TO EXPLORE FACTORS AFFECTING IMPLEMENTATION OF GREEN PROCUREMENT IN THE PETROLEUM SECTOR IN KENYA

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Abstract: **The study sought to explore factors affecting Green Procurement implementation in the petroleum sector in Kenya, a case of National Oil Corporation of Kenya. Specifically the study sought to explore the influence of environmental regulations, to the implementation of Green Procurement. Public bodies are being encouraged to implement Green Procurement, so as to reduce environmental footprint and in order to stimulate sustainability in the private sector. From the literature reviewed, there was need to explore the factors affecting Green Procurement implementation as a concept in the petroleum sector. While some studies concur that benefits accrue from Green Procurement implementation, others indicate ineffective regulatory system can lead to potentially reduced benefits or lead to failures. Some studies have focussed on factors causing failures in Green procurement implementation. To further literature, this study explored factors affecting implementation of Green Procurement in the petroleum sector. The study adopted a descriptive research design. The respondents were drawn from the employees of National Oil which according to human resource department, the company has 138 employees. A sample of 30% (46 respondents) from within each group in proportions that each group bear to the population as a whole was taken using stratified random sampling. Data was collected by use of self administered questionnaires as well as retrieval of secondary information. A pilot test was carried out to test the validity and reliability instruments. Data was analysed through descriptive statistics and frequencies. Data presentation was done using tables and frequencies. Statistical Package for the Social Sciences was used in assistance for data analysis. The study is valuable to the Managers in the petroleum sector, scholars and policy makers. The study found that Green Procurement is a recent phenomenon in the petroleum sector in Kenya having started in 2008 and is steadfastly growing. The implementation of Green Procurement in the petroleum sector is evident through aspects such as provision of design specifications to suppliers, suppliers Environmental Management System, and supplier environmental objectives.**

1. BACKGROUND OF THE STUDY

GP has been conducted in some countries; however mostly in Western countries and among big firms (Srivastata, 2007). For instance, Ford Motor Company has demanded that all of its suppliers with manufacturing facilities (including about 5,000 companies worldwide) must obtain a third party certification of Environmental Management System (EMS) for all their plants (Walker & Brammer, 2010).

Meanwhile, greening the supplier is a somewhat new concept and perhaps only a few companies are actually able to implement it in Asia. In addition, among small and medium enterprises in Taiwan greening the supplier is being

implemented in a very innovative way to minimize individual waste and promote this method to enhance environmental protection as well (Rao, 2006). Private sector organizations have in the last two decades adopted GP practices for specific products (e.g., recycled-content office paper, renewable energy, paints, cleaners, etc.), but are also looking at the materials, substances and chemicals they purchase that go into the products and services they provide. In the private sector GP is seen as a means towards improving their products and operations from environmental perspective to reduce risk, total cost of ownership and improve supply chain performance (Salam, 2008). Despite differences in emphasis, GP activities in both the public and private sectors take four main approaches namely; procuring eco-labeled products or services, in-house product/service evaluations, third-party product/service evaluations and supply chain initiatives.

Specific Objectives

The study was guided by the following specific objective.

To establish how environmental regulations influence implementation of GP in the petroleum sector

2. LITERATURE REVIEW

GP is defined as an environmentally conscious purchasing initiative that tries to ensure that purchased products or materials meet environmental objectives set by the purchasing firm, such as reducing the sources of wastages, promoting recycling, reuse, resource reduction, and substitution of materials (Eltayeb et al., 2010). GP ensures that purchasing or supply chain managers consider the issue of sustainability in the purchasing of inputs, in addition to the traditional purchasing criteria of cost, quality, and delivery (Min & Galle, 2001).

GP refers to a responsible purchasing process that accounts environmentalPurchasing function controls the goods and services entering the company, therefore it determines the items and amount of environmental and social capital consumed by business activities. "Reverse logistics" offer a new way of purchasing from reusing and recycling. Purchasing activities is also important in a sense of passing a focal company's own standards onto its suppliers. It is argued that Corporate Sustainability can't be achieved if GP is not integrated into it (Walker & Brammer, 2009). Many companies are using GP management as an effective approach to implement Corporate Sustainability.

GP deals mainly with the controlling environmental performance of suppliers. Located at the beginning of the forward flow of materials within an organization, purchasing is thus placed in an advantageous position to play a key role in the greening of products and activities ((Eltayeb et al., 2010).

