THE EFFECT OF ENVIRONMENTAL IMPACT CONSIDERATION ON PROCUREMENT DECISIONS OF KENYA ELECTRICITY GENERATING COMPANY

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ABSTRACT

Companies are now increasingly facing pressures from the stakeholders to incorporate green practices in their everyday activities. Green purchasing is one area where this effort can achieve considerable benefits. Green purchasing ensures that the purchased items possess desirable ecological attributes; reusability, recyclability and contains nontoxic materials. Green purchasing can also address such issues as waste reduction, material substitution and few natural resource uses. While environmental concerns have not fully achieved the desired attention in the developing countries, they are expected to become major concerns in future due to increasing stringent regulations and increased competition and scarcity of natural resources. This is forcing companies to reevaluate their business processes. The study sought to investigate the effect of environmental impact consideration on the procurement decisions of KenGen. KenGen is a leading power producer which has implemented environmental management system and procurement policy. The objectives of the study were to investigate the effect of pollution control on procurement decision of KenGen, as well as assess the effect of energy saving on procurement. In addition the study sought to determine the influence of natural resource saving on procurement decisions of KenGen. The study used a case study design. The targeted population was 125 staffs of KenGen working in the procurement, environment and production departments. The researcher used stratified random sampling to select the sample size of 48 % of the population. The sample size of this study was therefore 60 respondents, 41 of whom returned the questionnaires. The study used primary data, which was collected through structured questionnaires. The questionnaires were self-administered through drop and pick later method. The quantitative data in this research was analyzed by use of descriptive and inferential statistics using statistical package for social science (SPSS). Descriptive statistics such as mean, frequency and percentages were used to profile the sample characteristics and major patterns emerging from the data. The data was then presented in tables, pie-charts and bar graphs. The study also used Pearson moment coefficient and structural equation model to establish the relationship between the independent and dependent variables. The study established that pollution control is the most significant factor that influences procurement decision of KenGen. This is followed by Natural resource saving, which has also a notable influence on the decisions. Energy saving is

the least significant factor. The study also established that there is a strong positive relationship between pollution control and procurement decisions. The study also established that there is also a positive relationship between energy saving and procurement decisions. This study therefore recommends that KenGen should incorporate environmental concerns in the whole procurement cycle. The study further recommends that KenGen and other government organizations should develop policies that incorporate environmental issues in their activities.

Key words: *Environmental considerations, procurement, Kenya Electricity Generating Company, green procurement*

Introduction

There has been a steady increase in the concern for environment among firms both in the developed and developing nations which has been accelerated by the government legislations, employees, stakeholders, NGO's and the consumer pressures. (Pearce and Robinson 2011; Morali and Searcy 2012). There are also internal and financial reasons that are pressuring firms to emphasize environmental concerns in their operations. The fear of regulations and the pressure from activists and other stakeholders as well as the need to be seen to be good corporate citizens have made majority of the firms in both worlds to adopt the ecological concern in their everyday decision making, as well as shaping the corporate, business and functional strategy formulation and implementation (Pearce et al, 2011; Malcolm, 1997).

Environment is a term that is used to refer to the totality of the surrounding such as plants, animals, microorganisms, social, economic, cultural factors as well as land, air and water. (Ministry Environment, 2013; Lysons and Farrighton, 2012). The main areas of environmental concerns for business are; more efficient use of raw materials and resources, pollution and waste, energy and water savings, as well as minimizing carbon foot prints. In Kenya, pollution is the main problem which has huge potential to lead to the extinction of mankind while global warming is the most severe problem that is being faced in the world today (Dashore and Nagendra, 2013; Ministry, 2013). The environment has been an essential feature of Kenya's development policy, and environmental imperatives were captured through the periodic development planning cycles in the development plans. However, modern environment management can be traced to Rio Earth summit of 1992. Since then Kenya has signed various convection on waste management; the Basal and Bamaco convection, and is a party to a number of multilateral and regional environment agreement. The constitution of Kenya 2010 has devoted a whole Chapter (Chapter V) to land and environment (Ministry, 2013; NEMA 2010; Constitution, 2010).

There are various bodies in Kenya that are charged with the oversight responsibility on the implementation of environmental issues. The first body is PPOA, which oversee the implementation of the PPDA, 2005-The act has reduction of environmental impact through procurement as one objective, this is in addition to regulating procurement in public institutions.

The other body is NEMA, which oversee the implementation of EMCA of 1999. The Environment management under EMCA uses tools like Environmental Impact Assessment (EIA), which is a procedure for evaluating the likely impact of a proposed activity on the environment and its objective is to provide decision-makers with information about the possible effects of a project before authorizing it to proceed. It is also defined as a process which produces a written statement to be used to guide decision-making, which provides decision-makers with information on the environmental consequences of proposed activities, programs, policies and their alternatives.

