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EFFECT OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES ON PERFORMANCE OF KENYAN UNIVERSITIES, A CASE OF UNIVERSITY OF NAIROBI

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Abstract

This study aimed to bridge such gaps by establishing the effect of green supply chain management practices on performance of Kenyan Universities. The proposed study used descriptive design. The study targets six colleges within University of Nairobi with 143 members of staff in the administration department that contribute to the overall performance of the University. The study used census survey to cover the 143 respondents. The study collected primary data. The data was collected through use of a questionnaire. The study carried out a pilot study to pre-test the validity and reliability of data collected using the questionnaire. Data was analyzed using descriptive statistics. Quantitative data was analyzed using the SPSS (version 20) and included percentages, frequencies, means, and standard deviations. Qualitative data was analyzed through content analysis. The findings were presented through charts, tables and graphs. The study used ANOVA to test the level of significance of the independent variables on the dependent variable at 95% level of significance. In addition, the study conducted a multiple regression analysis. The study sought to establish whether reverse logistics, green procurement, green packaging and waste management have a positive influence on performance of the public universities.The findings of the study revealed that reverse logistics is positively related to performance of the University of Nairobi; green procurement is positively related to performance of the University of Nairobi, green packaging is positively related to performance of the University of Nairobi and Waste management system is positively related to performance of the University of Nairobi. The study recommends that the management of Kenyan Universities should encourage proper utilization of materials and recycling of materials. The management of Kenyan Universities should integrate green procurement process in all its purchasing processes since it's characterized by a low environmental impact that is products environmentally friendly in nature and produced using environmentally friendly processes. The management of Kenyan Universities should purchase products from manufacturers whose design products minimize consumption of materials and energy, that facilitate the reuse, recycle and recovery of component materials as the study found out that green packaging influences supply chain performance to a great extent. The management of Kenyan Universities should invest more in waste management systems as the study found out that waste management systems treats a controls post combustion emissions, treatment and recycle of waste created and allows for use of alternative fuels.

Keyword: Competitive Advantage, Corporate Image, Environmental Sustainability, Inventory, Lean Manufacturing, Logistic, Outsourcing, Product Design, Quality Management System, Supply Chain and Total Quality Management.

Introduction

This chapter highlights the background of the study, the statement of the problem, study objectives, research questions and significance of the study. It also points out the scope and the limitations of the study. In the recent times, there has been considerable internal and external pressure on firms to adopt and maintain environmentally friendly processes and to produce environmentally friendly products and services. As a result, both manufacturing and service organizations must consider the impact of environmental approach on business performance and the economic viability of the firm, as well as on the environmental performance of the firm (Elliot, 2011). This "green" approach requires those manufacturers, suppliers, and customers within supply chains work together to develop environmental solutions and monitor the implementation of those solutions (Gnoni *et al*, 2011). Further, the green supply chain management (GSCM) practices have been developed by various organizations as a practical means to implement an environmentally focused strategy.

As customers begin to demand that products and services be provided without damaging the environment, managers will make decisions that support the integration and coordination of environmental practices throughout the supply chain (Vachon & Klassen, 2007). They further point out that organizational competitive advantage can be gained through adoption of an environmental strategy and implementation of environmental collaboration and monitoring practices. According to (Elliot, 2011), while organizations incur higher costs in abating environmental pollution and thus increasing the total costs of some goods and services, the benefits associated with a cleaner environment far outweigh the costs. There has been concern that firms may lose competitive advantage due to the increased costs from implementation of environmental sustainability guidelines. However, on the same issue of loss in competitiveness, (Jaffe *et al*, 2015) conclude that there is little evidence to support the proposition that environmental regulations damage competitiveness.

GSCM emerges as a new systematic environmental approach in supply chain management and has been increasingly accepted and practiced by forward thinking organizations. The current environmental requirements that influenced manufacturing activities have increased attention in developing environmental management (EM) strategies for supply chain. Thus the concept of GSCM arises and becoming an important factor for business activities today (Seman *et al*, 2012). Zhu *et al*, (2008) also claimed that GSCM can be regarded as an environmental innovation. By integrating green concept to the supply chain concept, it has created a new research agenda where supply chain will have a direct relation to the environment. Kenya is one of the developing countries in the world and is becoming increasingly industrialized. Kenya faces substantial burden on the environment. The multinational organizations and developed countries are using third world countries as a point for disposal of end-of-life products and this result to environmental impact (Puckett & Smith, 2002).

