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EFFECT OF COST ON THE ADOPTION ON GREEN PROCUREMENT AMONG PUBLIC UNIVERSITIES IN KENYA

[1*] **Njeru Joseph Kithua**
jnjeru@jkuat.ac.ke

[2**] **Namusonge Gregory Simiyu**
gnamusonge@jkuat.ac.ke

[1,2] *Jomo Kenyatta University Of Agriculture And Technology, Kenya*

Abstract*: This study sought to analyze the predictors of the adoption of green procurement among public universities in Kenya. The purpose was to enable public universities develop an affirmative procurement program that encourages green or environmental purchasing. The study examined the effect of cost in the decision to purchase environmentally preferable goods, analyzed the effect of environmental awareness among consumers, investigated the effect of top management support as well as assessed the effect of various stakeholders in the adoption of green procurement. The study used descriptive research design and the focus was 31 public universities in Kenya. The unit of observation was procurement staff in public universities while the unit of analysis was senior and middle level procurement officers in five selected public universities in Kenya. The study adopted a census method with respect to the unit of analysis because the population was small. The target population was 108 staff in the Procurement department in five selected public universities. The data was collected through use of questionnaires. From the descriptive statistics the study established that majority of the respondents were neutral that that there was adequate budgetary allocation for adoption of green procurement. The green goods, services and works cost more than conventional ones. There was consideration of transaction cost when procuring goods, services and works. The cost of purchasing recyclable, biodegradable, low energy consumption and non-ozone depleting products was high and procurement and user departments understand life cycle costs and benefits of environmentally friendly products.*

Keywords*: environmental purchasing, green procurement, public universities*

I. INTRODUCTION

ICLEI (2012) defines green procurement as making all purchasing decisions and allocation of contracts on environmental criteria along with other criteria such as quality, price and delivery. The product lifecycle and its ecological impact through production, operation, maintenance and disposal are all considered in green procurement. Similarly, choices in products and service providers are made with ecological considerations in mind including a commitment to the use of less harmful and environmentally friendly products and practices to provide their services. Bowen (2016) point out that, compared to single criteria considerations, the product lifecycle perspective adds to the complexity of green procurement as it increases the number and scope of purchasing criteria throughout the life cycle.

Green procurement strategies require an organization to carry out an assessment of the environmental consequences of a product at all the various stages of the product life cycle. This means considering the costs of securing raw materials and manufacturing, transporting, storing, handling, using, re-using and disposing of

the product. Green procurement strategies mean regulations that require both teaching and non-teaching departments to take into account environmental considerations when procuring goods, services and works. These must include developing and including green specifications as desirable features. Tenders are then invited to indicate in their offers whether their items can comply with these green features, and where appropriate, to submit supporting documents for verification. According to Stigson and Russel (2013) procuring green should include a process of ensuring that suppliers meet required environmental standards. ICLEI (2012) is of the opinion that apart from green procurement positively contributing to environmental protection at a local level; it also creates a powerful market demand for greening production. Environmental concerns are the important macro-level justification for sustainable procurement, born out of the 21st century concerns that human beings are placing excessive demands on available resources through unsustainable but well-established consumption patterns. Walker and Brammer (2016) describes sustainable procurement concept as procurement that ensures a strong healthy and just society, living within environmental limits and promoting good governance.

Since procurement has always been based on the two criteria of price and quality with a view to enhancing the benefits for the procuring organisation, sustainable procurement broadens this framework to take account of third-party consequences of procurement decisions. This forms a triple bottom line consideration to include external concerns, which the procuring organization must fulfil. According to the UN World Commission on Environment and Development (2017), triple bottom line thinking is informed by and relates to the concept of sustainable development- the premise that development should occur in ways that meet the needs of the current generation while maintaining conditions and opportunities for future generations to do the same. Price water house coopers (PWC) (2011) describe sustainable procurement as a process of purchasing goods and services that takes into account the environmental impact that such purchasing has on people and communities. It is about considering what the products are made of, where they have come from, who has made them, how they are transported and how they are eventually disposed off.

According to the Kenya Country Thematic Programme for Green Growth and Employment 2016-2020, a clean and healthy environment is at the Centre of Kenya's sustainable development agenda. The right to a clean and healthy environment is enshrined in the Kenya Constitution 2010 Chapter Four on the Bill of Rights. Specifically, Article 42 (a) of this Chapter calls upon the government and other relevant institutions to protect the environment for the benefit of present and future generations through legislative and other measures. Similarly, the Public Procurement and Asset Disposal Act (2015) section 60 (3) calls upon the public procuring organizations to ensure that the goods, services and works are environmentally friendly. Green growth as a pathway to sustainable development envisages economic development that alleviates poverty and creates prosperity while minimizing pollution and natural resource depletion by taking a holistic approach to development.

