

DETERMINANTS OF ADOPTION OF GREEN PROCUREMENT IN THE PUBLIC SECTOR: A CASE STUDY OF KENYA PIPELINE COMPANY**Fredrick Nasiche**

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ABSTRACT

Green Public Procurement has become a policy tool for many Governments due to concerns of the environment, Sustainability, climate change and its effects. Many governments and international agencies are consciously including environmental and social considerations in their procurement processes. In Kenya, adoption of green procurement has been slow resulting in lower diffusion rate. This research sought to assess factors that determine the adoption of green procurement in the public sector, specifically Kenya Pipeline Company (KPC) based on the following variables: Organizations' green capacity; Cost of green products; Organizations' green incentives and pressure and Green supply capacity. The target population of this study was officers in KPC who are directly involved in the procurement function. Random cluster sampling method was employed to select a representative sample which yielded 90 members of staff from a population of 460. Semi-structured questionnaires were administered. Data was analyzed using frequencies and regression in SPSS (Statistical Package for Social Sciences). Information was presented in tables and graphs. The study found out that organization's green capacity, incentives and pressures are the main determinants of green Public Procurement adoption at KPC. The other factors studied; cost of green products and green supply capacity were not found to be significant. These results are an indication that the success of green public procurement relies heavily on enhancing the internal capacity of the organization. The findings confirmed studies by earlier researchers in the subject while at the same time contradicted others. A number of managerial and policy implications can be derived from this study. First, whereas some progress has been made in KPC to streamline adoption, there remains much to be done to take implementation of GPP to the next level. The research also points to the strong need for public institutions to rely on awareness, competence and knowhow of its personnel.

Key Words: *Green public Procurement, Sustainable Procurement, Environmental consideration*

Introduction

The World Summit on sustainable Development in 2002 made a call “to promote public procurement policies that encourage development and diffusion of environmentally sound goods and services (Walker & Brammer, 2009).” In that spirit governments, private companies and international agencies have increasingly included social and environmental criteria within their procurement processes in order to contribute to broader organizational goals of sustainable development (Srivastava, 2007; Brammer & Walker 2011; Preuss, 2009; Nijaki & Worrel, 2012). Public procurement has been identified as a tool that can shape supply selection decisions, waste management and disposal, pollution reduction and compliance with environmental regulations (Testa, Iraldo, Frey & Daddi, 2012). Globally, green procurement (GP) has taken over as the new competitive frontier (Rao & Holt, 2005). This means that organizations buy supplies and services by taking into account- the best value for money (price, quality, availability, functionality); environmental aspects over the entire life cycle of products; and social aspects - issues such as poverty eradication, labour conditions, human rights (Lysons & Farrington, 2012; Rimmington, Smith & Hawkins, 2006; Brammer & Walker, 2011).

The publication of the Brundtland commission report “Our common future” on sustainable development (WECD, 1987) brought forward issues that promote public policies that encourages development and diffusion of environmentally sound goods and services have provided impetus and the much need inspiration towards policy formulation and adoption (Thomson & Jackson, 2007). According to Thai (2006) green purchasing is the adding of environmental aspects to price and performance criteria when making purchasing decisions as opposed to the fixation with price as the only criteria. Leading international agencies that have included environmental issues in their procurement guides include the International Bank for Reconstruction and Development (IBRD), African Development Bank (AfDB) and United Nations (UN). Specific countries that have mainstreamed environmental agenda in their procurement policies include the United States of America (Swanson, et al 2005); South Africa (Bolton, 2006; 2008) and Asia (Ho, Dickinson & Chan, 2010). In Europe, the directives (2004/17/EC and 2004/18/EC) have specific guidelines that require member countries to implement, thereby bringing about rapid environmental diffusion and visibility.

Locally, green procurement has been a logical extension of this work (Brammer & Walker, 2011), yet Kenya as one of the developing countries has been slow in taking up structured and policy driven approach to enhancing adoption of GP, the benefits accruing notwithstanding (Bolton, 2006; 2008). The Public Procurement and disposal Act, 2005 and subsequent regulations 2006 and 2009, which are the core points of reference on public procurement in Kenya were reviewed and makes only a very weak reference to GPP.

