

ROLE OF SUPPLIER'S USE OF GREEN MANUFACTURING TECHNOLOGY ON ORGANIZATIONAL PERFORMANCE OF ENERGY AND PETROLEUM STATE CORPORATIONS IN KENYA

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ABSTRACT

Kenya plans to achieve middle income development status by the year 2030 as set out in its Vision 2030. To achieve this, it is projected that there will be growth in both the public and private sectors of the economy. Growth in the private and public sectors is influenced by among other things the effective and efficient management of the different functional areas in the organizations. One such function is procurement. The function ensures availability of quality cost effective inputs to the organization which are then converted into goods and services. As such, firm performance plays an important role in overall organizational success. Managers must therefore strive to ensure that the effectiveness of the procurement function is maintained. One way to maintain effective procurement is by continuously aligning the function to the concerns and changes in the business environment. Among the most important concerns in the world today is climate change caused by human economic activity. The negative effects of climate change is its potential to impact human lives and livelihoods, through increased incidence of natural disasters such as floods, droughts and disease outbreaks. Sustainable economic growth is also threatened by Kenya's vulnerability to climate change. It is estimated that 42% of Kenya's GDP and 70% of overall employment is derived from natural resource-related sectors, including agriculture, mining, forestry, fishing,

tourism, water supply and energy. While climate change will lead to adverse impacts across all of these sectors, agricultural sector stands apart as particularly vulnerable. With such effects, business operations are negatively affected by erosion of purchasing power, stagnation of economic activities, curtailing productivity and destruction of infrastructure among others. This realization has jolted businesses to work towards reducing their impacts on the environment by adopting green in their procurement processes. In addition, power production and distribution is among the highest contributors to environmental degradation through carbon emissions and depletion of forest cover. Although a lot of research has been done on several aspects of firm performance, there is a gap on how supplier's use of green manufacturing technology affects organizational performance of state corporations in Kenya. This descriptive study targeted all the 10 energy and petroleum state corporations in Kenya. Two hundred and fifty five procurement department staff of all the cadres were the sampled respondents. The study established that using supplier's use of green manufacturing technology as tender selection criteria had a negative impact on firm performance.

Key Words: *public procurement, green procurement, state corporations, firm performance*

INTRODUCTION

A Procurement Management Process, or Procurement Process, is a method by which items are purchased from external suppliers. The procurement management process involves managing the ordering, receipt, review and approval of items from suppliers. Importance of public procurement in shaping trends (Knight at al, 2012). A procurement process also specifies how the supplier relationships will be managed, to ensure a high level of service is received. This is a critical task in Procurement Management. In essence, the procurement process helps an organization "get what they have paid for".

According to NHS report (2012) Procurement management is important to both public and private enterprises whenever they want to buy items from external suppliers. By using the Procurement Management Process, an organization ensures that the items provided meet their needs. It also helps organizations manage the supplier relationship, ensuring that any issues are resolved quickly. By implementing a Procurement Process, organizations can ensure they get the maximum value from their supplier relationship. Rodrigues (2011) opines that through public procurement, governments not only get goods and services that they need in providing public goods, but is also an accepted avenue through which important public policies are promoted. This include promoting local traders and manufacturers, environmental conservation, promoting local entrepreneurship, involving marginalized groups like youth, women and people with disabilities in economic activities among others.

Across the world, public authorities are increasingly becoming aware of their environmental impacts and their responsibility to reduce them. Green public procurement is a well established and fast developing concept. In Europe for example, it is gaining momentum as the vehicle of choice for public authorities to manage their environmental impacts and influence business and society to do the same. Green public procurement is practiced by many governments, and is generally underpinned by robust international and national policy frameworks (EU, 2016). Whilst implementation models differ, the use of agreed, minimum environmental product specifications is widespread and appears to be the main mode of delivery, widely supported by governments. The huge resources that organizations and governments spend in procuring can be directed towards creating need for environmental conservation. In the European Union for instance, public procurement accounts for approximately 19% of the GDP. The EU is keen to harness this purchasing power to lower environmental impacts and incentivize the market to develop green technologies and products (EU, 2016).