Kenya's economic growth over the last decade has unfortunately come at the expense of its environment and natural resources. These continue to deteriorate at an alarming rate and threaten to undermine the country's long-term development objective of a middle-income economy providing high quality of life to all its citizens. Kenya desires to shift to a green and sustainable development path. This vision of sustainable economic growth is entrenched in key several documents such as Kenya Vision 2030 and the National Climate Change Action Plan. Vision 2030 aims to transform the country into a middle-income economy providing high quality of life to all its citizens as further elaborated by the Kenya Constitution 2010.

Statement of the problem

Green procurement adoption has been very slow in Kenya (Muraguri, Musyimi and Waweru, 2015). The teaching, research and production materials procured by public universities may result in environmental, economic and human catastrophes, which makes them a candidate for implementation of green procurement. Universities play an important role among public institutions because they initiate huge purchasing and contracting activities and contribute to sustainable development through education, research and daily operations. activities undertaken by universities are dependent on materials, goods, services and works procured using public funds. Without encouraging the procurement of greener variants of these materials, it's difficult or impossible to minimize adverse environmental impacts from their activities. It is also not easy to comply with or exceed environmental legislation and other requirements (Otieno, 2014). Despite the rise in green procurement information worldwide, public universities in Kenya go through a lot of lengthy bureaucratic processes in acquiring goods and services. This according to Adu (2016) leads to low productivity, inefficiency and loss of money and detrimental effect on university operations. Most of the studies reviewed have only explored aspects of green procurement in private sector. It is therefore necessary to encourage green procurement practices in order to comply with the environmental policies that universities have defined as part of the environmental management systems (EMS) This study therefore sought to look at the predictors of adoption of green procurement among public universities in Kenya and thus fill in the existing research gap.

Research Objectives

The general objective of this study was to examine predictors of adoption of green procurement among public universities in Kenya with a specific objective to examine the effect of cost in the adoption on green procurement among public universities in Kenya.

Scope of the study

This project sought to examine the predictors of the adoption of green procurement strategies within public Universities in Kenya. It focused on four objectives including influence of the cost of green goods, the environmental awareness among users, top management support and stakeholder cooperation in the adoption of green procurement in Kenya. Therefore, the study targeted procurement officers identifying the goods, services and works procured by universities; meaning that it concentrated on the earliest stage of the procurement cycle which is need identification. Questionnaires were used as research instruments to collect data from senior and middle level procurement officers. The six public universities are the oldest and therefore most experienced in procurement procedure development. They are also evenly distributed.

II. RESEARCH METHODOLOGY

The study used descriptive research design and the focus was 31 public universities in Kenya. The unit of observation was procurement staff in public universities while the unit of analysis was senior and middle level procurement officers in five selected public universities in Kenya. The data collection instrument for this research was a questionnaire. The study adopted a census method with respect to the unit of analysis because the population was small. The target population was 108 staff in the Procurement department in five selected public universities. The data was collected through use of questionnaires. The data was analyzed using statistical package for social sciences (SPSS) Version 24.0 which is the software for analysis. The model of analysis used in this research was multiple regression equation. The data is presented in prose form and using, figures and tables.

RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

Cost of Green Products

The study sought to know the extent to which the respondents agreed on the given statement concerning effect of cost on green procurement adoption among public universities in Kenya as indicated in Table 4.3. In a scale of 1-5, the scores were as follows: The scores "Strongly disagree=SD" and "Disagree=D" were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq$ Disagree ≤ 2.5). The scores of 'Neutral' were represented by a score equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq$ Neutral=N ≤ 3.5). The score of "Agree=A" and "Strongly agree=SA" were represented by a mean score equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq$ Agree ≤ 5.0). The results were presented in mean and standard deviation as illustrated in Table 1.

From the study results, majority of the respondents were neutral that there was adequate budgetary allocation for adoption of green procurement as shown by a mean of 3.234, green goods, services and works cost more than conventional ones as shown by a mean of 3.456; There was consideration of transaction cost when procuring goods, services and works as shown by a mean of 3.211; the cost of purchasing recyclable, biodegradable, low energy consumption and non-ozone depleting products was high as shown by a mean of 3.218 and procurement and user departments understand life cycle costs and benefits of environmentally friendly products as shown by a mean of 3.276. This implies that cost of green products affected green procurement adoption among public universities in Kenya.

Table 1: Cost of Green Products and Green Procurement Adoption

Statement	Mean	Std. deviation
There is adequate budgetary allocation for adoption of green procurement	3.234	1.768
Green goods, services and works cost more than conventional ones	3.456	1.654
There is consideration of transaction cost when procuring goods, services and works	3.211	1.560
The cost of purchasing recyclable, biodegradable, low energy consumption and non-ozone depleting products is high	3.218	1.543
Procurement and user departments understand life cycle costs and benefits of environmentally friendly products	3.276	1.564

Green Procurement Adoption

The study sought to know the extent to which the respondents agreed on the given statement concerning green procurement adoption among public universities in Kenya as indicated in the table below. In a scale of 1-5, the scores were as follows: The scores "Strongly disagree=SD" and "Disagree=D" were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq$ Disagree ≤ 2.5). The scores of 'Neutral' were represented by a score equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq$ Neutral=N ≤ 3.5). The score of "Agree=A" and "Strongly agree=SA" were represented by a mean score equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq$ Agree ≤ 5.0). The results were presented in mean and standard deviation as illustrated in the table 2.