Statement of the Problem

Kenya Pipeline Company annual accounts report for 2011/2012 financial year show that net profit after tax increased by 81% from Kshs. 3.8 billion in 2011 to Kshs. 5.5 billion in 2012.

The good performance is however marred by allegations of irregular procurement at the company, including non-adherence to environmental issues. Kenya Anti-corruption Commission report 2009/2010 show that the company was investigated for allegations of irregular procurement and award of a tender for rehabilitation of the line 1 pipeline, costing Kshs.7600M (KACC, 2011). Tones of 'dirty' super petrol found its way into its pumping system, and were at a loss to explain how 600,000 tones found its way into the pipeline (KPC, 2012). In May, 2012, the company had to halt supply after the pipeline leaked leading to fire in Mukuru- Sinai slums in Nairobi. Further, in June, 2012; KPC had to halt supply through Nakuru when the pipe line burst (KPC, 2012). Similar cases have been recorded in Africa. For example in Nigeria, fire broke out on pipeline Ilado, Lagos Island on May 12th 2006 resulting in more than 200 deaths (Balogun et al, 2006). The loss of fuel through pipeline was as result of leaks and busts which occasion high frequent replacement and lifecycle costs, including normal operational disruptions (Onyekpe & Dania, 1997). Oil transportation impinges on the environment: the ecosystem; air, water, land and the economic loss resulting from compensation. These occurrences are rampant at KPC and point to inefficiency in the procurement, management and transport systems.

Local studies so far done have focused on procurement in general (Otieno2004; Akech, 2005). Available evidence point to the issues of environment being at the heart of most governments and international agencies agenda. Whereas Kenya is expected to be in this league, evidence available points to weak policy and institutional capacity. The fuel products handled by KPC are highly inflammable with resultant effects on environment, economic and human catastrophes associated with leaks, which makes it a candidate for implementation of green procurement. No study has ever been done with regard to determinants of adoption of green procurement in KPC. This study therefore was intended to fill in this existing research gap.

General objective

The study sought to assess the determinants of green public procurement adoption in Kenya with special focus to Kenya Pipeline Company.

Specific Objectives

1. To determine whether organization capacity determines adoption of green public procurement at Kenya Pipeline Company;

2. To ascertain how cost of green products, services and works determines adoption of green public procurement at Kenya Pipeline Company;
3. To assess whether organization green incentives and pressures determines adoption of green public procurement at Kenya Pipeline Company;
4. To establish how green supply capacity determines adoption of green public procurement at Kenya Pipeline Company.

LITERATURE REVIEW

Theoretical Review

Agency Theory

According to Jensen and Meckling (1976), an agency relationship is “a contract under which one or more persons (principals) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent.” In this relationship, the agent must act in an honest way since the chosen actions have consequences for both parties. Consistent with the tenets of agency theory, it is assumed that agents i.e. purchasing officials are rational, self-interested people. This concept assumes that the principal and agent do not share the same levels of information, and as such, the agent can exploit a situation, sometimes to the disadvantage of the principal. Agency theory is most relevant in public contracting. Situations arise where there is a substantial conflict of interest between principals and agents and sufficient outcome uncertainty to trigger the risk implications of the theory (Eisenhardt, 1989). This is particularly relevant to public procurement functions as staff may have conflicting interests contrary to laid down procedures thus affecting adoption of green procurement as espoused in the Public Procurement Policy of 2009.

Stakeholder Theory

A stakeholder is “any group or individual who can affect or is affected by the achievement of an organization’s objectives” (Freeman, 1984). It is well known that companies produce externalities that affect different stakeholders. These externalities often cause stakeholders to increase pressures on companies to reduce negative impacts and increase positive ones. The theory suggests that a firm should pursue strategies that consider the parties affected by decisions while trying to minimize damage or maximize benefits to the representative groups (Freeman 1984). This calls for companies to think beyond financial performance but have obligations towards society and its constituent groups, (Jones, 1980). In this interplay businesses’ obligations go beyond the traditional fiduciary duties to shareholder and extend to the customers, employees, suppliers and neighboring communities (Jones, 1980). Clarkson (1995) perceived the firm as a system of stakeholders considered legal entity which operated for the benefit of the society. He

held that the purpose of the firm was to create wealth or value to the equity holders and stakeholders.