The other tools for environment management in Kenya are monitoring and environmental audit. Monitoring has been defined as a process whereby states observe, measure, evaluate and analyze by recognized scientific methods the risks or effects of pollution or environmental harm. This is a continuous or periodic determination of actual and potential effects of any activity or phenomenon of the environment whether short-term or long-term and it's usually undertaken after the project has begun, to check initial EIA predictions and determine whether further measures are needed in order to abate or avoid pollution or environmental harm. Environmental audit on the other hand is undertaken on development activities likely to have adverse environmental impact. It's usually done as an appraisal of all project activities including the production of goods and services; and extent to which firms give adequate consideration to; environmental regulatory frameworks, environmental health and safety measures and sustainable use of resources. The audit is one of the obligation of NEMA accorded to it under section 86 of EMCA (Muigua, 2012)

Environmental degradation in Kenya has given rise to the impacts of climate change with both economic and social consequences. This has been brought about by the unprecedented social, economic and political changes since independence. The current challenge is lack of harmonization of the sectorial policies and laws which proves to be inadequate in addressing environmental challenges as well as weak enforcement and implementation of the current laws. The prioritization of environmental concerns among policy makers in the country remains low (Ministry 2013). This is despite that the fact that Kenya has embarked on liberalizing trade, which has direct and indirect effect on society and the environment including dumping of electronic waste and obsolete technologies. The free trade has led to an increment in the value of imports rising from 2010 to 2103, by between 38.9 % from 2010 to 2011, and with this value increasing by 5.7% from 1,300.7 billion in 2011 to 1,374.6 billion Shillings in 2012. The large proportion of these imports has been nonfood i.e. Industrial imports. (Economic Survey, 2013). This calls for tradeoff between economic gains and environmental impacts. The integration of the environmental concerns in all sectors and activities is a pre-requisite for sustainable development, but it's regrettable that most of the production and consumption practices currently do not take into account the associated environmental costs. There is therefore a need for intensified creation of the awareness of the benefit of sustainable development which can lay foundation for green economy.

Statement of the Problem

The effects of global warming are adversely affecting the local weather patterns in Kenya and the world at large. The environment must be protected for continued survival, this protection from depletion of natural resources and water as well as protection from pollution is the responsibility of all players. All business activities have differing impact on the environment and Purchasing is one of the business activities which have a huge potential of safeguarding the environment impact. Until recently the purchasing drivers have been value for money and only factors that contribute directly to profits have been considered namely; cost, quality, performance. However, the notion of sustainability, which includes social, economic and environmental factors have become wide spread and have received much attention from scholars in the developed world (Vorosmarty andTatrai, 2011).

Supply chain management is an area in which environment issues have a direct bearing. (Saunders 1997). However, despite the increase in the attention given to greening the supply chain, there lacks corresponding frameworks and information on how the purchasing function can integrate environmental initiatives into functional and strategic level decision making (Sarkis, 2006). Nevertheless, purchasers can improve environmental performance of products and services and reduce the adverse impacts of their activities (Arts and Faith 2010; Dashore and Sohani 2013). The benefits of integrating environmental criteria into the procurement process include benefits to the society, individual, commercial firms and the purchasing and supply process itself.

Various studies have been conducted in the area of green procurement and green supply chain practices, in Kenya. Chege (2012) carried out a study on green practices in the supply chain management in hospitals around Nairobi, Omonge's (2012) study was limited to the green practices in supply chain management in the banking sector, while Kangangi (2011) carried out a literature review on best practices on the green supply chain. Bomo (2012) carried out a study on green logistics on customer service in supermarkets, while Langat (2013) carried out a study on factors affecting integration of green purchasing in procurement at Kenya Airways. While the findings of these studies cannot be ignored, the researcher's area of study was too wide in scope and focused on different industries with no emphasize to the energy sector. Thus their results may not apply in the energy sector.

The purpose of the study is to establish the effect of the environmental impact influences on the procurement decisions of Kenya Electricity Generating Company- Kenya.

General Objective

The objective of the study was to determine the effect of environmental impacts consideration on the procurement decisions of Kenya Electricity Generating Company Ltd

Specific Objective

1. To investigate the effect of pollution control on procurement decisions.

2. To assess the effect of energy saving on procurement decisions.

3. To determine the influence of natural resource saving on procurement decisions.

Theoretical Review

Institutional Theory

Institutional theory examines how external pressures influence company activities. Within this theory there are three forms of isomorphic drivers namely; coercive, normative and mimetic drivers (Sarkis, Zhau and Lai, 2010). Coercive isomorphic drivers occur from the influences of those in power, these includes rules and regulations, trade sanctions and fines among others. The theory can be used to study how a company addresses green issues due to external pressures and thus the institutional theory has become a research direction to explain environmental related practices. Tan, Zailani, and Jayaraman (2012) used the institutional theory to develop their theoretical frame work in their study to conceptualize the three drivers that drive green purchasing initiatives in firms. Normative isomorphic drivers come from social and customer environmental expectations, which drive a company to implement green supply chain management practices. These normative drivers cause organizations to conform in order to be perceived as having legitimate organizational activities. Mimetic isomorphic drivers occur when enterprises in situations of uncertainty imitate the actions of successful competitors in the industry to replicate their success.