In Kenya, public procurement is guided by the public procurement and assets disposal Act, 2015. This law aims to establish procedures for procurement and the disposal of unserviceable, obsolete or surplus stores and equipment by public entities to achieve the following objectives: to maximize economy and efficiency; to promote competition and ensure that competitors are treated fairly; to promote the integrity and fairness of those procedures; to increase transparency

and accountability in those procedures; and to increase public confidence in those procedures and to facilitate the promotion of local industry and economic development (RoK, 2015).

Although the law does not directly cite environmental conservation as one of its objectives, it is flexible enough to allow for green procurement is that maximizes economy and efficiency of the procuring entity. However, as Brammer and Millinton (2011) note, Kenya as one of the developing countries has been slow in taking up structured and policy driven approach to enhancing adoption of green procurement the benefits accruing notwithstanding. The government has however put in place a wide range of policy, institutional and legislative to govern all business activities to ensure there is protection of the environment (Odhiambo, 2008).

PROBLEM STATEMENT

Despite the undeniable importance of environmental integration in to business processes as a step towards checking and reversing global warming, research indicates that there is inadequate understanding of the costs and benefits of such integration on the organization's processes and hence productivity. The contribution to climate change by human economic activity is among the important discussions in recent times. According to Elizabeth and Helen (2015), this has resulted from the realization that climate change, if unchecked, has potential to wipe out life on planet earth through depletion of life supporting systems such as clean water and air, destruction of habitats and increased natural disaster occurrence including disease outbreaks (Cahil & Ftizpatrick, 2006). Research indicates that adopting green practices has several benefits. To begin with, it is a self preservation strategy against the vulgaries of climate change such as depletion of raw materials. Other benefits include access to affluent markets, access to special financing, good public image, approval from environmental regulatory authorities and it can also be a source of competitive advantage (Wanjohi et al., 2016). This realization has many progressive organizations innovatively integrating green in their processes (Porter & Van der Linde, 1995) Green processes and green products are over time becoming common across the economic sectors. There are also dissenting views on the benefits of adopting green. Some researchers like (Godstein, 1995) argue that the costs associated with adopting green far outweigh the benefits. Such include the cost of new technologies, lower productivity, specialized staff recruitment, training and development among others. As such, there is no unanimity on economic usefulness of adopting green. That may not be construed to mean that adopting green has no specific benefits in enhancing performance of specific organizational functions such as procurement. Nasiche (2014) points out that in Kenya, adoption of green procurement has been slow resulting in lower diffusion rate. This could be attributed to inadequate information on the contribution of green public procurement practices towards firm performance. Study sought to establish whether supplier's use of green manufacturing technology affects firm performance among the energy sector corporations in Kenya.

GENERAL OBJECTIVE

The objective of this study was to establish role of supplier's use of green manufacturing technologies on performance of energy and petroleum state corporations in Kenya. Additionally the researcher sought to establish whether if such a relationship existed, it was moderated by existence of regulations and policies.

THEORETICAL REVIEW

Several theories have been advanced to explain adoption of green environment in management processes and procurement performance. This study was grounded on a few such theories. These are; the social-economic theory, the stakeholder's theory, natural resource based view theory, the innovation theory, the economic approach theory and the institutional sociology and appreciative management theory.

Socio-economic Theory

Sutinen and Kuperan (1999) propounded the socio-economic theory of compliance by integrating economic theory with theories from psychology and sociology to account for moral obligation and social influence as determinants of individuals' decisions on compliance. According to Lisa (2010) psychological perspectives provide a basis for the success or failure of organizational compliance. Wilmshurst and Frost (2000) added that the legitimacy theory postulates that the organization is responsible to disclose its practices to the stakeholders, especially to the public and justify its existence within the boundaries of society. This theory, which focuses on the relationship and interaction between an organization and the society, provides a sufficient and superior lens for understanding government procurement system (Hui et al., 2011). From this theory, we can understand the policy, planning and sustainable procurement practices in public institutions and their influence on service delivery to the society.

Stakeholder Theory

According to Freeman (2014b), a stakeholder is any group or individual who can affect or is affected by the achievement of the organization's objectives. Miles (2006) states that the organization itself should be thought of as grouping of stakeholders and the purpose of the organization should be to manage their interests, needs and viewpoints. Freeman (2014a) defines stakeholders as those groups who are vital to the survival and success of the corporation. The theory is in part concerned with the influence of a wide range of actors in an organization's environment on organizational performance as many researchers have argued (Donaldson & Preston, 2005; Freeman, 2014; Quin & Thomas, 1995; Mitchell et al., 1997). Unlike traditional input-output models of organization performance, stakeholder theory emphasizes the interaction between interest groups such as the organization's employees, members of the social community, shareholders, and other allied organizations, in determining organization performance.