GP is a solution for environmentally concerned and economically conservative business. It is a concept of acquiring a selection of products and services that minimizes environmental impact. It requires a company or organization to carry out an assessment of the environmental consequences of a product at all the various stages of its lifecycle. This means considering the costs of securing raw materials, and manufacturing, transporting, storing, handling, using and disposing of the product. "Green" products reduce waste, improve energy efficiency, limit toxic by-products, contain recycled content or are reusable (Walker & Brammer, 2009).

Environmental Regulations

Business organizations are expected to adopt GP in response to environmental regulations set by various regulatory institutions such as government bodies in the country, overseas regulations mainly applicable to export companies, in additions to regulations set by the parent companies. Such regulations take the form of formal rules, laws, sanctions, and incentives (Scott, 1995). The regulatory mechanism are enforced by imposing direct constraints, in the form of authoritative orders or rules, that propels organizations to make necessary changes in their structure and processes (DiMaggio & Powell, 1983).

Firms try to avoid potential costs, uncertainty, and legal liabilities inherent in existing and anticipated regulations (Clemens & Douglas, 2006). Moreover, regulatory institutions may provide inducements for organizations to behave in a certain way. Inducement mechanisms include providing incentives to organizations for conforming to the demands of the agency that offered the inducement (Grewal & Dharwadkar, 2002).

However, the regulations mentioned above can be expected to stimulate GP indirectly. For instance, regulations that encourage recycling and waste reduction may motivate companies to increase recyclable contents in their products by purchasing recyclable materials from suppliers. In addition to local regulations, firms may respond to regulations set in

other countries. Many countries, especially in Europe, impose strict regulations that prohibit hazardous products, promote recycling, and recall of expired products (Ferguson & Browne, 2001; Tibben-Lembke, 2002; Zhu & Sarkis, 2006). Besides this, parent companies may set rules and standards that oblige their subsidiary companies, in developing countries, to adopt certain green initiatives.

The Development and Movement of Green Procurement Policies

Since the 1970's, economists and scientists have observed that the world had entered into an era of limits and unchecked consumption and abuse of natural resources would lead to economic disaster (Driscoll, Halliday, Rastad & Stock, 2010).

Sustainable procurement or GP has been one recent emphasis among the many activities of the sustainability movement. Sustainable procurement is "a process whereby organizations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organization, but also to society and the economy, whilst minimizing damage to the environment" (Salam, 2008). The goal of GP proponents is for organizations to "integrate environmental criteria into all stages of their procurement process, thus encouraging the spread of environmental technologies and the development of environmentally sound products, by seeking and choosing outcomes and solutions that have the least possible impact on the environment throughout their whole life cycle" (Driscoll et al., 2010). Both definitions are quite similar and are constantly being interchanged with one another. Each refer to buying environmentally friendly products, but sustainable procurement focuses also on the broader social and economical aspects of the procurement process, while GP emphasizes primarily the benefits to the environment.

Reasons for Green Procurement

There are different reasons and approaches for companies to GP. Drumwright (1994) proposed two types of reasons for companies' engagement in GP namely; GP is applied as a deliberate outcome of articulated strategies of corporate socially responsible behavior. This means that if a company takes corporate social responsibility, it normally starts GP programs. This is because of the environmental and social performances of a company's suppliers that can affect greatly its own performance and reputation (Bacallan, 2000). Also suppliers' information on environmental and social performances is necessary for a company to conduct a life cycle assessment.

Secondly, GP is motivated by business reasons. Companies either see GP as opportune or out of external restraints. Studies show potential competitive advantage firms can create through the creation of a sustainable supply chain (Markley & Lenita, 2007).

GP ensures environmental and social friendly product and services in a focal company while affects its suppliers to work on more environmental and social friendly product and services. GP passes on sustainability requirements up to upstream companies to create a green supply chain from material extractions to end-users, towards sustainable environmental and social capital throughout a product life cycle (Salam, 2008).

Advantages of Green Procurement

Leading companies that decide to go along with GP activities are experiencing tangible benefits. Strategic sourcing can create value through increased overall cost efficiency, enhanced reputation and market share, and reduced environmental risks and liabilities (UNDP, 2008).

There are economic benefits associated with GP. By reducing supplier-generated wastes and surpluses, companies decrease handling expenses and risks associated with waste disposal. In addition, a supplier's savings from improved efficiencies may be passed along to buyers in the form of reduced prices (Lacroix, 2009).

Efficient production may be enhanced through suppliers' use of cleaner technologies, process innovation, and waste reduction. This is especially true when suppliers and customers work together to find new ideas (UNDP, 2008). Greening its suppliers can contribute to a company's overall reputation among customers, investors, employees, and other stakeholders (Min & Galle, 2001).