The coercive pressures drive environmental management practices and they are promoting that through government legislation, laws and regulations. Sarkis (2007) argues that developing countries like China have strict environmental regulations which drive manufacturers to implement green supply chain management that exceed local and global expectations. On the other hand normative drivers impact on enterprises have been investigated and according to a study done in USA by Carter (2000) it was estimated that 75% of US consumers made their purchasing decisions with enterprise environment reputation in mind, while 80 % of consumers are willing to pay more for environment friendly products. While in south East Asia customer pressure is the chief factor leading companies to implement green supply chain. In Malaysia customer requirements form the core normative pressure to adopt green supply chain initiatives. Other normative drivers like export and sales to foreign customers are also important and they promote manufacturers to adopt GSCM practices for developing countries like China. Competitive bench marking may be the other pressure that pushes firms to adopt GSCM. The effect of globalization is forcing companies to imitate firms in developed countries to implement

GSCM. Thus institutional theory provides an overarching theme as to how organizations respond to institutional pressures within their environment.

The critic of the theory is that there are new perspectives such as ethical values and ecological thinking that is needed to be incorporated in order to understand organizational response to environmental issues. Secondly, Tan, Zailani, and Jayaraman (2012), argue that some researchers have done studies that have used mimetic forces to represent normative forces or coercive forces to represent mimetic and so on. This is because their effects are not always easily discernable. Institutional theory appears most appropriate for explicating the effect of green supply chain drivers and how they might influence specific green initiatives

Stakeholders Theory

A stakeholder is any group or individual who can affect or is affected by the achievement of an organization's objective (Mosgaad, 2009). The stakeholders view has modified the traditional view of organization which focuses on the owners of the organization and their economic interest, this theory suggests that companies produce externalities that affect many parties (stakeholders) which are both internal and external to the firm. Externalities cause stakeholders to increase pressure on companies to reduce the negative impacts and increase positive ones. Sarkis (2007) argues that there are various categories of stakeholders; direct vis a vis indirect, primary versus secondary, which are based on multiple dimensions of urgency and power, while Mosgaad (2009) holds that there are mainly two categories; market stakeholders and non-market stakeholders-the former are associated with the products chain and engage in direct economic transactions while non-market are not involved in economic transactions. These views are in contrast to Mitchel, (1997) as cited by Lee Kim (2012), who argues that there are three stakeholders attributes: power (stakeholders power to influence the firm), legitimacy (stakeholders relationship with the firm) and urgency(stakeholders claim on firm). These attributes forms the stakeholders typology, namely; latent stakeholders; expectant stakeholders and definitive stakeholders. These different typologies hold one or two attributes highlighted above.

The pressure of the external and internal group will influence organizational practice like environmental management in the supply chain. The supply chain is an entity with many stakeholders especially when environmental issues are introduced. These stakeholders can be employees, customers, shareholders, government and society/NGOs each with different demands for environmental concerns. The customers may demand a firm to follow certain environmental standards, while employees may affect a firm environmental activity- successful program depend on participation of employees. Shareholders may on the other hand demand that the environmental issues be addressed to reduce losses arising from poor publicity caused by unethical actions. Governments influence a firm strategy by providing regulatory schemes. Thus firms must comply with environmental policies and regulations to avoid legal action. The

Society and NGO may play a critical role in encouraging unethical firms to be more socially responsible –they can mobilize public opinion against or for a firm' activities.

The stakeholders' view analysis for green supply chain is pertinent as there is a view that not all GSCM practices are conducive for generating competitive advantage for enterprise but they are necessary due to pressures from stakeholders, who can be adversely affected by the organizations' activities. Stakeholders' theory is introduced as explanatory to contingencies for adoption of various GSCM practices. The theory influence on green purchasing and other supply chain related activities has received research attention (Sarkis et al, 2010) but there is no consensus among scholars on whether stakeholders influence the adoption of environmental responsible purchasing.

Empirical Review

Many studies have been done on many companies and industries in many countries and regions. A study was done by Yu, Hsiu-Iting and Yen Chun (2009) with the objective of finding out whether there exists any linkage between environmental effects and financial performance of companies in European countries. The study also aimed at investing whether firms displaying more environmental effort show a significant positive relationship between environmental performance and financial performance than those displaying less green effort. The study adopted correlation analysis of a sample of 15 European companies in 14 industries across 15 countries. The study did not find the existence of any positive relationship between the firm's environmental performance and financial performance. The population of the study was too wide and spread over different industries and countries.