Some stakeholders identified by Friendman and Miles (2006) include, customers, employees, local communities, suppliers and distributors, the media, the public in general, business partners, future generations, past generations (founders of organizations), academics, competitors, non Governmental organizations or activists considered individually, stakeholder representatives such as trade unions or trade associations of suppliers or distributors and financiers, other than stockholders (debt holders, bondholders, creditors), competitors, government, regulators and policymakers. Modern writers have identified the natural environment as part of an organization's stakeholders.

This has been informed by the important role that the natural environment plays in the success of businesses. Most raw materials are found as naturally occurring substances, plants and plant products, animal or animal derivatives and minerals among others. The environment also acts as the sink at the end of the pipe. It is thus impossible to think of success and performance of manufacturing firms without the natural environment. According to Porter (1980), competitive advantage and hence high performance can be achieved by controlling raw material source. In order to safeguard this important stakeholder, firms have an important role in pollution and emission control through active and proactive measures.

Natural Resource Based View Theory

Researchers in the field of management have long understood that competitive advantage depends on the match between distinctive internal (organizational) capabilities and changing external (environmental) circumstances (Andrews, 2001; Chandler, 1962; Wang & Li, 2008; Penrose, 1959). According to Hart (1995) it was only in the 1950s that a bonafide theory, known as the resource-based view of the firm, emerged, articulating the relationships among firm resources, capabilities, and competitive advantage. The match between internal and external environments according to Porters and Van der Linde (1995) leads to competitive advantage due to cost leadership and quality differentiation.

Afterwards, it was noted that “competing for the future” is an important measure of competitive advantage. According to Hamel and Prahaland (1994) the firm must not only strategize on current/ short term profitability and competitive advantage but also the long term ones. The resource based view posits that competitive advantage can be sustained only if the capabilities creating it are supported by resources that are not easily replicated by competitors (Hart, 1995). Recent environmental challenges facing the world have led to scrutiny of human economic activity, especially manufacturing. Projected population growth in the next 40 years will lead to accelerated production. According to Gore (1992), this growth might not be ecologically sustainable. Such production will stress the earth's natural systems beyond recovery (Commoner, 1992). As such, economic activity must change or risk irreversible damage to the planet's basic ecological systems.

Theory of Innovation

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

Only exogenous factors like weather conditions can cause changes in the circular flow position. In the circular flow position goods are being produced at a constant rate. This routine work is being performed by the salaried managers. It is the entrepreneur who disturbs the channels of this circular flow by the introduction of an innovation. Thus Schumpeter assigns the role of an innovator not to the capitalist but to the entrepreneur. He emphasizes creating new value-generating activities as a means of searching for higher profits from innovation. Such value generation can be tapped from adoption of the green environment.

Sundbo (1998) argues that innovations are important to the national economy during periods of depression. He adds that it is also important to individual organizations because it portends potential for expansion and future profits. Being innovative includes adopting issues of current global concern in to business processes in a manner that gets the business competitive advantage (Porters, 1995). According to Wanjohi (2016) the current global concern is climate change and its effects to human lives and livelihoods. Well managed organizations are innovatively adopting the green environment in their processes to gain competitive advantage.

The Economic Approach Theory

The economic approach describes firms’ adoption behavior as driven by performance outcomes. A firm will more likely adopt a process or an innovation which will directly lead to improved profitability. This theory seeks to identify the circumstances when it pays to be green and that manager’s exhibit rational behavior when they adopt beyond compliance environmental practices also known as environmental pro-activity (Russo & Fouts, 1997; King & Michael, 2001). It will be expected that firms will adopt any practice that results to economic gain. As such, should it be established that adoption of green environment positively affects economic outcomes of a firm; such a firm will willingly adopt such practices to maximize on such gain.

