transportation, incineration, composition, recycling and disposal of waste materials in an environmentally friendly manner. Waste treatment and disposal is key function in supply chain management. It's a strategy used by organizations not only to manage the environment but also to ensure social responsibility. A proper waste management system requires a well-developed waste recovery system (Royet al., 2006).

According to Hassan (2012), waste management practices directly affect environmental performance of an organization. Integration of effective waste management strategies enhances the organizational responsiveness to environmental concern thereby reducing environmental problems. A waste management system should be developed grounded on the following principles; organizational competitiveness, organizational efficiency, environmental friendliness, congestion alleviation and safely (Geroliminis and Daganzo, 2003).

### *Environmental Performance*

Environmental performance of an organization is a concept that is derived from the wider organizational performance of an organization; it is a segment of the broader organizational performance. Environmental performance describes a performance of the organization in relation to ecological effects of goods procured by an organization by taking to less environmentally damaging activities (Preuss, 2009).Environmental performance can be measured using indicators of environmental performance called Environmental Performance Indicators (EPIs).

The environmental performance indicators may be financial or non-financial. They represent the quantification of the effectiveness and efficiency of environmental action with a set of metrics (Neely et al., 1995). According to Global Environmental Management Initiative (1998),

the commonly used environmental performance indicators include; number of environmentally related injuries and illnesses, quantity of hazardous wastes generated, quantity of toxic chemicals released into the environment, quantity of wastes recycled, quantity of wastes well disposed of and level of emission. Similarly, Trucost (2006) identified key environmental performance indicators as; greenhouse gases emission to air, waste management in relation to land and water pollution, sustainability in resource use and sustainability in supply chain operations.

Chien (2007) argues that environmental performance is achievable through environmental policies and strategic measures set to reduce waste emission and improve waste management. Muma et al. (2014) in their study that related green supply chain management and environmental performance discussed environmental performance as a measurable results relating to environmental management system. According to their report, environmental performance can be improved through organizational environmental policies and objectives. It therefore implies that environmental management must be given a strategic approach and aligned with the organizational strategic goals. According to Ninlawan et al. (2010), environmental performance is linked with activities such as; reduced waste emission and improved waste management decreased consumption of hazardous materials and reduced environmental accidents.

EPIs may be grouped according to ISO 14031 guidelines. This ISO standard proposes a guideline for evaluating efficiency of environmental system. It identifies three categories of EPIs (Bennett and James, 1998; Marshall and Brown, 2003) as follows: Firstly, environmental condition indicators (ECIs), this is specific expressions supply information about local, regional and or global condition of environment .this may include measures including: receptor indicators (i.e. ecotoxity, biological oxygen demand), sustainability indicators (i.e. emission of substance per volume of production) and proxy ECIs (i.e. capacity of emissions and waste to cause environmental damage).

Secondly, environmental performance indicators (OPIs) supply information about environmental performance of organizations operation including: usage of virgin and non-renewable input materials, energy consumptions, fuel consumption, water usage efficiency, operation of facility and equipment and logistics and finally and output of products and services and their fitness for use, Biodegradability, Design and Disassembly of the products purchased and supplied by the organization and level of Fault, Durability, Reusability and Recyclability of products and Associated Materials, Packaging material usage and use of Post-Consumer Materials and. Third are the management performance indicators (MPIs) that provide information about management concerted effort to influence an organizations environmental

performance including: implementation of policies and programs, conformity of actions with requirements, community relations and environmental-related financial performance.

According to Commission for Environmental Cooperation (2000), environmental performance has ten elements. The first element is environmental policy aimed at enhancing organization's commitment to environmental management. The policy should have conditions for compliance and environmental requirements, commitment to continuous improvement, commitment to pollution reduction and prevention, commitment to reduction of environmental risk and commitment to sharing information related to environmental management. The second element is environmental requirement and voluntary undertakings aimed at identifying, elaborating and communicating all environmental requirements and practices to the stakeholders. Other elements include; environmental requirements and voluntary undertakings, objectives and targets relating to environmental performance, structure, responsibility and resources required for environmental management, operational control, corrective and preventive action for environmental management, training and competence in environmental management, organizational decision-making and planning on environmental management, document control and continuous evaluation and improvement of the process.

