

Effect of Green Procurement Adoption on Performance of Devolved System of Government in Kenya

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Abstract

The study objective was determined the effect of green procurement adoption on performance in devolved system of government in Kenya. The study was guided by natural resource-based view. This study employed descriptive. The target populations of the study were 202 staff from departments of Procurement, finance and the supply chain including tender opening and evaluation committees from the selected 5 counties in Kenya. The sample of respondents was used from the target population of 202. The researcher analyzed the data collected from the pilot study by computing Cronbach's Coefficient Alpha was computed to determine how these sample items correlate with each other. The findings indicated a positive and significant relationship between eco-design and green product on the performance of counties. The study recommended for the counties to work with suppliers that design products that reduce the consumption of energy and are recyclable. Also, counties should capitalize on the use of products that reduce the consumption of energy and are in compliance with the regulations of NEMA

Keywords; Green Procurement, Performance, Devolved System Of Government, Green Product, Eco-Design

Introduction

Green procurement is the process of acquiring environmentally friendly products and services; the selection of contractors and the setting of environmental requirements in a contract. Green procurement stems from pollution prevention principles and activities. According to Ondieki (2012), green procurement is also known as environmentally friendly purchasing where factors of price, technology, quality and the environmental impact of the product, service or contract to the surrounding are all considered. In this regard, the surroundings entail the surrounding environment as well as the community at large (Ondieki, 2012).

There has been increasing emphasis on environment-friendly corporate activity in today's business world and many progressive companies are embracing green purchasing (Kamonya & Iraki, 2013). The rise in greenhouse emissions and pollution of the environments by firms has precipitated the need for organizations to realign their supply chain operations with a view of conserving the scarce resources. Green supply Chain Management (GSCM) is an approach to improve performance of the process and products according to the requirements of the environmental regulations (Kamonya & Iraki, 2013).

As customers begin to demand environmentally friendly products, managers have been faced with the challenge of developing decisions that support the integration and coordination of environmental practices throughout the supply chains (Ondieki, 2012). Consequently, a sudden rise of environmental movements, legislations and concerns during the past decade have clearly outlined the need to address issues of environmental pollution accompanying industrial development together with supply chain management, thus supporting the green procurement practice and initiative of Green Supply Chain Management (Ondieki, 2012).

In light of increasing costs of waste management, environmental degradation, public health concerns, climate change, resource depletion, and persistent global poverty, the supply management profession is increasingly being called upon to contribute to broader organizational goals of sustainable development through the inclusion of social and environmental criteria within procurement processes (Srivastava, 2013). According to

Kenya Solid Waste Management (2013), industrial wastes constitute about 23% of the total waste generated in the Nairobi city, only about 25% of the estimated 1,500 tons of solid waste generated daily get collected.

Environmental issues have not been fully addressed and that there are still challenges facing effective implementation of green procurement in Kenya. These challenges to GP include; resistance to technology advancement adoption, lack of organizational encouragement, lack of suppliers of sustainable assets, or services, lack of IT implementation, a perception that the process and outcomes are more costly or time consuming habit and the difficulty in changing procurement behavior, stakeholder involvement, principles, benchmarking and employee training among others (Lozano & Vallés, 2013). In 2010, for instance, a mere 14% of its agricultural supplies were sourced sustainably by its own definition. Now the share is 48% (UNEP, 2013).

Despite the important role green procurement plays in ensuring environmental performance and public health and safety, most of the studies on this subject had been conducted in developed countries, yet not much research had been conducted in Kenya leading to insufficient empirical literature on green procurement (Stephen & Helen, 2011). Local studies so far done have focused on procurement in general (Otieno, 2004, Akech, 2005). the determinants of green public procurement adoption in Kenya with special focus to Kenya Pipeline Company by Ngugi (2014). The latest research was done by Catherine Gatari and Were (2014). From the above it is evident that most studies have attempted to study determinants if green procurement and very few have assessed how green procurement affects performance of county governments. In this case, it is important for a study to be undertaken to specifically address the effect of green procurement adoption on performance in devolved system of government in Kenya.

Theoretical Review

The study was guided by Natural Resource-Based view. Hart (1995) argued that the RBV ignored challenges and constraints imposed by the natural environment, which should be important to consider in developing new resources and capabilities in order to deal with the acceleration of the scale and scope of human activity. He reasoned that past economic and organizational practices could not be continued as they would not continue to provide the same outcomes. Thus, he offered the natural resource-based view of the firm (NRBV) that posits future competitive advantage being rooted in “capabilities that facilitate environmentally sustainable economic activity” (p. 991). The NRBV has recently received support in research linking environmental sustainability practices related to supply chain activities to improved economic, operational and market performance (Vachon & Klassen, 2006, 2008). These authors note that supply chain processes have a direct impact on the natural environment, and practices to manage and reduce this impact can develop capabilities to improve performance.