Green products are generally produced in a manner that consumes less natural resources and energy or uses them more sustainably from the process of acquiring raw materials, processing and manufacturing parts, transporting, use, and final

disposal. Green products are generally designed with the intention of reducing the amount of waste created. For example, they may contain recycled material or use less packaging, and the supplier may operate a 'take-back' programme (Rao, 2006).

Green products consist of natural materials, which can be recycled, reused and also are easily disposed of. So an organization can achieve lower waste disposal costs, waste treatment costs and energy costs. In addition, green products generally require fewer resources to manufacture and operate, so savings can be made on energy, water, fuel and other natural resources. Green products produce lower levels of hazardous and toxic materials in the environment (Salam, 2008).

While there are a number of other quantifiable benefits measured from GP, cost savings and risk reduction are perhaps the most universal across all types of industries and organizations. Qualitative benefits such as improved image, brand or ability to meet policy commitments is another key benefit and is of note in a business and public sector climate that is increasingly influenced by the public, nongovernmental organizations and employees that are well informed and educated around the environmental and social issues related to products and services. How both public and private sector organizations measure these benefits varies. They often quantify direct costs savings, environmental benefits, money spent or estimate hidden or indirect savings (Lacroix, 2009).

Challenges of Green Procurement

GP initiatives typically don't come easily. Getting buy-in from suppliers often takes a concerted and persistent effort. Environmental managers may also encounter initial resistance to change from within their own company's procurement department. Some environmentally preferable products aren't as readily available, may not meet performance specifications, or may not be cost-competitive. However, these products often outperform their less-green counterparts through improved efficiencies or favorable life-cycle costs (Lacroix, 2009).

Estimating hidden costs and potential savings is one of the challenges of GP. Total cost of ownership and life-cycle costing tools provide a means towards estimating potential benefits (e.g., reporting, material handling, and disposal), however, purchasing departments are often ill equipped to conduct such calculations. These calculations often require an in-depth knowledge of the products being procured and how they are used and disposed of (Min & Galle, 2001).

A mis-informed advocacy group is another challenge. One important challenge to GP as a whole is that well-intentioned environmental groups may not understand the full picture and will send conflicting messages. This can lead to frustration on the part of procurers and undermine the effort. There appears to be a need to facilitate communication among environmental groups to ensure that their advocacy efforts send a consistent message to procurement officers (i.e., education on what is an environmentally preferable car, paper, etc.)

Another challenge is lack of clear definitions. Many procurement professionals and their organizations are still unaware, uncertain or struggling to define the term "environmentally preferable." This becomes particularly difficult when organizations need to balance multiple environmental attributes in their decision making (Walker & Brammer, 2009).

Globalization and international trade issues pose potential barriers to establishing procurement programs for both governments and private firms. Eco-labels have in the past, and likely in the future, will be discussed as a "barrier to trade" issue. There have been instances where eco-labeling has been designed to support certain products within specific markets (e.g., the overwhelming demand by consumers in the UK for labeling of Genetically Modified Foods (GMO) foods). As a result, labeling organizations tend to use clear, science based, environmental criteria when establishing their programs (Lacroix, 2009).

A key challenge identified by many public and private sector organizations is changing behavior with the purchasing departments. In many instances, procurement is based on established supplier relationships, personal or brand preferences. First cost is the prime decision factor in purchasing. Many public sector organizations do not have purchasing practices that factor in total cost of ownership, or full life-cycle costs of the organization. Providing information and tools that will change these behaviors to favor environmentally preferable products will be key to overcoming the status quo (Min & Galle, 2001).

3. METHODOLOGY

Research Design

Research design refers to the method used to carry out a research. The study adopted a descriptive research design. A descriptive study is undertaken in order to ascertain and be able to describe the characteristics of the variable of interest in a situation (Kothari, 2004). The goal is to offer a profile of the phenomena of interest from a specific perspective. It is restricted to fact-finding and may result in the formulation of important principles of knowledge and solutions to significant problems. It is more than collection of data and it involves measure, classification, analysis and interpretation.

Descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals. This type of research design is appropriate in getting answers from respondents who participate through answering questions. The design was selected for this study because it can provide numeric descriptions of the population and describe events as they are, as they were or as they will be (Kombo & Trump, 2006).