**Empirical Review**

Empirical review is a critical look at existing research that is significant to the work the researcher is carrying out  (Kombo & Tromp, 2006).The empirical literature discuses and analyses past studies on the topic sustainable procurement and its impacts on environmental performance. A number of studies have been done in both public and private institutions on the issue of sustainable procurement. Study by (Chege, 2012) on Green supply chain management practice and supply chain performance of private hospital in Nairobi, Kenya, analyzed various Green supply chain management practices (GSCM) by private hospitals in Nairobi Kenya so as to determine their impact on supply Chain Management. This study stated its objectives in terms of various GSCM practices being employed in by private hospitals in Nairobi and the challenges faced in implementing this GSCM practices in the said hospitals. The study relied on descriptive survey research design where a census was done in all 45 private hospitals in Nairobi under category C of NHIF classification. Data was analyzed by multivariate data analysis techniques for determining causal effect relationship between variables in the study. The study found low but significant relationship between green design and SCM performance. On green operations, the relationship with SCP was high and significant, on reverse logistics and outbound logistics the significance was high and same case for purchasing and in-bound logistics. The study concluded that waste management greatly Supply Chain Performance. This study has

discussed role of GSCM in SCM performance in details but it does not show any relationship between sustainable procurement and environmental performance.

Study by Nasiche & Ngugi (2014) on Determinants of adoption of green procurement in the public sector: A case study of Kenya Pipeline Company (KPC) focused on factors that determine the adoption of green procurement in the public sector a case of Kenya Pipeline Company. Major variables of the study included green capacity, cost of green products, organizations green incentive and pressure and green supply capacity. The target population involved an officer of a KPL involved in procurement. Random cluster sampling was used that yielded 90 members of staff from a population of 460 employees. The data collected was analyzed using frequencies and regression in SPSS. The study found out that organizations green capacity, incentives and pressure are the major determinants of green public procurement adoption at KPC. Green supply capacity and cost of green products were also found to be significant. This particular study has devoted a lot of effort in analyzing what it takes to implement Green Procurement but too fails to elaborate on any relationship between sustainable procurement and environmental performance of firms moreover the study was done in a public business organization.

Research conducted by Wachira (2014) on the effect of environmental impact consideration on procurement decisions of Kenya Electricity Generating Company (KenGen). The study adopted a case study design. The target population included 125 staff of KenGen working in the procurement, environment and production sections. The research employed stratified random sampling in selecting a sample of 60 respondents to participate in the study while using structured questionnaires. Quantitative data collected was analyzed using descriptive and inferential statistics using SPSS .the study also adopted Pearson's moment coefficient and structural equation model to establish relationship between independent and dependent variables. The study established that, pollution control is the most significant factor that influences procurement decision of KenGen followed by natural resource saving that also has notable influence on procurement decision. Energy saving is the least significant factor. Study also established strong relationship between pollution control and procurement decisions. Study also established positive relationship between energy saving and procurement decisions. This study has elaborately analyzed the reverse impact of environmental concern on procurement practices but fails to look at the direct effect of firms sustainable procurement activities on environmental performance. Study was also done in power generating firm operating in different environment from timber manufacturing firms.

Tang and Chan (1998) on Purchasing behaviors and perception of environmentally harmful products adopted a survey kind of study among citizens of Hong Kong to establish

whether consumers' environmental consideration affects their buying behavior. The study adopted systematic sampling method was used to get a sample of 552 citizens outside shopping malls. The study found out that only a small percentage of buyers considered the environmental impact of product prior to purchase. This led to the conclusion that there is no strong relationship that exists between self-perception of environmental impact and purchase behavior. This study has explicitly analyzed the effect of buyer environmental consideration on their buying behavior but consumer role as a pressure group is just but a small component of the wider stakeholders influence on environmental performance of an organization.

Study by (Henry & Journeault, 2007) on Environmental performance indicators: An empirical study of Canadian manufacturing firms, examined the importance of measurement and use of environmental performance indicators within manufacturing firms. The objective of this exploratory study was to identify the associations among firm characteristics and the importance of measurement of EPIs and their use. The results of this study suggest three main conclusions. First, the importance of measurement of EPIs is associated with; firms having a more active environmental strategy, ISO 14001 compliant firms, larger firms, and public firms. Second, the global use of EPIs is also associated with a more active environmental strategy, ISO 14001 compliance, larger firms and public firms. Third, the specific uses of EPIs are associated with different firm characteristics and objectives: monitoring compliance, associated with ISO-compliant firms, motivation of continuous improvement associated with an active environmental strategy and larger firms, decision making associated with an active environmental strategy, and external reporting associated with public firms. This study has analyzed in great depth the EPIs and how they affect overall Environmental Management practices but it has not analyzed the relationship between sustainable procurement and environmental performance of a firm.