The NRBV as proposed by Hart (1995) is built upon three interconnected strategies, two of which are focused on developed markets, pollution prevention, and product stewardship. Pollution prevention is concerned with reducing pollution, or the inefficient use of the material and human resources, in the manufacturing process. Like total quality management and lean production, pollution prevention means reducing waste which results in improved operational performance through better utilization of inputs, reduced cycle times and lower costs.

Product stewardship entails integrating stakeholder perspectives into the product. It includes activities at every step in the value chain to focus on the entire lifecycle of a product from design to disposal. Implementing this strategy can enable a firm to develop a stronger reputation and competitive differentiation, both of which are market-based performance. Hart (1995) continues and additionally argues that these two strategies that bring improvements in operational and market performance ultimately result in enhanced cash flow and profitability or accounting-based performance for the firm. NRBV of the firm as espoused by Touboulic and Walker (2015) involves reusability are a source of competitive advantage. The imperatives of sustainable development create

opportunities for differentiation and increased market power. Inter-organizational resources as important as intra-organizational resources to stimulate supplier engagement with SSCM practice

Empirical Literature

Eco-Design

many eco-design tools, such as life cycle analysis (LCA), are effectively decision tools providing convergence in the design process thus improved supply chain performance (Deutz et al., 2010). However, reliance on such tools to increase product sustainability indicates that the sustainability criteria are being imposed on the design process as a limiting factor/design criterion rather than as part of the process of developing concepts. LCA and its equivalents expressly do not aid in the generation of concepts and, consequently, if the divergent stage of design has not been performed well then choices are likely being made between sub-optimal alternatives

Green Procurement Practices (GPP) could yield positive economic benefits for private companies in terms of Risk Management, Cost Reduction and Revenue Growth. The advantages of Green Procurement Practices (GPP), policies and programs among organizations like SME`S can help reduce expenditure and waste; increase resource efficiency; and influence production, markets, prices, available services and organizational behavior. GPP`s assist countries in meeting multilateral requirements such as the Kyoto Protocol and Rotterdam Convention, International Standards Organization and other bodies that have established guidelines for green procurement programs (Kamonya & Iraki, 2013).

The Commitment to Buy/Purchase Green encourages organizations to continuously improve the environmental sustainability of their purchasing decisions. Given its business and environmental benefits, Green Procurement has many benefits that it comes along with (Khisa, 2011). For governments, Green Procurement can help to: Reduce any negative and unintended impacts on the environment like pollution and deterioration of local air quality; Support companies that provide products and services that have fewer environmental impacts and stimulate "green," innovative product development and business development; Save the amount of money spent on cleaning up pollution, by preventing it in the first place; also this Sends a message to manufacturers and service providers that consumers will recognize their environmental efforts; Create a scale effect, thus reducing production costs by the sheer scale of demand for green products; and Fulfill OECD agreements to take greater account of environmental considerations in public procurement of products and services (Ninlawan et al., 2010). . Savings can also be made on disposal through recycling or using products that create less waste; for Organizational Benefits–By setting a standard for them, organizations are also more appealing to their own market (Nabiswa, 2012).

Private companies also avoid costs by eliminating or lowering fees for waste management or hazardous material management (like special training, handling and storage), reducing time and costs for reporting and receiving fewer fines; they save money by conserving energy, water, fuel

and other resources; Simplify compliance with environmental regulations; Reduce risk of accidents; reduce liability and lower health and safety costs; Improve image, brand and goodwill; and Improve health of employees and communities, through cleaner air and water, less hazardous wastes to handle and dispose; and also increase shareholder value in some organizations (Abuko, 2011).

Jumadi and Zailani (2010) emphasizes green procurement practices are applicable to both the public and the private business sector and certainly the SME`s where its proponents aspire to seeing its application across all areas of the economy. Influencing GPP within SME`s is not as straightforward as for governments because companies themselves have to be self-motivated to embrace sustainability. Green Procurement Practices (GPP)

involves spending and the investment process typically associated with public policy, although it is equally applicable to the SME`s.

Jumadi and Zailani (2010) further stated that through Green Procurement Awareness Programs, customers purchasing decisions have been influenced. Some customers now select the items they wish to order if the items are environmentally friendly manufactured and they also highly prefer alternative products that nowadays commonly available with a green banner that will appear with suggestions for greener choices.