From the study results, majority of the respondents agreed that green procurement is rooted in the principle of pollution prevention as shown by a mean of 3.765. Public universities in Kenya were working to improve the environmental performance of their operations and products and green procurement had been a logical extension of this work as shown by a mean of 3.477. Green procurement practices look at the materials, substances and chemicals in the products and services they provide as shown by a mean of 3.356. Public universities in Kenya use life-cycle assessment and material tracking tools to identify materials, substances

and chemicals in their products that pose significant environmental impacts as shown by a mean of 3.219. Public universities have a formal Green Procurement Policy as shown by a mean of 3.098.

Table 2: Green Procurement Adoption

Statement	Mean	Std. deviation
Green procurement is rooted in the principle of pollution prevention	3.765	1.327
Public universities in Kenya are working to improve the environmental performance of their operations and products and green procurement has been a logical extension of this work	3.477	1.283
Green procurement practices look at the materials, substances and chemicals in the products and services they provide	3.356	1.376
Public universities in Kenya use life-cycle assessment and material tracking tools to identify materials, substances and chemicals in their products that pose significant environmental impact.	3.876	1.387
Public universities have a formal Green Procurement Policy	3.543	1.905

Correlation is a bivariate analysis that measures the strength of linear association between two variables and the direction of the relationship. According to Gogtay and Thatte (2017), Pearson (*r)* correlation is the most widely used correlation statistics to measure the degree of the relationship between linearly related variables adopted in this study. To measure the strength of the relationship, the value of the correlation coefficient varies between +1 (positive one) and -1 (negative one). When the value of the correlation coefficient lies around + 1, then it is said to be a perfect degree of association between the two variables. As the correlation coefficient value goes towards 0, the relationship between the two variables will be weaker. The direction of the relationship is simply the plus **(+)** sign, indicating a positive relationship between the variables, or a minus **(–)** sign, indicating a negative relationship between the variables. Pearson Product moment correlation was used to determine the relationship between independent variable (cost of green products) and dependent variable (green procurement adoption among public universities in Kenya). The summary of the findings is in table 3.

The correlation analysis to determine effect of cost of green products on green procurement adoption among public universities in Kenya shows a significant correlation existed ($r= 0.578$; $p<0.05$). This implies that cost of green products is positively correlated to the green procurement adoption among public universities in Kenya. In addition, the correlation between these two variables was significant, that is $p<0.5$ implying a linear relationship between cost of green products and green procurement adoption among public universities in Kenya. This shows that cost of green products had a significant effect on green procurement adoption among public universities in Kenya.

Table 3: Correlation Coefficient Results

		CGP	AGP
Cost of green products	Pearson Correlation	1	
	Sig.(2-tailed)		
	N	89	
Adoption of Green Procurement	Pearson Correlation	.578**	1
	Sig.(2-tailed)	.000	
	N	89	89

**. Correlation is only significant at the 0.05 level (2-tailed)
CGP = Cost of green products; AGP = Adoption of Green Procurement

Summary

From the descriptive statistics the study established that majority of the respondents were neutral that that there was adequate budgetary allocation for adoption of green procurement. The green goods, services and works cost more than conventional ones. There was consideration of transaction cost when procuring goods, services and works. The cost of purchasing recyclable, biodegradable, low energy consumption and non-ozone depleting products was high and procurement and user departments understand life cycle costs and benefits of environmentally friendly products.

The study found out that adoption of green procurement is generally measured in terms of the number and level of products and services procured leading to reduced environmental impacts. This was done through assessment of the environmental consequences of a product at all the stages of its life cycle thus leading to pollution prevention. Adoption of green procurement was also measured by evaluating purchases based on a variety of criteria raging from necessity of the purchase in the first place to the options available for its eventual disposal. The adoption of green procurement should also be measured and monitored through developing a green supplier selection criterion, green specifications, reverse logistics management, waste management & reducing, reusing & recycling. Finally, green procurement adoption should be measured by the level of compliance with the PPADA (2015) section 60(3), which call upon the procuring organization to ensure that the goods, services and works procured are environmentally friendly.

This study concluded that there was no adequate budgetary allocation for adoption of green procurement. The green goods, services and works cost more than conventional ones as the universities considered transaction cost when procuring goods, services and works. The cost of purchasing recyclable, biodegradable, low energy consumption and non-ozone depleting products was high thus affecting the purchase of environmentally friendly products

Recommendation

This study recommends that there is need to have adequate budgetary allocation for adoption of green procurement within the public universities in Kenya. The universities should procure green goods, services and works which can cost less than conventional ones. The cost of purchasing recyclable, biodegradable, low energy consumption and non-ozone depleting products should be reduced to facilitate the purchase of environmentally friendly products. It is also recommended that procurement & user departments should understand life cycle costs and benefits of environmentally friendly products. Finally, the researcher

recommends that public universities need to consider all transaction costs when procuring goods, services and works for faster uptake of green procurement

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