Public sector in particular has to meet the different needs of stakeholders, particularly when environmental issues are introduced (de Brito et al., 2008). According to Boyne (2002, public agencies are owned collectively by members of political communities and this comes with it the pressure to meet the interest of all stakeholders. Governments usually creates environmental regulators as governmental agencies that have the authority to formulate environmental requirements and inspect the firm's compliance to those requirements and those that fail to comply risk incurring non-compliance penalties (Henriques & Sadorsky, 1996) and having their operating permits recalled and the operations closed. In aggregate, the above views point to the fact that there is a positive relationship between stakeholder pressures and the adoption of green procurement practices. Donaldson & Preston (1995) posits that drivers for green procurement adoption generally emanate from pressures of external and internal stakeholders such as government, investors, customers, suppliers, community groups and employees as well as from organizational culture or moral values related to doing the right or acceptable things (Carter & Jennings, 2004).

Resource-Based View

The resource based view holds that organization resources that are valuable, rare, and hard to substitute are the basis for competitive advantage (Melville, Kraemer & Gurbaxani, 2004). A firm's resources have been defined as all assets, capabilities, organizational processes, firm attributes, information, and knowledge owned by an enterprise that enable the firm to conceive of and implement strategies with the goal to improve its efficiency and effectiveness (Barney, 1991; Daft, 1983). Prahalad & Hamel (1990, 1994) popularized the approach using the concept of core competences. While competences express what a firm is able to do well (Prahalad & Hamel, 1990), core competencies encompass what the firm is able to do better than others (Lawson & Lorenz, 1999). In the resource based view, the allocation of resources to non-core activities leads to opportunity costs. This is particularly important in green procurement in the public sector. There is compelling evidence suggesting that most green products, services and works tend to cost more than non-green counterparts (Bouwer et al., 2006; Brammer & Walker, 2011). In view of the complex competing public expenditure needs relative to the scarce resources, chances are that resources allocation will affect adoption of green public procurement.

Power-Dependence Perspective

Buchanan (1992) conceptualized power-dependence imbalances in buyer-supplier relationships as the difference in value that buyers and sellers attach to the relationship. Several authors (Johnsen & Ford, 2002; Kumar et al., 1995) use the term interdependence asymmetry in this respect, which they define as the difference between the two partner's levels of

dependence. Buyer supplier relationships that are characterized by interdependence can be deficient because the dominant partner experiences high power and might be attempted to exploit it (Ireland & Webb, 2007). McDonald (1999) states in this respect that power imbalances within a buyer-supplier relationship can lead to unhealthy partnerships. In the long run the position of the weaker party will be eroded and the partnership will be destroyed (Saunders, 1997). In the context of green public procurement, if suppliers exhibit total power position, they are likely to resist green supply requirements and vice versa. Therefore in practice each of these aspects has a significant impact on the adoption of green procurement in the public sector.

Empirical Review

Organization Green Capacity

This factor focuses on the informational aspects to implementation of GPP. In order for an organization to be able to effectively implement GPP activities, it is vital that organizations understand the concept of GPP and government policies with respect to it and that they have the tools necessary to undertake GPP. De Boer & Telgen (1998) in their study reported that many public institutions were not conversant with the legal obligations to follow in public procurement laws thereby leading to non-compliance with the law. To many practitioners, the procurement laws are not explicitly clear and in many case their interpretation is subjective. Therefore, familiarity with the rules by both purchasers and suppliers can influence the chance that public agents will comply with the rules. This leads to the notion that there exist a relationship between familiarity with the green procurement rules and its compliance. study by Bouwer et al. (2006) found that operational and/or information tools were key in establishing environmental criteria in public procurement while Walker & Brammer (2009) found that the main problems limiting adoption of green public procurement was lack of information about the real environmental impacts of the products, difficulty in the preparation of call for tenders and purchasing, and lack of guidelines. Lack of clear definition and evaluation criteria for Green procurement has also been identified as a barrier to GP (Gattiker et al., 2008; Ashenbaum, 2008). Ashenbaum (2008) show that in most cases, sustainable procurement is not seen as legitimate or necessary initiatives for upper management or administration to address as the necessary measures are often seen as an added cost with little immediate benefit to the organization. Bouwer et al. (2006) further showed training and competence in environmental matters was key to successful adoption of green procurement in the public sector. Bjorklund (2011) further found that environmental awareness is an important driver in the environmental purchasing.