Green adoption has been credited with winning firms’ environmental conscious high end clients, opening up controlled western markets, lowering of production costs and in the public sector, attracting green donors and green grant makers as well as setting an important example to the private sector (Wanjohi, 2016). The above theory supports the dependent variable, firm

performance. This is because firms will adapt processes that make them effective and efficient, which leads to improved overall productivity.

The Institutional Sociology Theory

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

Institutional theoreticians also claim that something identified at a higher level is used to explain processes and outcomes at a lower level of analysis (Clemens & Cook 1999; Amenta 2005). Institutionalists tend to focus on different sorts of higher-order determinants and differ in how much they matter causally. As such, it would be expected that big corporations and government bodies set pace and identify issues that small firms in an economy try to borrow from. In addition, Institutional Sociologists like Pierson and Skocpol (2002) tend to argue that nation-level institutions mediate the influence of domestic institutions and global processes. This means that the national level organizations borrow from the multinational organizations, with which they deal with. Some of processes, behaviors and attitudes they borrow end up being rubbed off on the smaller regional organizations that they deal with (Amenta, 2005).

According to Ameta and Ramsey (2002) institutional Sociology theories as applied posit two distinct forms of institutions' influence over organizational action. Institutions can be constraining, superimposing conditions of possibility for mobilization, access, and influence. Institutions limit some forms of action and facilitate others. Through the use of public procurement, a government can craft an operational direction in an economy. By adopting green public procurement, the government encourages its suppliers to think green. This is cascaded down to the other suppliers and firms in the whole chain. Over time, green gets adopted in the entire economy.

CONCEPTUAL FRAMEWORK

A conceptual framework is a visual aid explaining the main aspects to be studied, the key factors, concepts or variables and the presumed relationships among them (Wanjohi, 2016). The relationships to be studied are represented in the figure below.

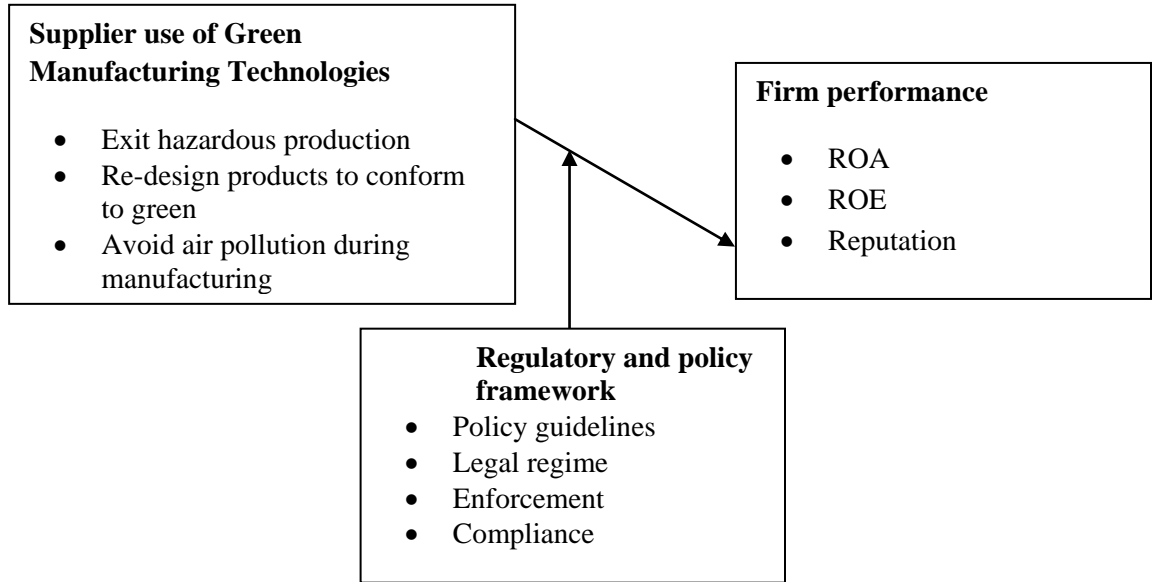


Figure 1: Conceptual framework

According to Mohan and Sahay (2000), the impacts of processes used in manufacturing products and developing services vary. Manufacturing processes may differ in the efficiency of input use, the amount and kind of waste generated and environmental effects on ecosystems and human health. Such impacts may be reduced by manufacturers through various means, ranging from improvements focusing on individual factors such as amounts and sources of energy used, to integrated approaches such as lean manufacturing techniques, which aim to reduce waste and improve efficiency throughout the manufacturing process.