The main focus of this study was quantitative. However some qualitative approach was used in order to gain a better understanding and possibly enable a better and more insightful interpretation of the results from the quantitative study. Quantitative approach involves the use of structured questions where the response options have been predetermined. The researcher seeks to use this approach because it is more objective and it helps in achieving high levels of reliability and a higher degree of objectivity (Mugenda & Mugenda, 2003).

The researcher assumes a case study. A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Kothari, 2004). The case study was chosen for the study because it was to enable the researcher to get more detailed information about the experiences of the employees of National Corporation of Kenya concerning factors affecting implementation of GP in the petroleum sector in Kenya.

Target population

Target population in statistics is the specific population about which information is desired. According to Kothari (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated (Mugenda & Mugenda, 2003).

The target population of the study was composed of all the firms in the Petroleum Sector in Kenya. The respondents were drawn from the employees of National Oil which according to human resource department of the company has 138 employees. Mugenda and Mugenda (2003), explain that the target population should have some observable characteristics, to which the researcher intends to generalize the results of the study. This definition assumes that the population is not homogeneous. The population characteristics are summarized in table 3.0.

Table 3.0: Target Population

Job Level	Population (Frequency)	Percentage %
Top management	11	8.0
Middle level management	111	80.4
Low level management	16	11.6
Total	138	100.0

Source: National Oil Corporation of Kenya HR Manual, 2010

Sample Size and Sampling Technique

The sampling plan describes the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample was selected (Kothari, 2004). From the above target population of one hundred and thirty eight, proportional allocation method was used to calculate the sample size from each strata using stratified random sampling which gives each item in the population an equal probability chance of being selected. Stratified random sampling technique is used when population of interest is not homogeneous and can be subdivided into groups or strata to obtain a representative sample.

According to Kothari (2004) a representative sample is one which is at least 10% of the population thus the choice of 30% equal to 46 is considered as representative. Stratified random sampling technique is used when population of interest is not homogeneous and can be subdivided into groups or strata to obtain a representative sample. The selection was as follows.

Table 3.1: Sample Size

Job Level	Population (Frequency)	Proportional Allocation ($n_i = n.P_i$)	Sample
Top management	11	$n_1 = 46*(11/138)$	4
Middle level management	111	$n_2 = 46*(111/138)$	37
low level management	16	$n_3 = 46*(16/138)$	5
Total	138		46

4. DATA COLLECTION PROCEDURE AND INSTRUMENTS

Type of Data

The study utilized both primary and secondary data. Primary data was gathered through questionnaires, while secondary data was obtained from published documents or materials such as journals, periodicals, magazines and reports obtained from the ministry and government reports. These supplemented the primary data received from questionnaires.

Research Instrument

With respect to GP, this study utilized questionnaires to collect primary data as used in various previous research projects (Mugenda & Mugenda, 2003). A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. The study considered questionnaires for they have advantages over other types of research instruments in that they are cheap, do not require as much effort from the questioner as verbal or telephone surveys, and often have standardized answers that make it simple to compile data.

Data Collection Method

This study collected quantitative data using a self-administered questionnaire. Nevertheless, where it proved difficult for the respondents to complete the questionnaires immediately, the questionnaire was left with the respondents and picked later.

A cover letter from JKUAT was taken along to enable the administering of the questionnaire. The respondents were assured of confidentiality of their names and responses and that the responses were not to be handled by any other person but rather were to be used purely for academic purposes. Each questionnaire was coded and only the researcher was to know which person responded. The coding technique was only to be used for the purpose of matching returned, completed questionnaires with those delivered to the respondents.

Pilot Study

A pilot study was conducted using the questionnaire on 3 respondents working in the Procurement Department from different Oil Companies. The purpose of pilot testing was to establish the accuracy and appropriateness of the research design and instrumentation and therefore enhance face validity. After the pilot study the main survey was to follow.

The respondents were conveniently selected since statistical conditions are not necessary in the pilot study (Kothari, 2004). The purpose was to refine the questionnaire so that respondents in the major study were not to have any problem in answering the questions. Expert opinion was requested to comment on the representativeness and suitability of questions and give suggestions of corrections to be made to the structure of the questionnaire. This was help to improve the content validity and reliability of the data that was collected. The questionnaire was hand delivered and administered at the respondents' place of work to ensure objective response and reduce non-response rate. The results of the pilot study were not to be included in the actual study.

Validity

Validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon. The content validity of the research instrument was evaluated through the actual administration of the pilot group. Content

validity is a measure of the degree to which data collected using a particular instrument represents a specific domain of indicators or content of a particular concept (Mugenda & Mugenda, 2003).