**Conceptual framework**

The study conceptualized a framework consisting of an independent variable and a dependent variable. Waste management was conceptualized as the independent variable and environmental performance was the dependent variable.

Figure 1: Conceptual Framework

*Independent variable*                                    *Dependent variable*

| Waste Management | → | Environmental Performance |
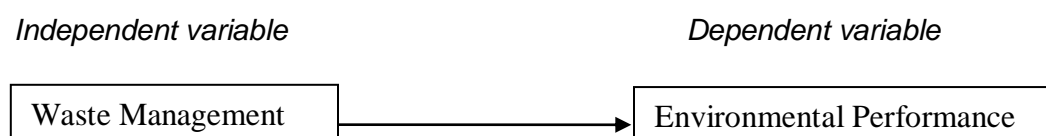
## METHODOLOGY

### Research design

Research design means the general plan or roadmap of how one goes about answering the research questions. It is a structure that helps to obtain answers to research questions (Cooper &Schindler, 2006). The researcher used correlational research design. This design is deemed appropriate as it allows the researcher to draw conclusion on the link between Sustainable Procurement practices and environmental performance of firms. The study employed a case study census cross-section (conducted at one point in time) survey strategy. Comply Company was chosen because of its accessibility and the fact that the company is practicing sustainable procurement practices.

### Population

A population is a group of individuals, objects or items from which samples are drawn for measurement and the element have certain homogenous characteristics (Kombo & Tromp, 2006). Mugenda and Mugenda, 2003 describes population as, the entire group of individuals or items under consideration in any field of inquiry and have common attribute. This study aimed to relate sustainable procurement with environmental performance among timber related firms in Nakuru County. All timber related firms in the county were therefore deemed to constitute the study population. However, the population members were the employees attached to procurement, finance, marketing and production departments. Since Comply Company will be used as a case, the target population for this study comprised all employees attached to the mentioned departments of Comply Company. The departments were chosen based on their involvement in the procurement process. Since the targeted respondents are only 100, all the respondents were involved in the study.

### Instruments of data collection

Primary data was collected using structured questionnaires. Primary data is data which is collected afresh and for first time. It's that information that a researcher obtains from the field (Mugenda and Mugenda, 2003). Structured questionnaires are easy to analyze since they are on their immediate useable form, (Kothari, 2004).

The questionnaire were self-administered by the researcher through drop and pick technique. The filled questionnaires were then collected after one week; this gave respondents enough time to answer the questions promptly. Each item in the questionnaire was developed to address a specific objective or research question.

## Data collection procedure

The researcher obtained a letter of introduction from JKUAT administration, there after authority shall be sought from Comply Company Management to conduct the research. The questionnaire were self-administered by the researcher through drop and pick technique. Follow up was done by a way of phone call. The filled questionnaires were collected after one week for analysis.

## Pilot test

A pilot test was carried at Cabro Timber Processing company procurement department only to determine the feasibility of the data collection instrument. A pilot test brings out the weakness of (if any) the questionnaire (Kothari, 2004), and enables the researcher to assess the question's validity and likely reliability of the data that is collected. The number of people to pilot test the questionnaire depends on the research question (s), the objectives and size of research project. This number also dependent on the variations observed in the population; different scholars have presented different views on the number to pretest the questionnaire. Saunders et al (2012 holds that a number of 10 respondents for a small survey is ideal. Mugenda and Mugenda (2003) on the other hand argue that the number should not be large and a pretest sample of between 1% and 10 % is good depending on the sample size. Based on these arguments, a sample of 5% respondents was selected to pilot test the questionnaire for this study.

## Data Analysis and presentation

The collected data was cleaned then coded and analyzed using the SPSS version 21. For descriptive statistical analysis, means and standard deviation were used. Correlation and regression analysis were conducted to test the effect of sustainable procurement on environmental performance. The results were presented using tables with their associated interpretations.