Other Sustainable Initiatives in Green Procurement practice that also applies to SME`s include; Suppliers being asked to provide information on their company`s green initiatives and environmentally preferable purchasing practices that will then be incorporated into contracts when feasible. Purchasing decisions will consider recycled content, waste minimization and energy efficiency as integral components of the decision-making process. Basic qualities for consideration include: Cost-effectiveness, Recycled content, Energy efficiency, Durability, Solid waste and also Total life cycle impact (manufacturing process, disposal) (Eltayeb, 2010).

Green product

Yeung *et al.*, (2003) found that senior management`s confidence is the most influential factor for the development of their quality management system. Similarly, cross-functional programs encompassing GSCM and CLSC practices are not for the “faint of heart” and require management`s support for successful implementation (Matthews, 2004; Seitz and Peatty, 2004). To ensure progress for environmental management, top management must be fully committed (Zsidisin and Siferd, 2001; Rice, 2003).

Shang *et al.*, (2010) conducted a GSCM study based eco design, green manufacturing and packaging, environmental participation, green marketing, stock and suppliers. The results inferred that the firms which re focusing on green marketing had been successful competitors against the rivals

Kamonya and Iraki (2013) sought to establish the impact of green procurement practices in small and medium enterprises in Nairobi. The study established that majority of small and medium size corporations in Nairobi have highly integrated the greening practices. In this case, the study came close to establishing the effect of green procurement adoption but not on procurement adoption. Consequently, Ondieki (2012) sought to assess the level of green procurement awareness in the Kenyan state corporations. The study established that the level of green procurement amongst the Kenyan state corporations is significantly high. On the lower side, the study was only conducted in the Kenyan state corporations and not in the devolved system of government. Further, a study by Khisa (2011) sought to investigate green procurement practices within the public sector in Kenya. In this case, the study established that following the government regulations in regard to green procurement, most public corporations were practicing green procurement or were on the verge of integrating the greening practices.

Research Gap

The main objective of the study was to examine the effects of green procurement adoption on performance in manufacturing firms in Kenya. From the literature review, the concept of green procurement adoption in Kenya is a common practice in both the public, private and even mobile sector. However, very few of these studies have particularly been undertaken in the Kenyan devolved system of government. The performance measurements in the aspect of green procurement adoption have not been fully explored. It is in this case that a study needed to be carried out to investigate specifically the effect of green procurement adoption on performance in devolved system of government.

Based on the literature reviewed, it is evident that there are inadequate studies on the adoption of green procurement in Kenya and especially in Kenya devolved system. Local studies so far done have focused on logistic in general (Otieno, 2004; Akech, 2005) the determinants of green public logistic adoption in Kenya with special focus to Kenya Pipeline Company by Ngugi (2014). The latest research was done by Gatari and Were (2014).

This implies that, the existing research works to cover green procurement strategy in developed countries and factors that effect its implementation but very little on developing countries. Studies conducted in Kenya in the area have focused more the on Green Public Logistic practice, status of GP implementation among other aspects that are broad based in the public sector but none is based on private sector. The literature reviewed shows there is inadequate literature on the green procurement implementation in the private sector in Kenya which has different dynamics like being typically motivated to reduce, not social, but organizational costs. As green procurement strategies may require significant capital investment.

Therefore, there lacks conclusive studies in the area of manufacturing firms as majority of reviewed studies focuses the general aspects of green procurement in the developed countries and the very little in developing countries is based on the private sector This forms the research gap. It is for this research gap that this study wishes to establish factors affecting implementation of green procurement practices in devolved system in Kenya.

Research Methodology

This study employed descriptive survey design. Descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Orodho, 2003). The target populations of the study were 202 staff from departments of Procurement, finance and the general supply chain including tender opening and evaluation committees from the selected 5 counties in Kenya. The samples of respondents were used from the target population of 202. Suitable and reliable instruments of collecting data were questionnaires. It is also cheaper and easy to deliver to respondents. To ensure reliability of the instrument, the researcher analyzed the data collected from the pilot study by computing Cronbach's Coefficient Alpha were computed to determine how these sample items correlate with each other (Mugenda and Mugenda, 1999). quantitatively using descriptive statistics method such as tables, percentage mean scores and standard deviation and pie charts. According to Mugenda&Mugenda (2003), data analysis is the process of bringing order, structure and meaning to the mass of information collected. Statistical Package for Social Sciences (SPSS) Version 23 and Excel 2016 software were the main tools for data analysis. The questionnaires were coded and the response on each item put into specific categories fitting the research questions. The quantitative data was analyzed by use of the SPSS software which has descriptive statistics features that assist in variable response comparison and gives a clear indication of response frequencies. this case, frequency distribution, percentages, graphs and charts were used to analyze the quantitative data collected. Further, a regression analysis and correlation analysis were used to verify existence of a relationship between the dependent and independent variables. In this case, the regression equation was expressed as

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon \dots \dots \dots (i)$$

Where:

Y= performance of devolved system

β_0 = coefficient of intercept

X1= eco-design

X2 = green product

ϵ =error term

$\beta_1 \dots \beta_2$ = regression coefficients of the independent variables

Findings and Discussion

This section covers the research findings and discussion. Discussions of the findings were given in under the information presented. The information analyzed was interpreted in relation to the research objectives. An overall response rate of 70% was realized.