Reliability

Reliability of the questionnaire was evaluated through administration of the said instrument to the pilot group. A construct composite reliability co-efficient (Crobanch alpha) of 0.6 or above for all the constructs were considered adequate for this study. The acceptable reliability coefficient is 0.6 and above (Nunnaly, 1987).

Data Analysis

Both quantitative and qualitative techniques were used. The data obtained from the research instruments was analyzed by use of descriptive statistics (frequencies and percentages), as well as inferential statistics (Binder & Roberts, 2003).To test the relationships that presuppose a relationship between criterion and response variables, data coded was extracted using factor analysis methods (Kothari, 2004).

The Pearson correlation coefficient is a bi-variate correlation coefficient that in this study was used to indicate one-on-one association between each of the independent variables to the dependent variable, while holding other factors constant (Eltayeb et al., 2010). Statistical Package for the Social Sciences (SPSS) version 15.0 was used for data analysis. The use of this version was because there was need for data reduction through factor analysis, for the purposes of regression and correlation analysis. In addition, test for scale reliability and validity were possible through this version of SPSS, which has advanced features that are also user friendly.

Data Presentation

Tables were used to present responses and facilitate comparison. Kothari (2004) notes that the use of percentages is important for two reasons; first they simplify data by reducing all the numbers to range between 0 and 100. Second, they translate the data into standard form with a base of 100 for relative comparisons. This was to generate quantitative reports through tabulations, percentages and measure of central tendency.

Response Rate

Table 4.0, illustrates the response rate of the respondents that participated in the survey. The field responses were that out of the 46 respondents surveyed, 41 questionnaires administered were filled and returned. Therefore the response rate was 89.1% for the all the employees studied. This fair response rate can be attributed to the data collection procedure, where the researcher personally administered questionnaires and waited for the respondents to fill, and picked the filled questionnaires. The response rate demonstrated willingness to respond to the survey.

Table 4.0: Response Rate

Respondent	Questionnaires Administered	Questionnaires filled and returned	Response Rate
Top Management	4	3	75%
Middle Management	37	33	89%
Low Management	5	5	100%
Total	46	41	89%

Findings Relevant to the Study

GP Implementation in My Firm

Table 4.1, illustrates that majority of the respondents scored highly GP implementation in aspects such as providing design specifications to suppliers, suppliers EMS, product content restrictions, supplier compliance auditing and supplier environmental objectives. However, the GP implementation was found to negatively affect supplier certification, supplier questionnaire, product content requirements and second- tier supplier compliance audit.

GP deals mainly with the controlling environmental performance of suppliers. Located at the beginning of the forward flow of materials within an organization, purchasing is thus placed in an advantageous position to play a key role in the greening of products and activities (Preuss, 2001). However, incorporating environmental considerations into the purchasing function may posit significant pressures and complications to the purchasing process since purchasing does

take into account the supplier's environmental aspects as well as traditional aspects such as cost, delivery, quality, and flexibility (Eltayeb et al., 2010).

In order for an organization to be able to effectively implement GP, it is necessary to understand the concept of GP and related government policies. Organizations also need the skills, competencies and tools necessary to implement GP (Walker & Brammer, 2010).

The study established that despite GP concept being a new phenomenon in the petroleum sector in Kenya. Majority of the respondents displayed a good understanding of GP, its implementation and benefits. Hence the respondents contributed positively to study from a well informed background.

Table 4.1: GP Implementation in My Firm

Construct	Frequency Disagree	Frequency Agree	Conclusions
Provides design specifications to suppliers	19	22	GP promotes design specification to suppliers (54%)
Suppliers environmental management system	9	32	GP implementation promotes development and implementation of EMS by suppliers (78%)
Supplier certification	30	11	Buyer firm implementing GP does not require the supplier to certify the system (27%)
Supplier questionnaires	28	13	Supplier questionnaires send to suppliers do not affect GP implementation (32%)
Product content requirements	28	13	Buyer's requirement that purchased products must have desirable green attributes does not impact GP implementation (32%)
Product content restrictions	15	26	Buyers specifications that purchased products must not contain environmentally undesirable attributes promotes GP (63%)
Supplier compliance auditing	9	32	GP implementation is boosted by buyers audit to suppliers to determine their level of compliance to environmental requirements (78.5%)
Second- tier supplier compliance audit	26	15	Audit of second tier suppliers has little effect to the GP implementation (37%)
Suppliers environmental objectives	12	29	GP implementation positively affects the alignment of both the buyers and suppliers environmental objectives (71%)

Environmental Regulations

The first objective sought to establish the influence of environmental regulations to the implementation of GP in the petroleum sector. Table 4.2, illustrates majority of the respondents showed a positive relation between environmental regulations and GP implementation in the following areas; through adoption of green supply initiatives so as to avoid environmental legislations, parents company setting strict environmental standards, frequent environmental audits, financial incentives by international organizations, environmental regulations in other countries and environmental regulations imposed by the government.