## Response rate

The target respondents for the study were 100 employees working in Procurement, Marketing, Finance and Production departments. However, only 61 respondents successfully filled the questionnaires. This represented a response rate of 61 percent which is adequate for the analysis.

## ANALYSIS & FINDINGS

### Descriptive Findings on Waste Management

The respondents were requested to tick appropriately the extent to which they agree or disagree with the statements on waste management using the scale; Strongly Agree (5), Agree (4), Not Sure (3), Disagree (2), Strongly Disagree (1). Their responses were as shown in table 1.

Table 1: Results on Waste Management

| Statements | N | Min | Max | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Organization has waste management system for solid wastes | 61 | 4 | 5 | 4.80 | .401 |
| Organization has waste management system for liquid wastes | 61 | 3 | 5 | 4.49 | .612 |
| Organization has waste management system for gaseous wastes | 61 | 1 | 5 | 4.24 | 1.031 |
| Organization has waste collection materials and equipment | 61 | 1 | 5 | 3.94 | 1.207 |
| Company has written down waste management policies | 61 | 1 | 5 | 3.50 | 1.206 |
| Company trains employees on waste management | 61 | 3 | 5 | 4.65 | .522 |
| Company disposes wastes in a way that creates value to the organization | 61 | 1 | 5 | 4.49 | .834 |
| Company disposes wastes in environmentally friendly manner | 61 | 1 | 5 | 4.37 | .799 |

As seen in table 1, the statements on the organization has waste management system for gaseous wastes, waste collection materials and equipment or written down waste management policies had standard deviations of 1.031, 1.207 and 1.206 showing that the responses on these statements were diverse. However, the means of 4.49 and 4.24 reveal that majority of respondents agreed that the organization has waste management system for gaseous wastes, waste collection materials while 3.94 indicates that majority of respondents agreed or were not sure if the company has written down waste management policies. The findings also revealed that the organization has adequate waste management system for solid wastes as indicated by the mean of 4.80, waste management system for liquid wastes indicated by 4.49, waste management system for gaseous wastes indicated by mean of 4.24, trains employees on waste management indicated by mean of 4.49 and that the company disposes wastes in a way that creates value to the organization as indicated by mean of 4.37.

### Descriptive Findings on Environmental Performance

The respondents were requested to evaluate the environmental performance of the firm by ticking appropriately on the following environmental performance indicators by your firm using the scale; Strongly Agree (5), Agree (4), Not Sure (3), Disagree (2), Strongly Disagree (1). The responses were as shown in table 2.

Table 2: Findings on Environmental Performance

| Statements | N | Min | Max | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Firm emits minimal gases into the environment | 61 | 3 | 5 | 4.65 | .522 |
| Firm deposits minimal solid wastes on land | 61 | 1 | 5 | 4.49 | .834 |
| Firm releases minimal liquid wastes into water bodies or land | 61 | 3 | 5 | 4.53 | .703 |
| Wastes by the firm poses minimal environmental risks and hazards | 61 | 1 | 5 | 4.37 | .799 |
| Wastes of the firm are Biodegradable | 61 | 3 | 5 | 4.55 | .702 |
| The firm uses minimal non-renewable inputs and materials | 61 | 1 | 5 | 3.94 | 1.207 |
| The firm uses inputs and materials efficiently | 61 | 1 | 5 | 3.50 | 1.206 |
| The firm uses minimal fuel energy | 61 | 4 | 5 | 4.80 | .401 |
| The firm saves on electric power usage | 61 | 3 | 5 | 4.49 | .612 |
| Products of the firm are Biodegradable | 61 | 1 | 5 | 4.24 | 1.031 |
| Products of the firm are Durable | 61 | 3 | 5 | 4.53 | .703 |
| Products of the organization are Recyclable | 61 | 1 | 5 | 4.37 | .799 |
| Packaging material used by the firm has minimal environmental effects | 61 | 3 | 5 | 4.90 | .100 |
| Products produced by the firm have minimal defects and faults | 61 | 3 | 5 | 4.65 | .522 |
| Firm has environmental protection policies | 61 | 1 | 5 | 4.49 | .834 |
| Management of the firm listens to local community complains on environmental issues | 61 | 2 | 5 | 4.43 | .781 |
| Management of the firm implements environmental protection polices as required | 61 | 2 | 5 | 4.55 | .673 |
| Management has a budget for environmental management efforts | 61 | 2 | 5 | 4.33 | .841 |
| Management compensates people affected by its no eco-friendly policies | 61 | 3 | 5 | 4.53 | .703 |
| Company adheres to international environmental standards | 61 | 1 | 5 | 4.37 | .799 |

