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Evaluation of Factors Affecting Implementation of Green Public Procurement in Laikipia County Government, Kenya

Ngunjiri Elijah Mwangi¹, Kenneth Lawrence Wanjau², Humphrey R. Omondi³

ABSTRACT

Green Public Procurement has been used as a tool to achieve environmental objectives by some countries especially in Europe. County governments in Kenya are allocated between 15 and 45 percent of the total country's income. Despite all these finances Counties possess, many of them do not fully use their purchasing power to achieve environmental objectives. Laikipia County for example, did very well on procurement activities to be ranked the best performing entity in public procurement in Kenya in 2014, yet it did not have a similar identity on Green Public Procurement. It is this research gap that this study sought to fill. The study was guided by knowledge gap, buyers' perception, management policies and technical capacity of suppliers as independent variables and implementation of Green Public Procurement as the dependent variable. The study population was 45 employees from Laikipia County government drawn from procurement and finance department. Primary data was collected by use of a self-administered semi structured questionnaire. Statistical model of multiple regression were used in analysis of data. The study established the value of knowledge gap, $\beta_1=0.561$, buyer's perception on GPP, $\beta_2=0.143$, management policy, $\beta_3= 0.095$, and technical capacity of suppliers to supply GP, $\beta_4=0.142$ had all have a positive effect on GPP implementation. The study recommends County governments to organize for compulsory training of its staff on GPP, conduct lifecycle costing of all products procured, create awareness of importance of introducing a GPP policy, and ensure all suppliers dealing with them have requisite environmental certification from the National Environmental Management Authority.

Keywords: Convectional Products, Environmental Objectives, Green Products, Green Public Procurement, Resources Sustainability.

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1. Introduction

Green Public Procurement (GPP) is the process by which public entities procure environmentally preferred goods, services and works, and incorporate environmental requirements in

¹ Corresponding Author, Department of Business and Entrepreneurship, Karatina University, Kenya. +254-720-422-363.

² Department of Business and Entrepreneurship, Karatina University, Kenya.

³ Department of Economics, Karatina University, Kenya.

the procurement process. Expenditure on Public procurement accounts for 15 to 30 percent of Gross Domestic Product of the many countries (UNEP, 2013). GPP involves the government entities using their superior purchasing power to influence the producer or market to produce or purchase goods and works that have less impact on the environment. Several government agencies have discovered their power in promoting availability of green and clean products. This is done by these agencies increasing the demand of green products during tendering by specifying recyclable products, non-toxic and energy conserving products (Walker & Preuss, 2008).

Green Public Procurement is significant in countries and regions where it is largely implemented. Green Public Procurement ensures Resources sustainability to cater for future generations, transforms the market to be more innovative to produce green products, cost saving during procurement and disposal of goods and services. In addition governments through their large purchasing power have used GPP as a tool to achieve environmental objectives by buying environmentally friendly goods (Omwaha, 2015).

Green Public Procurement has been considered differently in different parts of the world. In Europe, European Union is keen on ensuring that products from member countries do not impact negatively to the environment. The European Commission (EC, 2005) identified Finland, Denmark, United Kingdom, Germany, Austria, Sweden and Netherlands as the countries which have adopted GPP. In Sweden, the Ministry of Environment is charged with the responsibility of ensuring Sustainable Procurement. Netherland has proved to be committed to GPP through the Ministry of Infrastructure and Environment [Carbon Disclosure Product (CDP), 2013].

United States of America (USA) adopted GPP in 2009. The country's Agency on Environment Protection requires federal agencies to ensure that 95 percent of all contracts for products and services are green or environmentally preferred products (CDP, 2013). In China, the central and provincial governments are required to give priority to green Product listed in the green products inventory in their procurement process. The list includes a range of products such as cars, and materials for construction approved by Chinese certification committee for environmental labelling.

Japan government introduced the law of promoting Green Purchasing in the year 2000 to make procurement of eco-friendly goods mandatory for all public entities (UNEP, 2014). The country also developed a policy in 2013 committing all government institution to initiate their own policies to minimize environmental impact.