Tang, E. and Chan, Rich (1998) carried out a survey among citizens of Hong Kong to examine whether the consumers (buyers) environmental consideration influence their buying behavior. In the study 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.

Hokey Min and Galle (2001) carried out a study among firms in the manufacturing, apparel, printing, oil/gas extraction in the United States. The study was a mail questionnaire that was sent to randomly selected companies scrap and waste material. The first objective of the study was to establish if a firm's size affects its adoption of green purchasing strategies, while the second objective was to establish if large firms are likely to push their environmental initiative to their trading partners. The study found out that firms with large purchasing volumes are more heavily involved in green purchasing practice than one with small purchasing volumes. The study also found that the environmental regulation influence a firm's green purchasing initiatives.

Bodo, Bohlen and Diamantopoulos (1996) carried out a study among students and business executives in United Kingdom. The study used a questionnaire given out to two different

samples drawn from the targeted population; the objective of the study was to establish whether environmental consciousness can affect consumer purchasing decisions. The study found that environmental consciousness leads to high green purchasing.

Hsu, Tan, Zailani and Jayaraman (2013) conducted a study among ISO 14001 certified organizations in Malaysia, with the objective of investigating the drivers that foster development of green initiatives organizations in a developing economy. The study was a survey of all the registered ISO 14001 certified organizations numbering 569, mostly in the manufacturing industry. The research found out that regulatory measure, competitor pressures, customer pressures and social-cultural responsibility collectively drive green supply chain initiatives in the firms.

Research Methodology

Research Design

A research design is the plan and structure of investigating so conceived as to obtain answers to research questions (Kothari, 2004).A research design functions as the research blue print for measurement and analysis of data. The research adopted a case study research design. Saunders et al (2012) postulate that a case study explores a research topic within its context and that this type of design enables one to generate answer to the questions 'why?' 'how?' as well as 'what?'. The case study was however descriptive in nature. The object of a descriptive research is to gain an accurate profile of events, persons or situations. (Saunders et al, 2012). It determines and reports the way things are and attempts to describe characteristics associated with a target population as well as associations among other different variables. The research was carried out at procurement, environment and production department of KenGen Co. ltd- Kenya.

Population

A population is the total collection of elements about which inferences are made and refers to all possible cases which are of interest for a study. 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. The targeted population was 125 persons who are members of staff, both management and support staff in the procurement, environment, and production department of KenGen as at April 2014.

Sampling and Sample size

Some scholars argue that sampling makes a possible a higher overall accuracy than a census. Sampling is the process of selecting a number of individuals for a study in such a way that the selected individuals represent the large group from which they were selected. Saunders et al (2012) points out that statistician have shown that a sample of thirty or more would result in a

sampling distribution for a mean that is very close to the distribution. Mugenda and Mugenda (2003) argue that a sample of between at least 30 % of the targeted population is representative. Stutely (2003) as quoted by Saunders et al (2012) argues that a minimum number of 30 respondents is the rule of thumb for statistical inferences. The sample in this study was 48 % of the population which is 60 respondents.

Stratified random sampling was used to get the sample. Stratified random sampling ensures that the heterogeneous subjects in subgroups in the strata are reproduced in the sample in the same way, thus all subgroups are included. (Mugenda & Mugenda, 2003) The production, environment and procurement department formed the strata. Proportion method was used to get the sample for each stratum while simple random sampling was used to pick the actual respondents from each stratum.

Data Collection Instruments

Primary data was collected by use of 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). The questionnaire was self-administered by the researcher himself through drop and pick technique which gave respondents enough time to answer the questions. Each item in the questionnaire was developed to address a specific objective research question or hypothesis. Some items were developed to collaborate the other items, and were not used in the model analysis.

Pilot Testing

A pilot survey was done at KenGen procurement department to determine the feasibility of the data collection instrument. A pilot survey brings out the weakness of (if any) of the questionnaire and the survey techniques. (Kothari, 2004), and enables the researcher to assess the questions validity and likely reliability of the data that will be collected. It also helped to determine whether the methods of analysis are appropriate. The number of people to pilot test the questionnaire depends on the research question (s), the objectives and size of research project. This number was also dependent on the variations in the population; different scholars have divergent views of the number to pretest the questionnaire. Saunders et al, 2012 have postulated that a number of 10 for a small survey are ideal. While Mugenda and Mugenda (2003) argue that the number should not be large and a pretest sample of between 1% and 10 % is good depending on the sample size.