Costs of Green Products

The role of financial aspects attached to GPP, particularly perceptions of the financial viability of implementing GPP play crucial role in shaping the degree to which SP policies are acted upon since green/socially responsible production methods are often perceived of as being inherently more expensive than other methods (Bouwer et al., 2006). Given the tight budget constraints and countervailing objectives faced by most public sector organizations, perceptions regarding the cost-effectiveness of GPP do play a particularly important role in decision making.

A study by Bouwer et al. (2006) indicated increased cost of green products compared to those not environmentally friendly as a major barrier to adoption. Brammer & Walker (2011) says that often sustainable products simply cost more than conventional products where there is little regard to either the environmental or social implications of the production process in addition to cost for employee training or extended time engagement with suppliers.

Organization Incentives and Pressures

The degree to which GP is implemented in organizations concerns organizational attitudes and incentives for GPP. Other issues includes the extent to which there is support for GPP at senior levels in an organization and the degree to which organizational processes and structures support, or retard, the development of SP (Bjorklund, 2011; Ashenbaum, 2008).. It is further argued by Teutemann, (1990) that sole concern bureaucrats in the public sector is try to exhaust fully their procurement budget so as to avoid reductions in their future budget, hence cost reductions due to competitive procurement procedures in one year do not necessarily result in increase in subsequent budgets. This is a pointer to lack of professionalism as a hindrance to compliance with the public procurement law (De Boer & Telgen, 1998). In the public sector, procurement officers are the agents of the principal (the state) to realize the goals and objectives of the state. Therefore, the goals of the agent must be in conformity with that of the principal (the state) in order to achieve efficient reform in the public procurement programme. Top management support is critical to the success of either a successfully sustainable procurement strategy. Bjorklund (2011) found that priorities among the top/middle management are important drivers in the environmental purchase. Without high level support employees are often unwilling or unable to pursue GPP initiatives (Ashenbaum, 2008). Further, lack of trained staff to implement GPP programs has also been identified as a barrier to GPP initiatives.

Green Supply Capacity

The supply-side of the procurement transaction plays a crucial role in availability of sustainably-produced goods and services. Given that some of the goods and services procured by the public sector are highly specialist, it is possible that identifying sustainable sources of supply may be very challenging in some contexts (Lysons & Farrington, 2012). Recognition of supplier resistance or acceptance is essential for compliance with the procurement rules. To avoid non

compliance all suppliers may be required to provide proof of their commitment to environmental protection. This may take the form of statements on the steps they are taking to reduce their impact on environment, or alternatively to demonstrate that they are not in breach of any statutory requirements relating to the environment (Saunders, 1997). In addition, suppliers should consider the environmental impact of their products through the whole life cycle, from ‘cradle to grave’. Walker & Brammer (2009) indicated that the main problems limiting adoption of green public procurement was difficulty in engaging suppliers. Some GPP initiatives were found to be hampered by unwillingness of suppliers to cooperate (Lysons & Farrington, 2012). This unwillingness could be due to a number of reasons including concerns over sensitive information, poor supplier practices, and resource constraints

Research Methodology

Research Design

Research design means the general plan or roadmap of how one goes about answering the research questions. It is a structure that helps to obtain answers to research questions (Cooper & Schindler, 2006). The research designs used in this study was a descriptive research design (Mugenda & Mugenda, 2003). This method was considered appropriate as it was capable of highlighting unique aspects of the selected case. It is used when collecting information about people’s attitudes, opinions and habits, including protection of bias and reliability (Orodho & Kombo, 2002; Kothari, 2008). Factors affecting the adoption green procurement in KPC were best described by use of a case study.

Sample and Sampling Technique

A representative sample of 90 KPC officers was selected using probability proportional to size randomly sampled to participate in the study. The staff was first clustered by department and the number of staff to be selected from each department was proportional to the size of each Department. These were staff that participates in procurement activities as their daily function.