RESEARCH METHODOLOGY

Research Design

Kombo and Tromp (2006) define research design as the glue that holds all the elements of research together. Blumberg, Cooper and Schindler (2011) defined a research design as the plan and structure conceived to obtain answers to research questions. The study adopted a descriptive research design because the study tried to obtain information concerning the current status of impact of supplier's use of green manufacturing technology on firm performance in the energy and petroleum state corporations in Kenya. A descriptive research design determines and reports the way things are (Mugenda & Mugenda, 2003). Descriptive design aims at describing a phenomenon. In this study, the phenomenon being studied is how supplier's use of green manufacturing technology relates with firm performance in the energy and petroleum state corporations in Kenya. Descriptive research design was used in other related studies such as the moderating effect of adoption of green environment on performance of manufacturing firms in Kenya, (Wanjohi, 2016).

Target Population

A population is an entire group of individuals, events or objects having common characteristics that conform to a given specification (Mugenda & Mugenda, 2003). According to Cox (2010) target population is the entire set of units for which the study data will be used to make inferences. The population considered in this study was the entire 761 procurement staff in all the energy sector state corporations in Kenya.

Sample and Sampling Technique

According to Mugenda and Mugenda, (2003) the sample size of particular study may be calculated as follows:

$$N_0 = \frac{Z^2 pq}{d^2}$$

Where: n_0 is desired sample size; Z^2 is the standard normal deviation at required confidence level of 95% in which is set to 1.96; p is the proportion procurement staff able to identify effect of adoption of green procurement practices on firm performance which is set at 0.5 (50%); $q = 1 - p$; d is the margin of error at α (0.05).

Therefore;

$$n_0 = \frac{Z^2 pq}{d^2} = \frac{(1.96)^2 (0.5) (0.5)}{(0.05)^2} = 384.16$$

This gave a sample size of 384 respondents which was adjusted as the population was less than 10,000 using the relationship below.

$$n = \frac{n_0 N}{n_0 + N} \quad \text{equation (ii)}$$

Where: n is the desired sample for small population; n_0 is the desired sample size when population is big; N is the population size.

$$n = \frac{(384) (761)}{(384+761)} = 255.22$$

The sample size was 255 respondents. To determine the sample size of each category of employees in the procurement department, proportionate stratified sampling was used.

For Lower cadre (LC)

$$LC = \frac{255 \times 568}{761} = 190 \text{ respondents}$$

For Middle management (MM)

$$MM = \frac{255 \times 126}{761} = 42 \text{ respondents}$$

For senior management (SM)

$$SM = \frac{255 \times 67}{761} = 22 \text{ respondents}$$

Data Collection

The study used questionnaires to obtain both quantitative and qualitative data for analysis which will be further validated from analysis results from secondary data quantitative analysis. Schwab (2005) defines questionnaires as measuring instruments that ask individuals to answer a set of questions or respondent to a set of statement. Mugenda and Mugenda (2003) and Kothari (2004) define a questionnaire as a document that consists of a number of questions printed or typed in a definite order on a form or set of forms.

Secondary data from the state corporations under study was collected from annual reports. Kothari (2004), defines secondary data as data that is already available, referring to the data which have already been collected and analyzed by someone else. Polit and Beck (2003) explain that secondary research involves the use of data gathered in a previous study to test new hypotheses or explore new relationships. They also indicate that secondary analysis of existing data is efficient and economical because data collection is typically the most time-consuming and expensive part of a research project. Secondary data was used to validate the findings from analysis of primary data which was corrected using questionnaires. The strategy of using both primary and secondary data to address the same study objectives was meant to improve the interpretive coherence and improve both communicative and pragmatic validity of the study results. The researcher aggregated all staff of each cadre in one list. Thereafter, those to participate in the study were selected randomly from the list by blindly picking numbers representing the staff as per the list. The questionnaires were self administered and the respondents were allowed 2 weeks from the date of dropping to have completed the questionnaires.