In Africa, Ghana is named as the first African country to implement GPP (UNEP, 2013). In South Africa and Ghana the GPP has led to the emergence of markets in foods, renewable energies, and energy efficiency [International Institute for Sustainable Development, (IISD), 2011].

Roos (2013) highlights that Kenya has taken some substantial steps toward GPP. This includes the development of several separate policies on GPP for example; enactment of environmental policies and directives aimed at reducing paper consumption through duplex printing, prohibiting the use of high fuel consuming vehicles by public officers, use of energy saving appliances in public institutions, and promoting the building of solar water heating houses. Other efforts include government's implementation, through the Ministry of Energy; of renewable energy feed tariffs in 2008. This is based on the acknowledgement that consumption of renewable energy such as solar, wind, geothermal and biogas has the potential to create employment and generate incomes. This tariff has acted as an incentive which has attracted investment to independent power producers who are investing in renewable power plants because of the guaranteed market of electricity to the government through GPP initiatives (UNEP, 2013).

Counties in Kenya were created after the 2010 promulgation of the new constitution. [Government of Kenya, (Gok), 2010]. However, the 47 County governments came into being in 2013 after the first general election under the new constitution dispensation. Procurement in Counties is undertaken by a procurement department constituted by the County government treasury (Gok, 2015). It is regulated by the application of the Public Procurement and Asset Disposal Act of 2015. Section 60 of the Act empowers the County accounting officer to incorporate environmentally friendly goods in specifications during the procurement process. The Act however, gives, discretion to the accounting officers to include environment aspects and does not make it a compulsory requirement during tender advertisement, specification, contract award or evaluation criterion but puts emphasis on price, quality and time of delivery of goods and services procured. County governments have the ability to influence

manufacturers to produce green products for their consumption as well as achieving their environmental objectives.

Laikipia County government just like all other County government is guided by the Public Procurement and Assets Disposal Act in all procurement matters (Gok, 2015). The County government managed to employ the procurement methods stipulated by the Act and Regulations effectively to receive the best ranking public entity in Kenya and even awarded. However, it had not received similar accolades on environmental issues which give rise and result from green procurement matters. There is a significant relationship between the GPP and efficiency in procurement and economic performance.

By being ranked the best performing public entity on public procurement in Kenya (Gok, 2014), Laikipia County government may have put much emphasis on efficiency in the procurement processes saving and cost effectiveness to obtain value for money for the purchases however, the County did not receive similar reference or even mention on GPP (Gok, 2014). It was imperative to establish why it was ranked the best in public procurement and did not receive similar identity in Green Procurement.

Little attention has been given to GPP by County governments in Kenya. There have been few local studies on GPP, which have mainly focused on the manufacturers or producers. Nderitu and Ngugi (2014) studied on the effect Green Procurement practices has in performance of organization in the manufacturing industry. He established that green purchasing resulted to improved performance. Gatari and Were (2014) studied the challenges that face of Green Procurement implementation in manufacturing sector in Kenya. These studies have mainly focused on the manufacturers or producers. Little attention has been given to consumers like County governments who are the largest single consumers of the manufacturing sector products. This shows that limited attention has been paid on Green Public Procurement by County governments in Kenya. This study intended to fill this gap of knowledge. The study has outlined the methodology used in the study, the findings and the conclusion of the study.

1.2 General objective

The general objective of the study was to evaluate the factors affecting implementation of Green Public Procurement in Laikipia County Government, Kenya.