Over the last few years there has been rapid expansion in University opportunities in Kenya. The government has continued to award charters to new private Universities and letters of interim authority to institutions to operate as private Universities. In the year 2000, there were six public and five private universities. By the year 2011, we had seven public universities, fifteen constituent collages, fourteen charted private universities, eleven private universities operating with letters of interim charter and two private universities operating with a certificate of registration. This brings the total number of universities to forty nine in the country (Jan, 2012).

In the year 1996/7 34,852 and 5,964 students were enrolled in public and private universities respectively compared to the year 1999/2000 where the numbers increased tremendously to 41,275 and 10,500 in public and private universities respectively. Due to high demand for higher education and competition for top jobs people are enrolling in universities to further their studies, currently the number of students enrolled in both public and private universities in 2011/2012 academic year is estimated to have risen to over 200,000 students (Ministry of Education, Science, and Technology, Statistics Section).

Recently, a trend has emerged where the public Universities and private Universities establish numerous additional campuses away from their main campuses and particularly in the Nairobi central business district (CBD) and its outskirts, the provincial and other towns that are to host the county headquarters. The newly established public University colleges have joined in this trend and are also establishing their own campuses in the Mombasa, provincial towns, as well as other towns. Such campuses are now in operation in Nairobi, Nakuru, Mombasa, Kisumu, Nyeri, Kisii, and Meru. Previously, some public universities usually had only distance learning programme coordinating centers in the provincial towns and other towns.

The history of the University of Nairobi (UON) dates back to 1947 when the colonial government in Kenya drew up a plan for the establishment of a commercial institute in Nairobi. The university currently has a population of approximately 50 000 students in both regular and self-sponsored programmes. The main campus is located in the capital city of Nairobi. The UON library network comprises the main library (Jomo Kenyatta Memorial Library) and 11 branch libraries. The library was started in 1960 as the Gandhi Memorial Library by the Gandhi Memorial Academic Society and its growth has been tremendous over the years (University of Nairobi 2009). Initially, the library was designed to accommodate only 500 students who were taking technical courses.

At the time, the UON was only a technical college and 15% of the student population was Kenyans. By 1978, it had 5076 undergraduate students, 914 postgraduate students and a teaching staff of 883 full-time lecturers. The Gandhi Memorial Library could not cope with the huge growth in the number of students and this prompted the government to provide a grant of 80

million Kenya shillings to build a new library as a memorial to the Kenya's first president, the late Jomo Kenyatta. The new library was opened in 1988 and has sitting capacity of 3000 readers and a book stock of over 700 000 volumes, including books and bound periodicals (University of Nairobi Library 2009).

Statement of the Problem

Supply chain management practices contribute 50% to the performance of Universities in Kenya (Kamau, 2014). The performance of universities in Kenya has been affected by use of obsolete supply chain management practices and technologies with poor state of physical infrastructure, limited research and development, poor institutional framework, and inadequate supply chain innovation, technical, and entrepreneurial skills (ROK, 2014). In Kenya, very limited research has been done on the effect of green supply chain management practices on performance. Specifically, no such research has been done on Kenyan Universities.

In Kenya, the government has put in place a wide range of policy, institutional and legislation to govern all business activities in a move towards green procurement, by not going green, UoN would have its image tarnished causing a number of its potential customers to shy away from the institution. Hazardous substances released from UoN laboratories after student practical could cause accidents, and eventually lawsuits. This would result to the University using funds meant to improve its performance in settling lawsuits and compensation of damages caused as a result of the accidents (Ndulu, 2015).

Previous studies in Kenya have not focused and concentrated much on Green Supply Chain management for instance, a research conducted by Kirop (2013) did a study on Green supply chain management in Kenya's Cement industry, it emerged that, an institution that lacks green practices is likely to expend more on costs associated with production besides having its environment polluted that would result to law suits, health hazards and negative reputation. This study seeks to fill the existing research gap by conducting a study to establish the effect of green supply chain management practices on performance of Kenyan universities, with special focus on the University of Nairobi. To enhance UoN performance, it is clear that there is need for further exploration on this area through research so as to bridge the existing gaps. This study aimed to bridge such gaps by establishing the effect of green supply chain management practices on performance of Kenyan Universities.

Objective of the Study

The general objective of the study was to establish the effects of green supply chain management practices on performance of Kenyan Universities. The study was guided by the following objective

i. To determine the effect of reverse logistics on performance of the University of Nairobi.
ii. To establish the effect of green procurement on performance of the University of Nairobi.
iii. To examine the effect of green packaging on performance of the University of Nairobi.
iv. To establish the effect of waste management system on performance of the University of Nairobi.