RESEARCH RESULTS

Response Analysis

Two hundred and one questionnaires were returned representing a 78.8% response rate. The response rate is considered adequate given the recommendations by Saunders, Lewis and Thornhill (2007) who suggest a 30-40% response, Sekaran (2003) who document 30%, Mugenda and Mugenda (2003) advise on response rates exceeding 50% and Hager, Wilson, Pollack and Rooney (2003) recommend 50%. Data indicated that 42.4% of the energy related state corporations in Kenya were established between 1950 and 1970, 36.7% were established between 1971 and 2000 while 21.0% were set up beyond 2001. Most of the organizations have between 51 and 200 members of staff of different cadre manning their procurement departments. Considering that most procurement departments comprise less than 5% of the entire workforce, the institutions studied qualify as big undertakings employing over 100 employees. Further, majority (71.7%) staffs working in procurement departments in studied organizations belong to professional bodies while 28.3% do not belong to a professional body.

Table 1: Variable descriptive statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
X1	2.20	5.00	3.9127	.60874
Y	1.00	4.33	3.6667	.46809

From table 1 above Supplier's use of Green manufacturing technology had a mean of 3.9127 and minimum and maximum values of 2.20 and 5.00 respectively and its standard deviation is .60874 indicating a spread of within one standard deviation from the mean. Firm performance had a mean of 3.6667 and minimum and maximum values of 1.00 and 4.33.

Diagnostic Tests

A normal distribution is not skewed and is defined to have a coefficient of kurtosis. Jarque-Bera formalizes this by testing the residuals for normality and testing whether the coefficient of skewedness and kurtosis are zero and three respectively (Brooks 2008). The study used Jarque-Berra's statistic to determine whether the sample data have the skewedness and kurtosis matching a normal distribution. It is a test based on residuals of the least squares regression model. For normal distribution JB statistics is expected to be zero (Gujarati, 2007).

Table 2: diagnostic tests summary

Statistic	X1
Skewness	.189
Std. Error of Skewness	.174

Statistic	X1
Kurtosis	-.301
Std. Error of Kurtosis	.346
Tolerance	.529
VHF	1.891
Pearson Correlation	-.071*
Sig. (2-tailed)	.003

In this study JB statistics values for supplier’s use of green manufacturing technology were 0.189 and 0.301. The VIF result was 1.891 and tolerance of .529. This shows that the variables had a VIF that is way less than 10 and tolerance value of more than 0.1 ruling out the possibility of multi-collinearity (Field, 2009). Therefore, the results imply that there was no multi-collinearity problem among variables. The relationship between supplier’s use of green manufacturing technology and performance of energy and petroleum state corporations in Kenya was negative with a correlation coefficient of -0.71 at 0.003 level of significance.

Table 3: Model summary

Model	R	R Square	Adjusted Square	Change Statistics				Sig. F Change	
				R Std. Error of the Estimate	Square Change	F Change	df1		df2
1	.071a	.005	-.002	.46923	.005	.727	1	144	.395

a. Predictors: (Constant), X1

Effect of supplier’s use of green manufacturing technology had a correlation coefficient (R) of 0.071 which is a positive. Further, the study had R Square of 0.005 indicates that the model can explain 5.00% of the variations or changes in the dependent variable, performance of energy and petroleum state corporations in Kenya. This implies that supplier’s use of green raw materials does contribute to performance of energy and petroleum state corporations in Kenya although in a small way.

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.160	1	.160	.727	.004a
	Residual	31.705	144	.220		
	Total	31.865	145			

a. Predictors: (Constant), X1

b. Dependent Variable: Y

The results of the ANOVA test show a P-value of 0.004 is more than the set level of significance of 0.05 for a normally distributed data. The results further revealed that the model had an F-ratio of 0.727 which was significant at 5% level of significance. The results indicate that the model is statistically significant in explaining the impact of supplier’s use of green manufacturing technology on firm performance.

Table 5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.895	.248		15.726	.000
	X1	-.054	.063	-.071	-.853	.395

a. Dependent Variable: Y

The negative Beta coefficients indicate that a unit change in the independent variable leads to a negative change in the dependent variable. In this case, a unit change of supplier’s use of green manufacturing technology led to a .071 units drop in firm performance.