This confirms findings by Eltayeb et al. (2010), that environmental regulations have positive effects on GP implementation. In Kenya, there are no environmental regulations that dictate business organizations to perform GP activities (Salam, 2008). Nevertheless, there are environmental regulations set by regulatory bodies in Kenya and other countries that prevent the use of hazardous or toxic elements in products, prevent pollution, and promote the use of recycled materials in products. In compliance with these environmental regulations, firms try to ensure that whatever the products are producing, they meet the standards set in the environmental regulations. Therefore, the effect of environmental regulation on GP in Kenya appears to be indirect in nature. Firms adopt GP initiatives to guarantee a continuous supply of green inputs that enable them produce the green products specified by the environmental regulations.

Table 4.2: Environmental Regulations

Construct	Frequency Disagree	Frequency Agree	Conclusions
Adoption of green SC initiatives	14	27	As a result of reduction of any impending environmental legislation firms adopt GP (66%)
Parent company sets strict environmental standards	5	36	Strict environmental standards by parent company promotes GP implementation (88%)
Compliance audit by government	13	28	Frequent environmental audits by government to a firm positively affect GP's implementation (68%)
Financial incentives by Kenya government	35	6	Incentives offered by Kenya government have insignificant effect to the implementation of GP (15%)
Environmental regulations in other countries	19	22	Environmental regulations in other countries have positively impacted on GP implementation (54%)
Environmental restrictions	19	22	Imposition of environmental restrictions by government has boosted GP's implementation (54%)

Table 4.3, illustrates that Petroleum firms in Kenya agree, on average, that there are regulatory impositions and inducements on their firms (mean = 3.23, SD = 1.06). The table also illustrates that GP implementation has a weak and positive association to environmental regulations (r = 0.064) and that the relationship is statistically significant at 5% level.

Table 4.3: Association between GP Implementation and Environmental Regulations

Variables	Mean	Standard Deviation	Pearson Correlation
Regulation	3.23	1.06	0.064

Previous studies also indicate that environmental regulation has the greatest influence on a firms "reverse" logistics activities. This implies that many buying firms tend to get involved in GP implementation in a "reactive" manner, in that they are simply trying to avoid wilful and negligent violations of environmental laws, rather than proactively embedding environmental goals within the long-term corporate purchasing policy. That is, buying firms tend to perceive their environmental program as a cost center rather than a profit center (Walker & Brammer, 2010).

The study found that there is a positive relation between environmental regulations and implementation of GP. This implies that policy makers need to set up appropriate policies and environmental regulations to encourage business firms to adopt GP activities.

5. RECOMMENDATIONS

The study makes the following recommendations based on the findings and conclusions:

First, the petroleum firms intending to implement GP should focus on developing internal sense of responsibility of a firm towards the society in which it exists. For green issues, such sensitivity is intensified by increasing environmental problems such as global warming and pollution. Such problems may also raise awareness and interest of a firm to behave in a more socially responsible manner and reflect an image of due diligence and commitment to sustainability and social responsibility.

GP can create economic value such as reduced disposal and liability cost while improving the company's resource conservation and public image. Furthermore, firms that participate in recycling programs often receive tax credits and exemptions from the government (Walker & Brammer, 2010).

Secondly, petroleum firms are expected to implement GP in response to environmental regulations set by various regulatory institutions such as government bodies in the country, overseas regulations mainly applicable to export companies, in additions to regulations set by the parent companies. Such regulations take the form of formal rules, laws, sanctions, and incentives (Scott, 1995). Firms try to avoid potential costs, uncertainty, and legal liabilities inherent in existing and anticipated regulations. (Clemens & Douglas, 2006). Moreover, regulatory institutions may provide inducements for organizations to behave in a certain way.

As petroleum firms in Kenya are increasingly attentive to environmental regulations, it is proposed they begin to perform an environmental compliance audit to review applicable environmental regulations, identify new restrictions and evaluate how their environmental initiatives help them conform to evolving regulatory guidelines (Walker & Brammer, 2010).