1.3 Specific objectives

i. To identify the extent to which knowledge gap affects implementation of Green Public Procurement in Laikipia County Government, Kenya.

ii. To determine the extent to which buyer's perception on green products affect Green Public Procurement in Laikipia County Government, Kenya.

iii. To find out the extent in which management policy affect Green Public Procurement in Laikipia County Government, Kenya.

iv. To establish the extent to which technical capacity of suppliers affect Green Public Procurement in Laikipia County Government, Kenya

2. Methodology

This study considered different research paradigms, matters of ontology and epistemology which relate to the growth of knowledge, nature of the knowledge, and the assumptions on the way the researcher view and examine it (Bryman 2012). Research paradigm are perceptions, believes, assumptions, nature of reality, truth and influence the manner in which the study is undertaken , from the beginning to conclusions and they exposes and minimizes research bias (Bordens & Abbott, 2008). The study employed pragmatism approach. This approach believes that the most critical determinant on matters of epistemology, ontology and axiology is the research questions (Saunders, Lewis & Thornhill, 2009). The study adopted descriptive research design. This design is used in preliminary and explanatory studies and enables the researcher to collect, summarize and interplate data (Orodho, 2003).

The study was carried out in Laikipia County government, Kenya. The target population composed of the 47 County governments in Kenya (Gok, 2010). These County governments have common observable characteristics in that procurement activity. For example, the 47 county

governments are funded by the exchequer and that, procurement is guided by the PPAD Act (GOK, 2015). The study population comprised of 45 employees drawn from Laikipia County government procurement and finance departments.

The study used purposive sampling. Purposive sampling allows a researcher to get the requisite information that will meet the objectives of the study (Mugenda & Mugenda, 2003). Primary data was collected using a self-administered, semi structured questionnaire with both open and closed ended questions. This enabled the respondents to add information which had not been elicited using closed ended questions. The inclusion of open ended questions allowed subjects to respond on their own understanding, enabling the study to unearth more information on the way people saw the topic.

For pilot testing, data from five (5) respondents were collected, representing 10% of the population in the study. Cronbach's Alpha statistic ranged from 0.8 to 0.9, indicating high reliability of data. Mertens (2010) avers that the closer the coefficient is to 1.0, the more reliable the measurements. This study adopted construct validity.

Multiple regression was used in the study of how knowledge gap, buyer's perception on green products, affects implementation of Green Public Procurement. Assumption tests were conducted which included, tests for outliers, normality, multicollinearity and heteroscedasticity. IBM Statistical Package for the Social Sciences (SPSS) version 21.0 for Windows 7 and Windows 8 was used for data entry and data cleaning. R-GUI version 2.10.0 was also used for building plots, for instance box-plots using the Ggplot2 package, and for multivariate testing of outliers in the independent variables.

3. Findings

A total of forty-five (45) questionnaires were issued to respondents out of which Forty-three (43) were filled and returned. The rate of response was 96 percent. Mugenda & Mugenda (2003) states that when a rate of response is 50 percent, it is adequate, when 60 percent and above it is good, and when above 70 percent, it is very good. The rate of response was therefore sufficient compared with other studies of GPP because when making generalization of outcomes of a survey, it is assumed that the respondents are a representative sample representing the entire population. A high response rate therefore assures the results are more accurate (Backstrom and Hursh, 1963; Babbie, 1990; Aday, 1996; Rea and Parker, 1997).

Multivariate testing of outliers of independent variables was done using Mahalanobis d – square. The test produced reasonable box plot where there were no outliers outlined from the d-square as shown in figure 1. This meant that the data was acceptable and therefore the findings were valid.

Normality test was done through the use of skewness and kurtosis (Kline, 2005). Kline (2005) states that when a variable has an absolute value of skewness which is above 3.0 is said to be highly skewed and for kurtosis if the index is above 8.0, it is an extreme kurtosis.

Cunningham (2008) noted

that an index lower than 2.0 and 7.0 in skewness and kurtosis respectively did not violate the normality assumption. The normality test of independent variables gave the results in the table 1 showing that the skewness and kurtosis ranged between -2 and +2 which implied that the normality assumption was met, and therefore the data was acceptable and valid.