Table 2 shows that most of the statements had a mean of 4.2 except for statement as to whether the company uses minimal non-renewable inputs and materials that had a mean of 3.94. The highest number of respondents agreed that packaging material used by the firm has minimal environmental effects indicated by the mean of 4.90. The responses on whether the firm uses minimal non-renewable inputs and materials, inputs and materials efficiently and products of the firm are biodegradable were most diverse as indicated by standard deviations of 1.207, 1.206 and 1.031. The results in the table also reveal that the company environmental protection policies indicated by mean of 4.49, implements environmental protection polices as required shown by a mean of 4.55, has a budget for environmental management indicated by mean of 4.33 and adheres to international environmental standards shown by mean of 4.37 among other indicators. These results imply that the company is experiencing improved environmental performance.

**Inferential statistics**

The researcher used correlation analysis to establish the relationship between waste management and environmental performance (Table 3).

Table 3: Effect of waste management on Environmental performance

| | Waste Management | |
|---|---|---|
| Environmental Performance | Pearson Correlation | .049 |
| | Sig. (2-tailed) | .706 |
| | N | 61 |

The Pearson Correlation value of 0.049 indicates a positive correlation between waste management and environmental performance. The significance value of 0.706>0.05 indicates that the correlation is statistically insignificant. The hypothesis is therefore accepted and conclusion made that waste management has statistically insignificant positive effect on environmental performance.

**CONCLUSION**

The researcher concluded that waste management has positive effect on environmental performance. This was evidenced by the positive correlation between waste management and environmental performance. Proper waste management leads to improved environmental responsibility, reduced complaints on environmental conservation and reduced costs of operations. This directly affects environmental performance. These findings concur with the findings of Chege (2012) that proper waste management improves internal operational efficiency thereby leading to better environmental and operational performance. Nasiche & Ngugi (2014) however noted that cost of waste management if not contained may outdo the economic benefits of waste management. It therefore implies that in order to realize the benefits of waste management, the costs associated with waste management must be contained within acceptable levels.

**RECOMMENDATIONS**

Timber processing firms like Comply Company should develop clear written down environmental management policies. The policies should be well communicated and shared across the organization through formal processes so that everyone in the organization can understand their roles in ensuring sustainability and environmental responsiveness. These policies should be written down and followed in environmental management. Further studies

may be done to identify the role of end consumer in adoption of waste management strategies and improvement of environmental performance of an organization.

## REFERENCES

Amemba, C., & Mburu, N. (2013). Elements of Green Supply Chain Management. *European Journal of Business and Management*, 2222-2839.

Argandona, A. (2011). *Stakeholder Theory and Value Creation*. Working Paper, Chair of  Corporate Social Responsibility and Corporate Governance

Ayadi, S. & Pesqueux, Y. (2007). *Stakeholder Theory in Perspective.* HAL Id: halshs     00154129

Bennett, M., & James, P. (1998). *Environment under the Spotlight Current Practice and Future Trends in Environment Related Performance Measurement for Business.* London.: Association of Chartered Certified Accountants, .

Birkinshaw, J., & Pedersen,T. (2009). Strategy and management in MNE subsidiaries. *The Oxford Handbook of International Business.*Rugman, A. M. (editor). Second Edition.880 p.

Chege, E. (2012). Green supply chain management practice and supply chain performance of private hospital in Nairobi, Kenya. *Unpublished MBA Thesis.*

Chien, M., & Shih, L. (2007). An Empirical Study of the Implementation of Green Gupply Ghain Management Practices in the Electrical and Electronic Industry and their Relation to Organizational Performances. *Int. J. Environ. Science and Technology., 4*, 383-394.

Chkanikova, O. (2012). *Sustainable purchasing in food retail: inter-organisational management to green food supply chains* The 3rdNordic Retail and Wholesale Conference,, School of Economics and Management, Lund University, Sweden, November 7-8, 2012.

Cooper, D., & Schindler, P. (2006). *Business Research Methods.* New York: Mc Graw-Hill Publications.

DEFRA (2005), *ERDP Annual Report 2004*, DEFRA, London.