Descriptive statistics

County Performance mainly involves two ways of looking performance in relation to green procurement adoption. The dimension on green procurement adoption deals with the acquisition of environmentally friendly products and services. Thus, the study sought to establish the perceptions of the employees on performance in devolved system of government in Kenya. The findings were presented in Table 1. The responses were measured on a 5- point Likert scale. The overall mean response for performance in the devolved system was 3.88 (SD = 0.760) that shows that majority of the employees agreed with majority of the items on the performance in the devolved system

Table 1 Performance in Devolved System of Government

	Mean	Std. Dev
There is a general improvement of services in county governments	3.71	1.09
Revenue collection and accounting functions is more efficient in county government	3.86	0.97
Transport services is more efficient	4.21	0.94
Trading services and licensing has significantly improved	3.76	1.05
The health services has improved in services delivery	3.94	1.17
There has increase in budget allocation.	3.8	0.77
Performance in Devolved System	3.88	0.99

Eco-Design

The eco-design is a practice which requires that manufacturers to design products that minimize consumption of materials and energy, that facilitate the reuse, recycle, and recovery of component materials and parts, and that avoid or reduce the use of hazardous products within the manufacturing process. Thus, the study sought to establish the perspectives of the employees working with the county governments on the effect of eco-design on performance in devolved system of government in Kenya. The findings were presented in Table 2. The responses were measured on a 5- point Likert scale. The overall mean response was 3.86 (SD = 0.746) that indicates that majority of the employees actually affirm that the counties uses of eco-design practices. However, there are gaps in terms of the county looking for suppliers that design products that avoid or reduce use of hazardous products.

Table 2 Eco-Design

	Mean	Std. Deviation
The county looks for suppliers of who design products with reduced consumption of material/energy	3.96	0.563
The county looks for suppliers who design their products for reuse, recycle, recovery of material, component parts	3.84	0.842
The county looks for suppliers of who design its products to avoid or reduce use of hazardous of products and/or their manufacturing process	3.43	0.93
The county looks for suppliers of who design product for support regulation	4.21	0.651
Eco-design practices	3.86	0.746

Green product comprises use of carbon dioxide refrigeration systems, treatment and control of post combustion emissions, use of alternative fuels (e.g. cleaner fuels), treatment and recycle of hazardous wastes, process optimization implementation of waste to energy process, waste reduction, reuse and recycling approaches. This may also involve source reduction the recycle and re-use waste management programs focuses on management of waste after it has been created. As such, the study sought to establish effect of green products on performance of devolved system of government in Kenya by assessing the views of the employees regarding green product and the findings were presented in Table 3. The responses were measured on a 5- point Likert scale. The overall mean was 3.89 (SD = 0.989) for green product that shows that majority of the employees agree that the counties practice green product.

Table 3: Green product

	Mean	Std. Dev
The county products have reduced consumption of material/energy	3.36	1.254
The county product for comply with NEMA regulations	3.58	0.87
The county uses eco-friendly cleaners and detergents	3.93	0.841
The county product are easy set up for the users in the most energy saving way	3.24	1.049
The county usability of part particularly for extend using products, repair easy and increase efficiency	3.80	0.929
Green product	3.58	0.989

Inferential analysis

Correlation analysis is usually carried out in order to establish the degree to which two variables converge or diverge together depending on the case so as to determine the significance of the relationship. Usually, the Pearson's Product Moment Correlation Coefficient is used to make inference about the existing relationship between two variables. The findings in Table 3 show that eco-design practices have a positive and significant relationship with the performance of the devolved system of government in Kenya, $\rho = 0.595$, $p < 0.01$ and this means that there is a probability of 0.595 that performance of the devolved system of government in Kenya will increase with increased eco-design practices. The findings also show that green product has a positive and significant relationship with performance of the devolved system of government in Kenya, $\rho = 0.631$, $p < 0.01$ indicating that there is a 0.631 probability that performance of the devolved system of government in Kenya will increase with increase in green product.