Data Quality and Analysis

The study generated both quantitative and qualitative data due to the nature of the instrument adopted which consists of semi-structured questionnaires. The researcher first cleaned the data after getting the questionnaires from the field. Data was merged and tabulated on tabulation sheets on Microsoft excel as well as the SPSS (Statistical Package for Social Sciences) to ease calculations. Reporting of data was done using descriptive statistics including frequency tables, percentages, means, simple graphs, tables and charts. Qualitative responses were discussed and content analysis done whereby various responses were organized into content form. Qualitative

analysis involved coding and organizing collected data into themes and concepts that address the research questions (Mugenda & Mugenda, 2003). In addition to the descriptive statistics, the following regression model was used to rank the relative importance of each factor.

$$\text{Green Public Procurement} = \alpha_0 + \beta_1 \text{ organization green capacity} + \beta_2 \text{ cost of green products, Services and works} + \beta_3 \text{ organization green incentives and pressures} + \beta_4 \text{ green supply capacity} + \varepsilon \dots \dots \dots (1)$$

Using the model the researcher was able to empirically test whether; organization green capacity, cost of green products, services and works, organization green incentives & pressures, and green supply capacity determined adoption of green public procurement at KPC. All the variables were measured by set questions. After which, a composite index was developed and aggregated for each of the independent variables upon which the dependent variable was regressed. The dependent variable was measured using a set of questions and an index developed.

Research Results

The study found that (71%) of the respondents have worked at KPC for more than 3 years. All respondents had achieved post-secondary qualifications with 10% having certificate, 22% held diploma, 25% are graduate degree holders while 42% had postgraduate degrees. Thus, the majority of the respondents (67%) had at least a degree. This finding correlates well with that on organizational hierarchy (84%) of the respondents in the study were in managerial positions (middle level and top level management) and hence had a clear understanding of the procurement function in the institution, thus making the information acquired more reliable. Further the results indicate that majority of the study participants were males (70%), aged above 30 years with more than 10 years in public procurement.

Organizational Green Capacity

Respondents agreed that training was helpful in their current roles (75%) posting a mean of 3.3 and standard deviation of 0.9; that understanding of sustainable procurement regulations in Kenya is vital as shown by 67% of the respondents with mean of 3.2 and standard deviation of 1.3 respectively. Further, 63% of the respondents agreed that understanding of green procurement regulations in Kenya is important in enhancing internal capacity as accounted for by a mean of 3.2 and standard deviation of 1.3. In addition, 50 % of the respondents agree that awareness of green procurement regulations is key to building internal capacity as shown by a mean of 0.5 and a standard deviation of 0.5. However, it is noted that only 46% acknowledged that knowledge of international green procurement regulations play a role in internal capacity building as shown by a mean of 0.2 and a standard deviation of 0.9. A proportion of trained staff in GPP is low (33%), with a mean of 2.2 and a standard deviation of 1.2. As to whether KPC has green procurement guidelines, 17% of the respondents agreed as shown by a mean of 3.8 and

standard deviation of 1.2. Only 16% of the respondents thought KPC has a green procurement policy with just 10% indicating that it has been communicated. Staff trained on the use of green procurement policy was low with only 10% agreeing that they have been trained. A mean and standard deviation of 0.3 and 0.2 respectively was recorded. Further the capacity building program may have enhanced staff understanding, awareness and knowledge of green procurement regulations and principles both in Kenya and internationally (46-67%). However, notably, KPC has not documented clear green procurement guidelines and policies as relatively fewer staff rated the organization to have achieved much in this regard (16-17%). Further, a handful of staff seems to have received the communication and training on the use of KPC Green Procurement Policy. Overall the KPC internal GPP capacity is low and this is likely to affect adoption GPP practices in the organization.

Cost of Green Products, Services & Works

The study findings reveal that 70% of the respondents do not think that green products, services and works cost more than non-green ones while 30% agree. The respondents were further asked to indicate whether the cost of green products, services, and works has prevented KPC from going green procurement and if so to what extent. The results indicate that cost is not a major factor (85%) limiting the adoption of GPP at KPC, while 15% agreed that cost is a factor. Of those who indicated that cost was an adoption deterrent, only 18% rated it highly (to a large and to a very large extent), somewhat as shown by 25%, to a small extent 18% and to very small extent 39%.