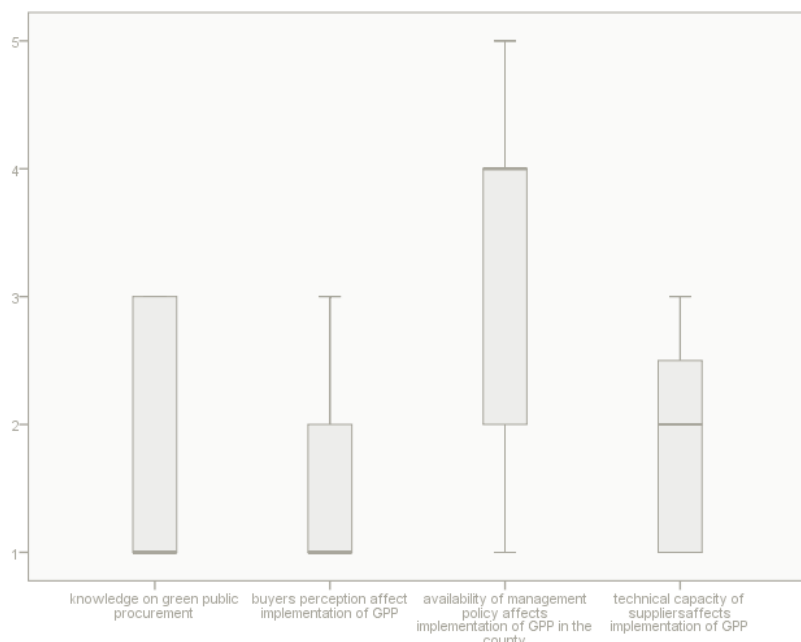


Figure 1: Multivariate testing of outliers

Table 1: Skewness and kurtosis of independent variables

	Skewness			Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Knowledge on Green Public Procurement	43	.193	.361	-1.975	.709
Buyers Perception Affect Implémentation of GPP	43	1.139	.361	.365	.709
Availability of Management Policy Affects Implementation of GPP in the County	43	-.481	.361	-.687	.709
Technical Capacity of Suppliers Affects Implementation of GPP	43	.650	.361	-.780	.709
Valid N (List Wise)	43				

In testing for multicollinearity, VIF of predictor variable were used. Tolerance of an independent variable is calculated from $1-R^2$. Tolerance with value close to one shows insignificant multicollinearity while those close to zero(0) indicates a significant one (Mugenda & Mugenda, 2003). A VIF above 4 shows a high Multicollinearity. The result of the tolerance in the table 2 indicates that the independent variable has a tolerance close to one. The Variance Inflation Factor (VIF) values for the variables ranges between 1.048 (knowledge on Green Public Procurement) and 1.320 (Technical Capacity of Suppliers). This indicated that the beta values of the regression equation for the four variables was stable and had low standard errors.

Table 2: Tolerance and VIF values

Model	Corrélations			Collinearity Statistic	
	Zero-Order	Partial	Part	Tolerance	VIF
Knowledge Gap affects Implementation of GPP.	.447	.470	.458	.954	1.048
Buyers Perception affects Implémentation of GPP.	.163	.044	.038	.834	1.199
Availability of Management Policy affects Implementation of GPP.	-.129	-.019	-.017	.894	1.118
Technical Capacity of Suppliers affects Implementation of GPP	.185	.216	.191	.758	1.320

a. Dependent Variable: county implementation of GPP

Heteroscedasticity was tested and was proved not to be a problem because the errors Variance of dependant variable across groups was equal as indicated in table 3.

Table 3: Levene's Test of Equality of Error Variances

Dependent Variable: county implementation of GPP				
F	df1	df2	Sig.	
2.954	28	14	.018	

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

The test showed that the error of variance of the dependent variable was constant across groups and therefore heteroscedasticity was not a problem. This made the study valid and acceptable.