A sample of 5 % respondents was selected to pilot test the questionnaire for this research. The Chronbach alpha was used to test the reliability of the data collection instrument and an alpha of between 0.6-0.7 is normally accepted. A coefficient of 0.8 implies there is high reliability of data. (Mugenda and Mugenda, 2003). The Cronbach Alpha for this study was 0.849 as per the reliability table, hence the data can be said to be reliable. (Annex 1). To test validity, the

researcher discussed the questionnaire with the supervisor who gave guidance on the validity of items to capture data that represents the variable under study.

Data Analysis and Presentation

The collected data was first checked for completeness and comprehensibility. It was then coded and summarized and tabulated for ease of analysis. The quantitative data collected was analyzed by use of descriptive statistics: the measure of central tendency, the mean was used to establish any similarities in the data. Data was presented using tables, bar graphs and charts. Inferential statistics using x^2(Chi square) to test for relationship between independent and dependent variables in the study; this was at 95% confidence level and p of 0.05%. Structured Equation Model (SEM) was used to get the relationship between the dependent and the independent factors.

Results and Discussion

Characteristics of the study variables were analyzed using SPSS version 21.0. The results were presented in charts, tables and bar graphs. To test the relationship between variables Pearson's correlation coefficient was used. To study the effect of environmental impacts on the procurement decisions of Kenya Electricity Generating Company Ltd, operational framework model was done using the path analysis and the Structured Model Equation (SME) using Amos 18.0.

Response Rate

A total of 60 questionnaires were given out to the staff of which 41were completed and returned giving a response rate of 69%. Mugenda and Mugenda (2003) argue that a response rate of over 60 % is good, thus the response rate in this study was adequate for analysis.

Social Demographic Characteristics

Respondents were required to indicate their gender. The findings revealed that the majority (70.6%) of the respondents was male and the remaining 24.4% were female. This reveals a skewed representative of male. The respondents were required to indicate their departments. Respondents working in procurement department were 51.2% followed by production at 36.6 % while environment had the least respondents at 12.2%. This shows that environment department is not very robust compared to the other departments. The respondents were also required to indicate their position in the company with majority (58.5%) indicating that there are at the level of officers followed by supervisor at 31.7% and the managers are 4.9%. This shows that the majority of the respondents are conversant with the issues under study. The respondent's academic qualification was as follows: Those with Bachelor degree were the majority at 63.4 %,

followed by Masters at 22 % and Diploma level and below had 14.6%. The findings reveal that the majority of the respondents were literate hence could easily articulate green procurement issues under study. The study revealed that the majority of the respondents (58.5%) have worked for KenGen for between 0-10 years, followed by those who have worked for between 11-20 years (31.7%), with only 2.4% having worked for over 30 years. To investigate whether the company articulate environmental policies the respondents were required to indicate their awareness of company ISO 14000 certification. All respondents (100%) indicated that they are aware of the environmental policy. On whether the company has environmental procurement policy the majority (90.2%) indicated that they were aware as compared to 9.8% who were not aware or sure. To assess the critical area of environmental impact assessment before project commencement, the respondents were required to indicate their awareness of this exercise, the majority (92.7%) indicated that they are aware, with 2.4% being not aware while 4.9% were not sure. These finding reveals that the organization articulates environmental issues at the policy level and it's assumed that the respondents had good understanding of the issues under study. These finding compliment the findings of Lagat (2013) that male gender are majority in government institutions and that respondents with Bachelor degree can articulate green issues well.

Effect of Pollution Control on Procurement Decisions

The study sought to investigate the effect of pollution control on procurement decisions of KenGen. Respondents were required to respond to various items as well as rate the extent to which they agreed to different aspects of pollution control consideration in procurement decisions. In addition they were to indicate the frequency in which pollution issues were considered during procurement activities. To measure pollution prevention several measurement constructs were employed. On the aspect of carbon dioxide emission consideration before buying equipment, majority at 61% indicated that this is considered, followed by 36.6% who indicted that it's not considered, while 2.4% of the respondents were not sure. On toxic material restrictions in products being bought, 58.5% of the respondents indicated there are restrictions in place, this in contrast to 34.1% who felt that this is not the case with only 7.3% who were not sure. On disposal method for obsolete items 63.4 % indicted that open tender was the preferred disposal method as opposed to the environmental degrading method of burying (14.6%), burning (9.8%) and donation being the least preferred at 4.9%. The finding are in contrast to finding by Tang, and Chan (1998) whose study did not find any strong relationship between pre purchase environmental impact knowledge and the purchasing behavior. The finding of the study indicates that pollution prevention in considered at source and has influence on procurement decisions.

Respondents were further required to rate various statements in pollution management; they were required to rate their answers on a five point Likert-scale with the 'most important' taking -1, while 'least important' taking- 5. Pollution consideration when evaluating transport mode was considered important with 75%, while pollution related offences as a ground for blacklisting

suppliers was also considered important with 85%. On licenses required for disposal services providers, the license from NEMA was considered the most important license by 92.7% of the respondents.