Organization Incentives and Pressures

The specific objective of this section was to assess whether organization green incentives and pressure determines adoption of GPP at Kenya Pipeline Company. The results show that top management support for GPP implementation at KPC stands at about 45%; with mean of 0.47 and standard deviation of 0.3. This is 55% short of the desired full commitment by top management, Table 4.6. As to whether top management has incorporated green procurement in the overall corporate strategy, 25.8% of the respondents thought so with mean of 0.3 and standard deviation of 0.2. There is no specific department dealing environmental issues as evidenced by 22.6% of the respondents with mean of 0.2 and standard deviation of 0.2 only. The analysis indicates that external pressure on the company to implement green procurement is very low (19.4%) with the mean of 0.2 and standard deviation of 0.3. Top management support for leadership of GPP stands at 50% with mean of 2.5 and standard deviation of 1.4; training support at 45% with mean of 2.2 and standard deviation of 1.2; communication and financial support at 46% with mean of 2.3 and standard deviation of 1.2 respectively.

Green Supply Capacity

The specific objective of this section was to establish how green supply capacity determines adoption of GPP at KPC. The results indicate the respondents were divided on the question of whether there are adequate green suppliers of products, services and works in Kenya with 55% of the respondents with mean of 0.6 and standard deviation of 0.5 saying it would be difficult. However about 39% of the study participants with mean of 0.4 and standard deviation of 0.4 indicated that suppliers of products, services and works in Kenya are available and 29% of the respondents with mean of 0.3 and standard deviation 0.5 indicated that suppliers have the technical and operational capacity to satisfy KPC tender requirements. In addition, 20% of the respondents said that KPC suppliers have been resistant to green procurement requirements in tenders. Results also indicated that supplier resistance to green procurement requirements in tenders' stands at 12.9%, this has not prevented KPC from going green in procurement.

Inferential Analysis

Descriptive Statistics

This section sought to provide a description of the variables used in describing the determinants of adoption of green procurement in the public sector. In the findings, there were 62 observations which were used for this study for all the variables. Mean scores for organization capacity, cost of green products, green incentives and pressure, and green supply capacity were 3.47, 2.49, 3.26 and 3.80 respectively. In order to find out the determinants of adoption of green procurement in the public sector and thus be able to answer the four research questions conclusively, inferential statistical analysis was done. First and foremost, correlation analysis was done.

Correlation Analysis

Bivariate Pearson correlation was used to examine if there is any correlation between the proposed model dimensions. The results show that the correlation coefficients are more than 0.7 which means that there is a strong positive correlation between model dimensions. Table 1 presents the results.

Table 1: Pearson Correlation Analysis

Dimension	Green Procurement	Public	Organization Capacity	Cost of Green Products	Green Incentives and Pressure	Green Supply Capacity
Green Procurement	1					
Organization Capacity	0.913		1			
Cost of Green Products	0.892		0.927	1		
Green Incentives and Pressure	0.903		0.931	0.915	1	
Green Supply Capacity	0.911		0.916	0.929	0.922	1

The greatest correlations are between green incentives & organization capacity and green supply capacity & cost of green products having a correlation of 0.931 and 0.929 respectively. The correlation test shows that green incentives will determine organization capacity which improves GPA. Green supply capacity also determines cost of green products given it is the second greatest correlation.

Regression Analysis

Table 2: Strength of the Model

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
dimension	.796a	0.633	0.594		0.30202

a. Predictors (Constant): Organization Capacity Cost of Green Products, Green Incentives and Pressure and Green Supply Capacity.

Analysis in table 2 shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) R² equals 0.633 that is, organization capacity, cost of green products, green incentives and pressure and green supply capacity leaving only 36.7 percent unexplained.

ANOVA Analysis

Table 3: Anova Analysis

Model		Sum of Squares	df	Mean Square	Sig.
1	Regression	2.976	1	1.494	.000 ^a
	Residual	1.466	61	.091	
	Total	3.442	62		

a. Predictors: (Constant), Organization Capacity, Cost of Green Products, Green Incentives and Pressure and Green Supply Capacity

b. Dependent Variable: Green Public Procurement

The P-value (Sig.) of 0.000 (Less than 0.05) implies that the model of GPA is significant at the 5 percent significance level. ANOVA findings (P-value of 0.00) in table 3 show that there is correlation between the predictor's variables (Organization Capacity, Cost of Green Products, Green Incentives and Pressure and Green Supply Capacity) and response variable (GPA). An F ratio is calculated which represents the variance between the groups, divided by the variance within the groups. A large F ratio indicates that there is more variability between the groups (caused by the independent variable) than there is within each group, referred to as the error term. The regression coefficients are shown in Table 4 below.