Donaldson T., Preston L. E. (1995). "The stakeholder theory of the Corporation: Concepts, Evidence, and Implications", *Academy of Management Review, vol. 20*, n°1, pp. 65-91

Fontaine, C., Haarman, A. and Schmid, S. (2006). *The Stakeholder Theory*. Academy of  Management Executives

Geroliminis, N. and Daganzo, F.. (2003). *A review of green logistics schemes used  in cities       around the world.* Transport (FIRST): Evaluation Final Report

Hassan, M. ( 2012). Sustainable Supply Chain Management Practices and Operational Performance. *American Journal of Industrial and Business Management*, 42-48.

Henri, Jean F., & Journault, M. (2008). Environmental performance indicators: An empirical study of Canadian manufacturing firms, *Journal of Environmental Management,Volume 87* p.165–176

Henry, J., & Journeault, M. (2007). Environmental performance indicators: An empirical study of Canadian manufacturing firms. *Journal of Environmental Management 87 (2008) 165–176, 87*(2008), 165-176.

Joanne M., & David B. (2010). *Business Strategy and the Environment Volume* 20, Issue 2, p94–106, February 2011

Kennard M 2006, *Sustainable procurement, XXIII* FIG Congress, 8–13 October, http://www.fig.net/pub/fig2006/papers/ts08/ts08_03_kennard_0843.pdfviewed on 16 May 2011.

Kennard, M. (2006); *Sustainable procurement, commercial management, shaping the change*

Kombo, D., & Tromp, D. (2006). *Proposal and Thesis Writing:An Introduction.* Nairobi, Nairobi county, Kenya: Paulines Publications Africa.

Kothari, C. (2004). *Research Methodology-Methods and Techniques.* New Delhi: International (P) Limited Publishers.

Marshall, R., & Brown, D., 2003*. Corporate Environmental Reporting: What's in a Metric?* Business Strategy and the Environment 12 (2),87.

Meehan, J., & Bryde, D. (2010). Sustainable Procurement Practice. *Business Strategy and the Environment , 20* (2011), 94-106.

Mitchell, R., Agle B., & Wood, D., (1997). Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts. *Academy of Management Review.*Vol 22, No.4, pp-853-886

Mugenda, O. (2003). *Quantitative and Qualitative approaches.* Nairobi: Africa Centre for technology studies.

Muma, B., & Nyambega, E. (2014). Green Supply Chain. *International Journal of Economics, Finance and Management Science*, 270-276.

Nasiche F., & Ngugi. G. (2014). Determinants of adoption of green procurement in the public sector: A case study of Kenya Pipeline Company. *International Journal of Social Sciences and Entrepreneurship*1(11)307-328

Neely, A., Gregory, M., & Platts, K. (1995). Performance Measurement System Design: A Literature Review and Research Agenda. *International Journal of Operations and Production Management, 15* (4), 80–116.

Nijaki, L., & Worrel, G. (2012). Procurement for sustainable local. *International Journal of Public Sector, 25*(2), 133-153.

Ninlawan, C. ( 2010, March 17-19 ). The Implementation of Green Supply Chain Management Practices in Electronics Industry.

Olga, C. (2012). *Sustainable Supply Chain Management: Theoretical Literature Overview.* IIIEEWorking Paper 2012:1

Preuss, L. ( 2009). Addressing Sustainable Development Through Public Procurement:. *An International Journal* , 213-223.

Roy, J., Nollet, J. & Beaulieu, M. (2006), *"Reverse logistics networks and governance structures",Supply Chain Forum*. 7 (2) 58-67.

Stephen B., & Helen W. (2011) "Sustainable procurement in the public sector: an international comparative study", *International Journal of Operations & Production Management,* Vol. 31 Iss: 4, pp.452-476

Tang, E., & Chan, R. (1998). *Purchasing Behaviors and Perception of Environmentally Harmful Products.* Journal of Marketing Intelligence and Planning.16 (6). 356-362

Trucost (2006) "*Carbon counts: The Trucost Carbon Footprint Ranking of UK Investment Funds*". Trucost, London,UK.

Wachira, C. K. (2014). Theeffect of environmental impact consideration on procurement decisions of KenyaElectricity Generating Company. *International Journal of Social Sciences and Entrepreneurship, 1*(12), 317-339.