The respondents were required to indicate the frequency in which pollution issues are considered in procurement decisions. A five point Likert-scale was used, with 'all the time' taking- 1, while 'rarely' taking- 5. The measured items reported different findings, however, on average it was found that the measured items were considered most of the time with percentages ranging 50% to 90%. The findings of the study indicate that pollution management is considered most of the time and it affects procurement decisions. These findings are consistent with findings by Min and Gale (2001) whose finding indicate that buying firms are more concerned with pollution in their activities especially 'after the act' disposal and treatment of waste. It also supports findings by Tan, C. et al (2013) that organizations are changing products design to minimize their environmental impacts.

Energy Savings and Procurement Decisions

The study sought to investigate the effect of energy saving on procurement decisions of KenGen. Respondents were required to indicate the level of agreement with various aspects on energy saving and conservation in relation to procurement decisions as well as their agreement with extent which energy saving affect procurement decisions. Items were measured on a five point Likert-Type scale ranging from 1 'great extent' to 5 being least extent. On energy saving percentages 73% was registered, while energy conservation was considered to a great extent with 85.4% score. Energy consumption being an important aspect with 85.5%. These findings compliment findings by Zhang (2013) that market forces help save energy consumption. These finding indicates that energy saving and conservation are critical factors that affect procurement decisions of KenGen. Energy efficiency being a critical factor of energy saving was addressed. The respondents were required to indicate the frequency in which energy efficiency factors are considered in procurement decisions. A Likert-type scale was developed with 'all the time' being 1 and 'never' taking 5. Impressive percentages score of over 75.1% were registered. However the findings revealed that energy saving is not a critical factor of supplier evaluation, with only a score of 51.2% being recorded. According to the study findings the organization energy efficiency and hence energy saving affects procurement decisions. These findings complement findings by Tan et al (2013) that energy saving considerations has impact on organizations' operations.

Natural Resource Saving and Efficiency

The study sought to investigate the influence of natural resource saving on procurement decisions of KenGen. Respondents were asked to rate various aspects of natural resource saving strategy in relation to procurement decisions. Items were measured on a five point Likert –Type

scale ranging from1 'great extent" to 5 "least extent". The research findings revealed that the majority of respondents (over 78%) agreed that recycled papers bought mitigate environmental degradation. On the items of raw material and production process disclosure by suppliers, majority (63%) and 88% felt that these are critical disclosure by suppliers. Respondents were further required to indicate the frequency in which various statements are implemented. This was on Likert-type scale with 'all the time' taking -1, with 'never' taking – 5. On frequency of buying goods with high recycle content and substitute material to natural resource, over 75% for both cases were reported. However, the majority of respondent were neutral that suppliers are given packaging directives on packaging mode and they are required to retain packaging material. Percentages of 34% and 51.2% were recorded for both items. These findings compliment findings by Bodo, and Bohlen (1996) who found out that environment impact knowledge and recycling behavior affects procurement decisions. According to the study finding natural resource saving greatly affects the procurement decisions.

Procurement Decisions at KenGen

The respondents were required to indicate the extent to which the procurement activities are carried out in environmental friendly way. Various items were posed to the respondents. On the tendering method, the majority 73.2% indicated that print media is the most used method, while environmental friendly e-commerce takes a mere 4%. This is in line with the PPDA act 2005 and PPOA regulations. On environmental department involvement in specification development, the study found that they were involved some of the times but not as strongly as it should be. Percentage score of 68%-80% were recorded as indicated in table 4.8 and table 4.9. The study findings also indicated that only less that 10 % of the award marks are given for environmental consideration during tender award. The same findings were also reported on environmental consideration in performance where percentage score of 68% -90% were recorded. This indicates that the environmental issues are given consideration in the procurement process. These finding are in agreement with findings by Bodo et al (1996) that many buying firms that are environmentally conscious engages in green purchasing.

Analysis of the Factor in the Model – Effect of Environmental Impact Consideration in Procurement Decisions of KenGen

The factors in the conceptual frame work were analyzed as indicated in table 1. Some items were dropped and only the significant factors were analyzed.