Theoretical Review

Supply Chain Management Theory

The supply chain management theory was proposed by Rao and Young in 2013. Rao & Young (2013) suggest that firms consider outsourcing of logistics to an external Logistics Services Provider (LSP) when logistics complexity is high. Wilding and Juriado (2011) observe that cost reduction is the main motivation for logistics outsourcing. Welch and Nayak (2012) mentions that firms which outsource for operational and cost-based reasons will tend to restrict the Logistics Service Provider's involvement to the basic logistics functions. Therefore, an outsourcing decision might be influenced by a firm's supply chain characteristics, logistics complexity and demand uncertainty or logistics strategy. The theory supported the variable "performance" in terms of improving the Supply chain efficiency since costs of reverse logistics would be reduced by adopting a strategy such as outsourcing of the logistics function.

Logistics Management Theory

The Logistics Management Theory was pioneered by Morris and Imrie in 2012. According to this theory logistics is defined as the planning, organization, and control of all activities in the material flow, from raw material until final consumption and reverse flows of the manufactured product, with the aim of satisfying the customer's and other interest party's needs and wishes i.e., to provide a good customer service, low cost, low tied-up capital and small environmental consequences (Christopher, 2012). The credibility of this operation is based on how good is the design of the system that leads to this kind of logistics. Logistics management is an integrating function which coordinates and optimizes all logistics activities, as well as integrates logistics activities with other functions, including marketing, sales, manufacturing, finance, and information technology, (Morris & Imrie, 2012). Through Logistics management theory, the variable "reverse logistics' was supported since costs associated with delays when returning goods such as damaged reputation and stock holding costs would be controlled.

Multi-Attribute Utility Theory

Ellram (1990) pioneered the Multi-Attribute Utility Theory; according to this theory one analytical approach often suggested for solving complex problems is MAUT (Ellram, 1990). MAUT enables the decision maker to structure a complex problem in the form of a simple hierarchy and to subjectively evaluate a large number of quantitative and qualitative factors in the presence of risk and uncertainty. The major strength of MAUT is its ability to deal with both deterministic and stochastic decision environments. In particular, MAUT has three distinctive advantages over MOP in handling multiple and conflicting criteria. These are: MAUT requires less "front-end" analysis than MOP as MAUT has no constraints to consider explicitly, MAUT requires data than MOP as MAUT does not necessitate parameters for constraints and MAUT

poses less computational difficulty than does MOP as MAUT is not burdened with additional constraints.

The application of MAUT to the complex problem usually involves identification of the objectives or goals of the decision and defines the problem scope, define a finite set of relevant attributes affecting the decision outcome and structure them into a hierarchical form called a "value tree". Elicit preference information concerning the attributes from the decision maker(s) and determine the relative importance of the attributes. Develop the decision maker′s utility function by establishing functional relationships between the attributes and the utility scores. If this relationship is uncertain, the expected utility score for each attribute will be determined by using the appropriate type of probability distributions. Compute the aggregate (overall) utility score for each decision alternative and rank alternatives in terms of aggregate utility scores. This theory supported the variable "Green procurement" as it aided in selecting the most appropriate foreign supplier & materials where green procurement criteria would be given reasonable weight.

Price Premium Theory

The Price Premium Theory was proposed in by Laroche, Bergeron and Barbaro-Forleo (2001). The theory has posited that some social and environmental attributes of products may serve as a differentiation strategy for the firm (Laroche, Bergeron & Barbaro-Forleo, 2001; Reinhardt, 1999). This type of strategy implies that the firm is able to charge a price premium in comparison to competitors. This price premium has been defined as "a percentage over the willingness to pay for the base commodity". Thus, in the case of certification, if certified wood commands a price premium, then some consumers are willing to pay some percentage over and above what they are willing to pay for the base commodity without certification. The willingness to pay a price premium usually has been explained by both psychological variables as well as demographic variables. Our focus here is on developing theory with respect to the variables regarding psychological attitudes toward the environment.

The price premium is related to consumer preferences. From a psychological point of view, the price premium that consumers are willing to pay for public goods is a behavioral intention. However, little research has actually tried to investigate the nature of environmental attitudes and the price premium that an environmentally friendly product is able to command. The theory is of importance to the study as it supports the variable "waste management system" where it would aid in estimating waste disposal costs which was estimated and uncertainty in those estimates handled.

Conceptual Framework

A conceptual framework is a model of presentation where the relationship between variables in the study is represented diagrammatically (Orodho, 2009). It is the schematic diagram which

shows the variables included in the study. In the conceptual framework below, reverse logistics, green procurement, green packaging and waste management system form the independent variables of the study; while the dependent variable is performance of the University.