3.1 Multiple regression

Multiple regression was used to determine the weight each independent variable contribute towards implementation of GPP. The regression model used was,

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \sum$$

Where

Y-Green Public Procurement implementation

α - constant

β_1 -coefficient of knowledge gap
 β_2 -buyer perception on green products
 β_3 -management policy
 β_4 -technical capacity of suppliers
 X_1 - knowledge gap
 X_2 -buyer perception on green products
 X_3 -management policy
 X_4 -technical capacity of suppliers
 Σ -error

The coefficients of the regression model were calculated in the table 4

Table 4: Regression model coefficients

Model	Unstandardized Std. Error		Standardized Coefficients	t	Sig.
	B	Coefficients			
Knowledge Gap affect Implementation of GPP	.610	.168	.561	3.625	.001
Buyers Perception affect Implementation of GPP	.195	.234	.143	.835	.409
Availability of Management Policy affects Implementation of GPP	.065	.106	.095	.616	.541
Technical Capacity of Suppliers affects Implementation of GPP	.174	.204	.142	.855	.398

a. Dependent Variable: county implementation of GPP
 b. Linear Regression through the Origin

The model developed was;

GPP implementation= $0+0.561X_1+0.0143X_2+0.095X_3+0.142X_4 + \Sigma$ that is;

GPP Implementation= $0+0.561(\text{knowledge gap on GPP}) +0.143(\text{Buyer's perception on GPP}) +0.095(\text{Availability of management policy on GPP}) + 0.142(\text{Technical capacity of supplier to supply GP}) + \Sigma (\text{Error})$

4. Discussions of findings, conclusion and recommendations

This study found out that, knowledge gap was the major factor affecting implementation of GPP, that is 56.1%. The study revealed that, the more knowledgeable the employees are about GPP, the higher the chances that the County government will implement GPP. This was in line with UNEP (2013), which identified knowledge gap as a factor affecting implementation of GPP.

The study also found out that, 14.3% of Buyer's perception on green products contributed to implementation of GPP at the County level. This means that, implementation of GPP was largely perceived by the buyers' (respondents) as cheaper as compared to their conventional equivalents. Both management policy (9.5%) and technical capacity of suppliers (14.2%) were vital for implementation of GPP. Policies help in changing the attitude of employees and suppliers.

5. Conclusion

The study establishes that knowledge on GPP on the side of the procurement staff is critical in its implementation. Any knowledge gap on GPP on the side of procurement staff results to a hitch in its implementation. This shows a positive correlation between knowledge gap and implementation of GPP.

In addition, the study concludes that the perception of the buyers' or the procurement staff on green products had a correlation with implementation of GPP. Whenever the procurement staff perceive green products expensive, then implementation of GPP becomes difficult. On the contrary, whenever the procurement staffs perceive GP as cheap and saving on costs, then the buyers' willingly adopt GPP.

The study concludes availability of management policy on GPP was very important in County government. However, the study concludes that availability of the policy alone was not sufficient in the implementation of GPP. Once the policy is in place, awareness of its existence among the staff and also the willingness of staff to implement it are important ingredients in GPP Implementation.

Finally, the study concludes that technical capacity of suppliers to supply GP was an important component in implementation of GPP. Study also concludes that though most County suppliers were certified by the relevant environmental bodies, most suppliers do not supply eco-labeled goods.

6. Implications

The study implies the following:

6.1 Awareness creation

There is need for the County government to continuously create awareness of the County staff on matters of GPP. The County government should organize and facilitate compulsory training seminars on GPP to all procurement and finance staff at least annually. The County government should also sponsor key personnel in procurement in national and international forums on green procurement to learn and teach other county staff on GPP. The County government should also ensure availability of green procurement manuals within its premises to create awareness of GPP.

6.2 Capacity building

The study also imply that a complete life cycle costing of products should be made to establish whether the GP are cheaper or expensive to establish the right perception on the side of buyers of green products.

Additionally, more efforts are required by the County government to create awareness on the management policy on GPP. Support and willingness of the top management to implement the policy has also been recommended to ensure the policy is fully implemented.

The study also suggests of a continuous evaluation of the technical capacity of suppliers to supply green products. The study recommends to the County government to make it compulsory that all suppliers during tendering be certified by the relevant environmental bodies like NEMA. The study recommends that where the suppliers do not meet the technical capacity to supply GP, then the County government should conduct sourcing. This will help look for more suppliers globally who have the capacity to supply GP. The study also recommends that County government should only procure eco-labeled goods from suppliers.

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