Table 1: Factors in the Model

Item	Descriptions	Construct (Informative & Reflective)
PC1	How often the noise is produced an important consideration when buying a machine?	
PC2	How often are suppliers required to give disposal instructions	
PC3	How often do you require works supplier to show competence in minimizing waste generation	**Pollution Control (PC)**
PC4	How often is environmental pollution a criterion for transporters evaluation	
PC5	How often pollution Prevention is considered in transport mode evaluation	
ES1	Energy Saving lighting can help mitigate environment degradation	
ES2	Energy Rating effect on motor driven buying	**Energy Saving (ES)**
ES3	Energy Consumption effect on bought items	
NR1	Recycled paper	
NR2	Material Product is made of	**Natural Resources (NR)**
NR3	Process of making product	
NR4	Products of high recycled content	
NR5	Products that are environmental friendly	
NR6	Goods made of substitute material	
PCO1	Environmental at Technical Specification	
PCO2	Environmental at Tendering	**Procurement Decision (PC)**
PCO3	Environmental at Evaluation	

Analysis of the factors Using Structured Equation Model (SEM)

The three research questions were tested using the SEM due the present of Latent (unobserved variables, PCO, NR, PC, ES). The factors (PC 5,ES 3,N1,N2,N3), which were not loading adequately within the main constructs were dropped as indicated in figure 1. These were items with high correlated errors (Kim. L.& Lee. S; 2012).
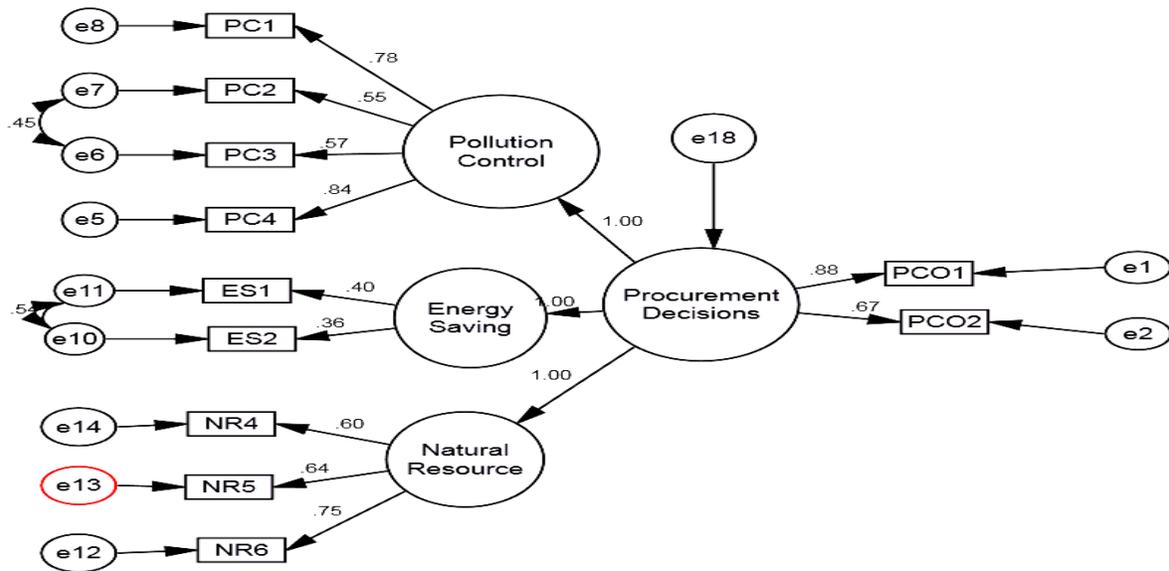
Figure 1: Structural Equation Model of Pollution Control, Natural Resource Saving, Energy Saving and Procurement Decisions of KenGen

Confirmatory factor analysis was done and the model in figure 5.0 was the result. The (Structured Equation Model) SEM was also undertaken to evaluate the significance of the independent (ES, PC, NR) variables and the dependent variable (PCO) as per the objectives and the conceptual framework. Kim and Lee (2012) postulates that SEM can estimate the parameters of multiple equations. The SEM result shows that the model in figure 5.0 has acquired a model fit which is acceptable. The statistical tests that determine the adequacy of the model fit to data are all within the acceptable ranges. (x^2 /df =2.01; Confirmatory Fit Index (CFI) = 0.812; Root Mean Squared Error of Approximation (RMSEA= .0163. summarized on table 2 below.

Table 2: Fit indices Summary of PC1, ES1 and NR influence on PCO

Model element Model fit	Observed index	Threshold
x^2/df	2.058	<3 (good)
CFI	0.812	>.80 (adequate)
RMSEA	0.163	<0.5 (good)
Note: 95% confidence interval		

All the variables (PC; ES; NR) were loadings significantly to the factor (PCO), with loads of above 0.5 (Hoyle R.H. 1995). Table 3 indicates that the loadings are: PC1, 0.62; PC2; 0.63, PC3; 0.50, PC4; 1.00; ES 1; 1.36, ES2; 1.00; NR4;0.81, NR5: 0.75, NR6; 1.00. The positive and high load figures show there is a positive relationship between the pollution control and procurement decisions. There is also positive relationship between Energy saving and procurement decision. The same finding are identified on the relationship between Natural resource saving and procurement decisions.