Table 4: Regression Results

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta			
1	(Constant)	.199	.032			.870	.000
	Organization Capacity	.187	.162	.041		.335	.000
	Cost of Green Products	.042	.007	.161		.666	.000
	Green Incentives & Pressures	.555	.216	-.643		.256	.000
	Green Supply Capacity	.154	.022	.093		.182	.000

a. Dependent Variable: Green Public Procurement

These are the values for the regression equation for predicting the dependent variable from the independent variable. The regression equation is presented below.

Regression equation:

$$GPP = 0.199 + 0.187X_1 + 0.042X_2 + 0.555X_3 + 0.154X_4$$

Where:

Constant = 0.199, shows that if Organization Capacity, Cost of Green Products, Green Incentives and Pressure and Green Supply Capacity all rated as zero, GPP would be 0.199.

X1 = 0.187, shows that one unit organization capacity results in 0.187 units increase in GPP

X2 = 0.042, shows that one unit cost of green products results in 0.042 units increase in GPP

X3 = 0.555, shows that one unit green incentives and pressure results in 0.555 units increase in GPP

X4 = 0.154, shows that one unit green supply capacity results in 0.154 units increase in GPP

The existence of organization capacity and Green Incentives and Pressure incentives are perceived to be playing a significant role in stimulating adoption Green Public Procurement in KPC as opposed to cost of green products and green supply capacity. This result indicates that the success of green public procurement relies heavily on internal capacity, incentives and pressure factors rather than factors exogenous to the organization. The standardized beta coefficient shows that green incentives and pressures is the most significant in influencing green public procurement followed by organization green capacity. In summary, this study has mainly fulfilled the research objectives. It has identified the factors that could contribute towards green public procurement adoption at Kenya Pipeline Company. The result obtained shows significance and inconsonance when compared to previous studies in other countries.

Summary of the Major Findings

Organizational Green Capacity

The study found out that although the proportion of procurement staff that has been trained in GPP was low, the training was effective in implementing GPP at the organization. The GPP capacity building program enhanced staff understanding, awareness and knowledge of green procurement regulations and principles. These are inconsonance with a bulk of evidence showing that the information campaigns, sensitization on GPP opportunities and training courses for procurers are critical for increasing the capability of public bodies to adopt and effectively “use” environmental criteria in their purchasing strategies and decisions (Iraldo et al., 2007; Hart, 2005; Francesco et al., 2012). Therefore it can be concluded from the statistics that organizational capacity is a key determinant of adoption of GPP at KPC. Despite the key milestones that GPP

training has brought, the organization was yet to publish green procurement guidelines. Overall analysis showed that the KPC internal GPP capacity is low and this is thus likely to affect adoption GPP practices in the organization.

Cost of Green Products, Services & Works

Survey respondents were of the contrary opinion as to whether green products, services and works cost more than non-green ones. The principal underpinning this result is because the marginal economic and sustainability benefits of GPP are far much higher than the marginal costs especially so in the long-run as observed by Chen (1991). The results also showed that cost is not a major factor limiting the adoption of GPP at KPC. However the findings are in contradiction to the earlier study by Bouwer et al. (2006), Brammer & Walker (2011) which found that increased cost of green products as a barrier to adoption. On the other hand the findings are supported by United Nations (2008) which found that green products, services and works do not cost more in the long term. These results from the statistic show that cost of green products, services and works was not a major determinant of adoption of GPP at KPC.

Organization Incentives and Pressures

The study found out that top management support in terms of training, communication and financial for GPP implementation at KPC stands at about 50%. Study participants indicated that the organizations top echelons are yet to fully integrate green procurement in the overall organization strategy. Further, external pressure to the organization to implement GPP has been limited as KPC strives more to adhere to NEMA requirements than streamline the GPP policy. These findings reinforce the well-known theory of compliance capture by Stigler (1971) that public institutions are likely to default on regulatory requirements that seek to achieve wider public good and rather extend their vested interests especially when compliance enforcement was weak. The findings from the statistics confirmed that internal organization incentives and pressures are critical determinants to the adoption GPP at KPC, in line with earlier empirical findings by Bjorklund (2011) who found out that top/middle management was an important drivers in the environmental purchase.