This study sought to determine the effect of green procurement adoption on performance in devolved system of government in Kenya. The results in Table 4 showed that all the four predictors (eco-design and green product) explained 50.6% variation of performance of the devolved system of government in Kenya. This showed that considering the four study independent variables, there is a probability of predicting performance of the devolved system of government in Kenya by 50.6% (R-squared = 0.506). The findings in Table 4 indicated that the above discussed coefficient of determination was significant as evidence of F (4, 90) ratio of 147.606 with $p < 0.001$. Thus, the model was fit to predict performance of the devolved system of government in Kenya using eco-design, green production, green purchase and product re-usability.

The first specific objective of the study was to determine the effect of eco-design on performance in devolved system of government in Kenya. In line with this, the study aimed at answering the research question that: to what extent does eco-design affect performance in devolved system of government in Kenya? The findings show that eco-design have a positive and significant effect on performance in devolved system of government in Kenya, $\beta_1 = 0.156$, $p = 0.039$ meaning that with each unit increase in use and implementation of eco-design practices, performance in the devolved system increases by 0.156 units. In line with these findings, Jumadi and Zailani (2010) point out that a reduction in the product environmental impact may be achieved not only through an appropriate product design, but also a proper use by consumers of the products and services. At the county governments, the main clients are the public for which services are offered. So, it is not only the responsibility of the county governments to come up and implement eco-design and packaging strategies but also a

responsibility to the clients on being eco-conscious. In this sense, consumers must become more aware of the environmental implications related to the products they are using, so that sustainability may be perceived as a value-added element for the society, as well as a distinguishing feature for companies (Jumadi & Zailani, 2010).

The second specific objective of the study was to establish the effect of green product on performance in devolved system of government in Kenya. This was mainly through answering the research question that: Do green products affect performance in devolved system of government in Kenya? The findings in Table 4.13 show that green product has a positive and significant effect on performance in devolved system of government in Kenya, $\beta_2 = 0.244$, $p = 0.004$ meaning that increasing green product by 1 unit would increase performance in devolved system of government in Kenya by 0.244 units. Consistently, Eiadat et al., (2008) elucidated that green products enhance cash flow and enhance business performance by building the reputation of the firms. In a similar vein, Krammerer (2009) argued that green products have private environmental benefits for the customer will generate stronger consumer demand.

Table 4 Regression and correlation statistics

	Unstandardized Coefficients		Standardized Coefficients			Correlation
	B	Se	Beta	T	Sig.	r
(Constant)	2.596	0.138		18.847	0.000	
Eco-design practices	0.103	0.050	0.156	2.073	0.039	0.595**
Green product	0.127	0.044	0.244	2.921	0.004	0.631**
R-Square	0.506					
Adjusted R-Square	0.501					
Std. Error of the Estimate	0.241					
F	147.606					
Sig.	0.000					

a Dependent Variable: Performance in devolved system of government in Kenya

Conclusion

In conclusion, eco-design practices are instrumental in enhancing the performance of the counties in Kenya. The reason for this is that, the counties have actively engaged in searching for suppliers who design products that reduce the consumption of energy. In so doing, the counties contribute to the conservation of the environment and at the same reduce on costs incurred. There is also emphasis on reuse and recycling of material and component parts implying that there is limited wastage in the counties. Moreover, there is compliance with the laid down regulations since the counties only work with suppliers that adhere to the set regulations. The challenge however is that there is limited focus on suppliers that avoid or reduce use of hazardous products.

Also, green product positively and significantly influences the performance of the counties in Kenya. The improvement in performance is attributed to the utilization of products that reduce the consumption of energy. The other aspect that has significantly contributed to the county performance is the use of products that are in compliance with the regulations from NEMA. Besides, the county uses eco-friendly cleaners and detergents that have also contributed to the improved performance. However, the counties are yet to optimize the setting of products in the most energy saving way for users.

Recommendations

Based on the findings of the study, the following recommendations are put forward: Evidence from the study suggests that eco-design practices contribute to improved performance of the devolved units in Kenya. To

improve further on the performance on the performance of the counties, there is need for the counties to work with suppliers that design products that reduce the consumption of energy and are recyclable. Moreover, it is utmost necessary for the counties to work with suppliers who design products for support regulation. Focus should also be on suppliers that avoid or reduce the use of hazardous products.

Since green product is key in enhancing the performance of the devolved units, the counties should capitalize on the use of products that reduce the consumption of energy. In the same way, the counties need to direct their efforts towards setting up products for users in the most energy saving way. Further, the counties need to enhance the use of products that are in compliance with the regulations of NEMA. With the above in place, the counties are likely to elicit improved performance.

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