Table 3: Loading Pattern Matrix of PC, ES, NR

	Pollution control	**Energy saving**	**Natural resource saving**
PC1	0.62		
PC2	0.63		
PC3	0.50		
PC4	1.00		
ES1		1.36	
ES2		1.00	
NR4			0.81
NR5			0.75
NR6			1.00

Note: loading is significant when value is above 0.5

To evaluate whether the relationship is significant, t-statistics were calculated by dividing the parameter estimate and the standard error. These parameter estimates are considered significant if the t-statistics computed exceed t-tables figure of 1.96at 0.05 levels (Hoyles, 1996).The evaluation brought the following t-statistics. Pollution control influence on procurement decision was the most significant at 6.8 (α = 5%.), while Natural resource saving was second most significant variable that influence procurement decision with t-value of 5.6 (α = 5%.). Energy saving had least significance influence on procurement decision with a t-statistic of 2.2 (α = 5%). The hypothesis was supported by the finding;

Pollution control significantly influences procurement decisions of KenGen, (p> 0.05)

Energy saving significantly influences the procurement decisions of KenGen.(p> 0.05)

Natural resource saving has significant influence on influence on procurement decisions of KenGen,((p> 0.05)

The equation:

PCO= 0.182ES+0.767NR+1.1PC

Table 4: Significance tests of Pollution Control, Energy Saving and Natural Resource Saving

Variable	Estimate	Standard Error	(z value)	Threshold
Pollution control	1.100	0.161	6.6	>1.96
Natural Resource saving	0.767	0.135	5.6	>1.96
Energy saving	0.182	0.081	2.2	>1.96

Note: significance at 5 %

Table 5: Parameter Weights: Regression Weights: (Group number 1 – Default model)

			Estimate	Standard Error.	C.R.	P-value
Energy_Saving	←-	Procurement_Decisions	.182	.081	2.257	<0.024
Natural_Resource	<---	Procurement_Decisions	.767	.135	5.687	<0.001
Pollution_Control	<---	Procurement_Decisions	1.100	.161	6.846	<0.001

Summary of Findings

The study sought to determine the environmental impact consideration effect on the procurement decisions of KenGen. Specifically the study sought to investigate the effect of pollution control, the effect of Energy saving, as well as the influence of natural resource saving. The empirical literature supported the findings. The sample size of this study was 60 respondents drawn from procurement, environment and production department of KenGen. 41 responses were obtained which represent 68% response rate. According to Mugenda & Mugenda (2003), any response rate of 50% and above is adequate for analysis and thus the response rate in this study was adequate. A pilot study was undertaken to test the validity and reliability of the questionnaire. The respondents were randomly selected. From the finding, it is evident that most of the respondents were aware of the company's environmental policies. In addition most of the respondents had university degree and above hence were conversant with the environmental issues under study.

Pollution Control and Procurement Decisions

The study findings revealed that pollution control influences procurement decisions to a great extent. Results of SEM analysis show as strong and significant relationship between the pollution control and procurement decisions; this is evidenced by high t-statistics figure and low p values.

Energy Saving and Procurement Decisions

The finding of the study also revealed that energy saving moderately influences the procurement decisions of KenGen. The t-statics show a low value and high p value as compared to the other variables. However the relationship between energy saving is positive and significant. Thus energy saving affect the procurement decisions.

Natural Resource Saving and Procurement Decisions

The study also sought to investigate the influence of natural resource saving on the procurement decisions. The finding of the study indicates that there is positive and significant relationship between natural resource saving and procurement decisions. The findings are supported by high t-statistics and low p values. The study finding thus revealed that the combined effect of the three factors under study on the procurement decisions is statistically significant. There environmental impact consideration informs procurement decisions of KenGen to a great extent.

Conclusions

The objective of the study was to determine the effect of environmental impacts influence on the procurement decisions of KenGen. Based on previous empirical studies environmental considerations were expected to have a positive effect on the procurement decisions, specifically it was expected that procurement being part of supply chain has a big role to play in environmental management. The study findings indicate that there is strong significant positive relationship between environment impacts consideration and procurement decisions of KenGen. The study indicates that the positive relationship between pollution control and procurement decisions is more statistically significant than that between natural resource saving, while energy saving has the least significant relationship with procurement decisions. The presence of the environment policy and adoption of Environmental management system based on ISO 14001 may explain why the company adopts environmental responsible purchasing.

Recommendations

The study recommends that management of KenGen should initiate policies that would make environmental impact consideration criteria in the procurement process. The study recommend that the management of organizations should organize seminars and workshops and sensitize employees and suppliers on the benefits of green purchasing and need to embrace it. The study

further recommends that manufacturers and suppliers should incorporate green concerns in their products so as to integrate environmental issues in the whole supply chain. Thus business should embrace their responsibility for the impact of their business on the environment. The study further recommends that Government should enact legislation that incorporate minimum environmental issues in the procurement act.

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