Thirdly, Customers, as a major financial stakeholder, can exert considerable pressures and demand goals of sustainability or environmental performance from suppliers (Doonan, 2005 & Lin, 2007). Customer pressure and expectation for green products provides effective means for extending environmental practices in the petroleum sector.

6. OBJECTIVE SUMMARY

Objective One: Establishing Environmental Regulations Influence on GP Implementation in the Petroleum Sector

The study established a positive relation between environmental regulations and GP implementation in the following areas; through adoption of green supply initiatives so as to avoid environmental legislations, parent's company setting strict environmental standards, frequent environmental audits, financial incentives by international organizations, environmental regulations in other countries and environmental regulations imposed by the government.

The study also found that Petroleum firms in Kenya agree, on average, that there are regulatory impositions and inducements on their firms to implement GP. Environmental regulations have a weak and positive association to the GP implementation and that the relationship is statistically significant.

The implications are that in Kenya, there are no environmental regulations that dictate business organizations to perform GP activities (Salam, 2008). Nevertheless, there are environmental regulations set by regulatory bodies in Kenya and other countries that prevent the use of hazardous or toxic elements in products, prevent pollution, and promote the use of recycled materials in products. In compliance with these environmental regulations, firms try to ensure that whatever the products are producing, they meet the standards set in the environmental regulations. Therefore, the effect of regulation on GP implementation in Kenya appears to be indirect in nature. Firms adopt GP initiatives to guarantee a continuous supply of green inputs that enable them produce the green products specified by the environmental regulations.

7. CONCLUSIONS

Governments around the world have sought to address the challenges of sustainable or GP implementation by leveraging their influence as major procurers of the goods and services, hence the choice of National Oil Corporation of Kenya in this study. Internationally, sustainability practices are changing apace and sharing learning across regions will benefit all.

On GP implementation, the study concludes that GP is a recent phenomenon in the petroleum sector in Kenya having started in 2008 and is steadfastly growing. The implementation of GP in the petroleum sector is evident through aspects such as provision of design specifications to suppliers, suppliers EMS, product content restrictions, supplier compliance audits and supplier environmental objectives.

The results of the study indicate that environmental regulations are one of the most important factors for GP implementation. This implies that policy makers need to set up appropriate policies and environmental regulations to encourage business firms to adopt GP activities. If properly designed, environmental regulations can be a vehicle for the creation of competitive advantages because it forces the firms to be innovative (Min & Galle, 2001). Therefore, policy makers need to consider setting up effective environmental regulations to motivate further firms to adopt GP.

REFERENCES

[1] Anbumozhi, V., & Kanda, Y. (2005). *Greening the Production and Supply Chains in Asia: Is There a Role for Voluntarily Initiatives?*. (IGES Kansai Research Center Discussion Paper, KRC-2005, No. 6E). Available at: www.iges.or.jp (accessed Oct 21, 2010).

[2] Bacallan, J. J. (2000). Greening the Supply Chain, Business and Environment. In Sarkis Joseph (Ed.). *Greening the supply chain* (pp.11-12). London: Sping-Verlag Limited.

[3] Binder, D.A., & Roberts, G. R. (2003). Design Based Methods for Estimating Model Parameters. In R.L. Chambers and C.J. Skinner (eds.). *Analysis of Survey Data* (pp. 29-48). Chichester: Wiley & Sons Ltd.

[4] Clemens, B. & Douglas, T.J. (2006). Does Coercion Drive Firms to Adopt 'Voluntary' Green Initiatives? Relationships Among Coercion, Superior Firm Resources and Voluntary Green Initiative. *Journal of Business Research*, Vol. 59 No. 4, pp. 483-91.

[5] Cruz, J.M., Wakolbinger, T. (2008). Multiperiod Effects of Corporate Social Responsibility on Supply Chain Networks, Transaction Costs, Emissions and Risk. *International Journal of Production Economics* 116: 61–74.

[6] Driscoll, T., Halliday, A., Rastad, J. and Stock, R. (2010). *Green Procurement Practices in London Borough of Croydon*. (Unpublished Masters Thesis). Worcester Polytechnic Institute, London.

[7] Drumwright, M.E. (1994). Socially Responsible Organizational Buying: Environmental Concern as a Noneconomic Buying Criterion. *Journal of Marketing*, Vol. 58 No. 3, pp. 1-19.