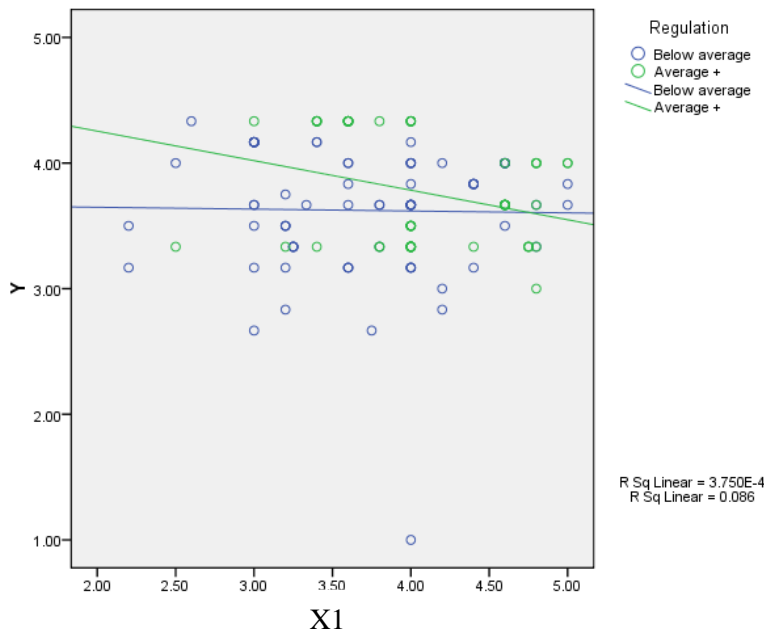


Figure 2: Scatter diagram showing effect of regulatory and policy frameworks on relationship between supplier’s use of green manufacturing technology and firm performance

The scatter diagram shows that regulatory and policy frameworks moderate the relationship between supplier's use of green manufacturing technology and firm performance. The figure shows that a rise in supplier's use of green manufacturing technology in firms that have regulatory and policy frameworks (above average firms) lowers performance moderately. A rise in supplier's use of green manufacturing technology in below average firms in regulatory and policy frameworks has no impact on performance. To confirm the level of moderation, a model analysis was done and the results of tests conducted on the moderating effect of regulatory and policy frameworks on the relationship between supplier's use of green manufacturing technology and firm performance of energy and petroleum state corporations in Kenya. The results indicate existence of moderation effect with adoption of green environment. R² changed from .005 to .021 after moderation, with p-value of .031. The results indicate that regulations and policy framework has a high moderation effect on the relationship between supplier's use of green manufacturing technology and firm performance. Analysis of variance (ANOVA) revealed that moderated supplier's use of green manufacturing technology has an F statistic of 1.029 and the $P < 0.032$ which is greater than 0.05 implying that the mean difference of moderated supplier's use of green manufacturing technology and performance of energy and petroleum state corporations in Kenya was statistically significant at a level of significance of 0.05.

DISCUSSION

The results clearly show that by considering supplier's use of green technology as a criterion when procuring by energy and petroleum state corporations in Kenya, firm performance is affected. The effect is mild and negative. The effect is greater in firms that have green regulations and policies. This is centrally to the findings by Carter et al (2000) who posited that environmental monitoring of suppliers, which in part ensures green value addition chain, increases a firm's performance by reducing disposal and liability costs and improves public image.

It also goes against the findings of Walton et al (1998) who argued that green procurement practices, such as supplier audits to ensure use of green technology, raise firm performance by reducing waste and saving on energy use. Monitoring Supplier's use of green manufacturing technology is a management practice.

Literature on adoption and implementation of management practices however shows that there is a possibility of such an occurrence. Studies by Zhu and Sarkis, (2007), Yang, et al (2010), Ru-Jen and Chwen (2012), among others all indicate that when management practices are adopted to satisfy external pressures and expectations, the practices may not result to improved performance. They argued that the might adoption instead lower performance. This study results indicate that the monitoring of supplier's use of green manufacturing technology was mainly aimed at improving the organizations' image, attract green donors and to satisfy legal requirements as well as being part of corporate social responsibility, not to improve efficiency.

IMPLICATION TO RESEARCH AND PRACTICE

The study has proved that although most of the energy and petroleum state corporations in Kenya have instituted some measures towards green procurement such as monitoring supplier's use of green manufacturing technology, without proper strategy on how such practices improve internal efficiencies of the firm, the said practices might be counterproductive.

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