Green Supply Capacity

The analysis show that there is limited numbers of green suppliers of products, services and works in Kenya who has the prerequisite technical and operational capacity to satisfy KPC green tender requirements. However, most of the available suppliers have not shown resistance to the implementation of green procurement requirements in tenders. Further analysis indicated that the lack of local green supplier capacity was not a major determinant in KPC GPP adoption owing to the liberalized global trade that makes it easy to float and source tenders globally at a competitive price. The findings are in contradiction with study by Walker & Brammer (2009)

which indicated that the main problems limiting adoption of green public procurement as difficulty in engaging suppliers.

Main Determinants of GPP Adoption at KPC

The study found out that incentives and pressures (Bjorklund, 2011) and organization green capacity (Iraldo et al., 2007; Hart,2005; Francesco et al., 2012), are the main determinants of Green Public Procurement adoption at KPC. The two variables each has standardized beta coefficient of .555 and .187 at 99%confidence level. The other factors studied; cost of green products and green supply capacity were not found to be significant. These results are an indication that the success of green public procurement relies heavily on enhancing the internal capacity rather than of focusing on the exogenous environment.

Conclusions

In this study, the researcher explored the current status of sustainable procurement practice in KPC and how the different factors determine GPP adoption. In summary, this study has mainly fulfilled the research objectives. It has identified the factors that could contribute towards green public procurement adoption in the public sector in Kenya. The result obtained for significant determinants (green capacity, incentives and pressures) shows significance and inconsonance when compared to some previous studies in other countries. At the same time, supplier capacity and cost of green items did not show any significant impact on GPP adoption, in contradiction with earlier studies (Bouwer et al., 2006; Brammer & Walker, 2011).

A number of managerial and policy implications can be derived from this study. First, even though some progress has been made in KPC to streamline adoption, there remains much to be done to take implementation of GPP to the next level. Indeed it has been recognized implementing GPP is a slow and evolving process, even in the most advanced countries, GPP is still work in progress and an evolving practice in Kenya. The research also point to the strong need for public institutions that intend to develop a GPP-oriented strategy to strongly rely on awareness, competence and knowhow of its personnel involved in the procurement activities at different levels.

Recommendations

Provide for ongoing skills development, continuous training and capacity building of staff on GPP related issues: The study findings clearly emphasize the need for an organization to implement an effective capacity building and awareness-raising action on its human resources, both by means of spreading information on GPP tools and opportunities and by intensively training the key-personnel on how to set up a tendering procedure, define the requirements, qualify the suppliers, and identify the best offer for “sustainable value for money”. Accordingly,

all staff involved in the procurement function should continuously upgrade their skills in order to be able to appreciate the latest innovations in green product design, to enable them design sustainable tenders documents. Part of this process should also involve easing access to capacity building tools and information resources through online information repositories; 2) enhance the supervisory and regulatory capacity of Public Procurement Oversight Authority: This will enable PPOA to come up and enforce green procurement regulations. The institution also needs to come up with clear and elaborate GPP implementation guidelines for the entire public sector. Supporting instruments for GPP implementation including product guidance based on the principles of life cycle thinking as well as eco-labeling, eco design and re-manufacturing tools and techniques should be developed by PPOA as a matter of priority. PPOA should also develop a national action plan for GPP; 3) Make GPP part of the performance contracting goals for all public sector institutions. Public sector employees should be encouraged to spearhead GPP uptake. Therefore the GPP drive should form part of the performance variables and assessment should be done based on how environmental issues have been included in the entire procurement process and 4) Align both legal and fiscal policies to enhance faster GPP uptake in the private sector: The regulatory mechanism should take the form of rules, laws, sanctions and incentives that when enforced will result in constraints and inducement to organizations to make necessary changes in their structures and processes. These actions may force organizations to behave in certain ways in order avoid penalties and encourage the use of recyclable materials, waste reduction and conservation of energy.

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