[8] Eltayeb, K. T., Zailani, S., & Jayaraman, K. (2010). The Examination on The Drivers for Green Purchasing Adoption Among EMS 14001 Certified Companies in Malaysia. *Journal of Manufacturing Technology Management*, Vol. 21 No.2, pp. 206-225. doi: 10.1108/17410381011014378

[9] Ferguson, N. & Browne, J. (2001). Issues in End-of-Life Product Recovery and Reverse Logistics. *Production Planning & Control*, Vol. 12 No. 5, pp. 534-47.

[10] Government of Kenya. (2010). Kenya Gazette Supplement No. 40: *The Energy (Importation of Petroleum Products) (Quota Allocation) Regulations, 2010*. Nairobi: Government Printer.

[11] Government of Kenya. (2006). *The Public Procurement and Disposal Regulations 2006*: Legal Notice No. 174. Nairobi: Government Printer.

[12] Government of Kenya. (2005). *The Public Procurement and Disposal Act 2005*: Nairobi: Government Printer.

[13] Grewal, R. & Dharwadkar, R. (2002). The Role of the institutional environment in marketing channels. *Journal of Marketing*, Vol. 66 No. 3, pp. 82-97.

[14] KIPPRA. (2010). *Study On the Demand For Petroleum Products in Kenya*, Nairobi: Government Printer.

[15] Kombo, D. K., & Tromp, D. L. A. (2006). *Proposal Writing and Thesis Proposal: An introduction*. Nairobi: Paulines Publications.

[16] Lin, C.Y. (2007). Adoption of Green Supply Chain Practices in Taiwan's Logistics Industry. *Journal of International Management Studies*, Vol. 2 No. 2, pp. 90-8.

[17] Markley, M. J. & Lenita, D. (2007). *Exploring Future Competitive Advantage Through Sustainable Supply Chains*. Alabama, USA: Department of Management and Marketing, Culverhouse College of Commerce and Business Administration. The University of Alabama, Tuscaloosa.

[18] Mugenda, O.M., & Mugenda, A.G. (2003). *Research Methods; Quantitative & Qualitative approaches*. Nairobi: Acts Press.

[19] Nunnally, J. (1987). Psychometric Theory. New York: McGraw- Hill.

[20] Nyangena, W. (2009). *The Kenya Vision 2030 and the Environment: Issues and Challenges*. Nairobi: Government Printer.

[21] Ogot, M., Nyandemo, S., Kenduiwo, J., Mokaya, J. & Iraki, W. (2009). *The Long Term Policy Framework for Public Procurement in Kenya*. Nairobi: UNES

[22] Onyango, C.H., Njeru, G.N. & Omori, B.M. (2009). *Regulatory and Competition- Related Reforms in Kenya's Power and Petroleum Sectors*. Nairobi: UNES

[23] Preuss, L. (2001). In Dirty Chains? Purchasing and Greener Manufacturing. *Journal of Business Ethics*, Vol. 34 No. 3, pp. 345-59.

[24] Rao, P. (2006). Greening of Suppliers/ In-Bound Logistics in the South East Asian Context. In Sarkis, J. (Ed.). *Greening the Supply Chain* Chapter 11, (pp. 189-204), London: Springer.

[25] Reichel, M., & Ramey, M. A. (Eds.). (1987). *Conceptual Frameworks for Bibliographic Education: Theory to Practice*. Littleton Colorado: Libraries Unlimited Inc.

[26] Salam, A. M. (2008). Green Procurement Adoption in Manufacturing Supply Chain. *An International Journal*. Thailand.

[27] Scott, W.R. and Christensen, S. (1995). *The Institutional Construction of Organizations*. Sage, Thousand Oaks, CA.

[28] Sekaran, U. (2003). *Research Methods for Business: A Skill Building Approach*. Singapore: Wiley & Sons Ltd.

[29] Walker, H. & Brammer, S. (2009). Sustainable Procurement in the United Kingdom Public Sector. *International Journal*, 14/2, pp 128-137. doi: 10.1108/13598540910941993

[30] Walker, H., Preuss, L. (2008). Fostering Sustainability Through Sourcing from Small Businesses: Public Sector Perspectives. *Journal on Cleaner Production* 16: 1600–1609.

[31] Young, A. & Kielkiewicz-Young, G. (2001). Sustainable Supply Network Management. *Corporate Environmental Strategy*, Vol. 8 No. 3, pp. 260-8.

[32] Zhu, Q.; Sarkis, J. (2006). An Inter-Sectoral Comparison of Green Supply Chain Management in China: Drivers and practices. *Journal of Cleaner Production*, 14, 472-486.