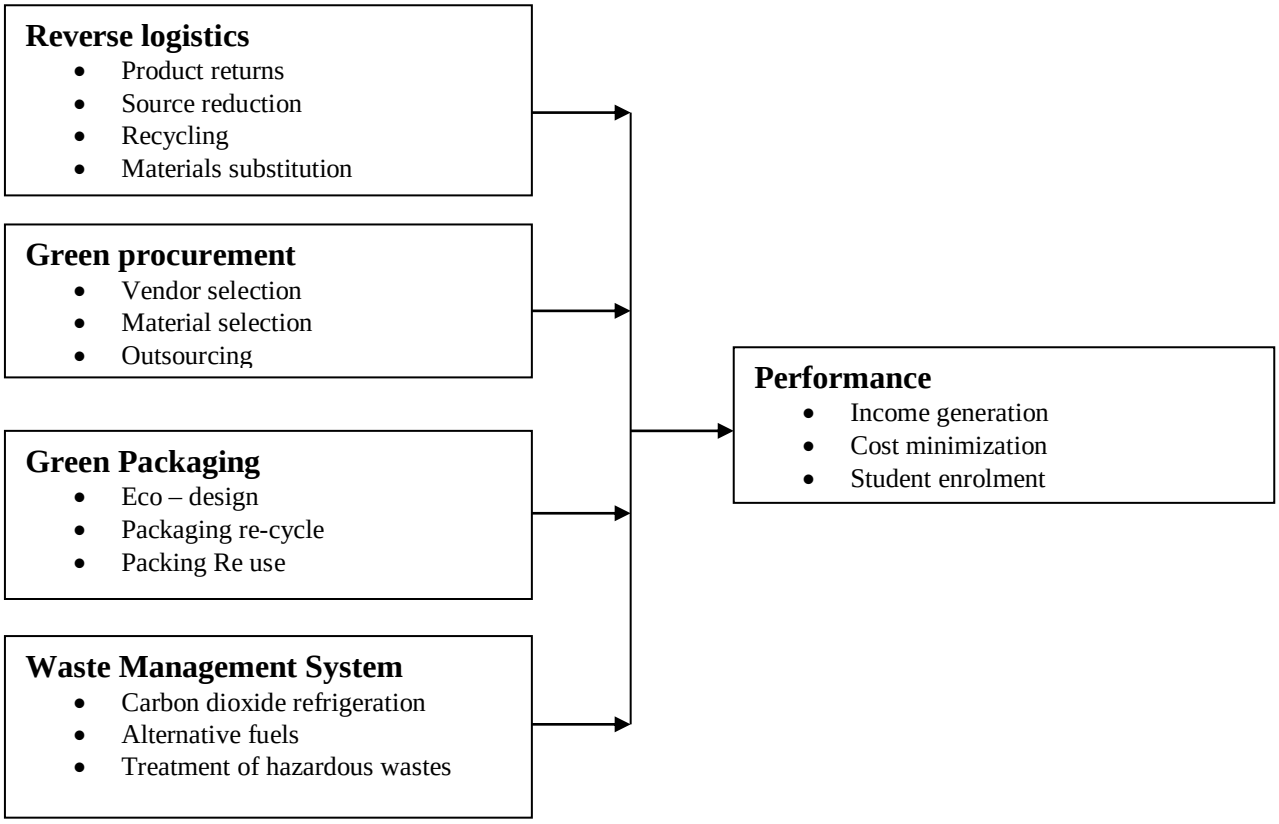

Figure 1: Conceptual Framework

Critique of Existing Literature

The GSCM practices have been expounded in detail in the literature as well as the studies done in the area. It has shown that there lacks a comprehensive framework on the GSCM practices and as a result different organizations adopts different practices that they deem suitable to their business context. As such there is lack of universally acceptable GSCM practices. The literature also pointed out the benefits accrued from adoption of GSC practices. These include the positive relationship between GSCM practices and improvement in the SCP as well as economic and environmental performance of the various organizations. Rha (2010) did a study on the GSCM and SCP but the study focused on the manufacturing firms only and recommended further research on the same on other practices and different firms. Obiso (2011) study found that majority of the independent petroleum marketing firms were not aware of GSCM and could not understand what is green supply chain practices are hence there is need to know if

pharmaceutical companies in Nairobi are aware of GSCM practices and if they are aware, which of the GSCM practices are they carrying out.

Khisa (2011) study shows that many organizations were either considering or just initiating implementation of green procurement practices. From his findings there was need for the public sector organizations in Kenya to adopt green procurement practices in order to help in the effort to conserve the environment. There was lack of knowledge on green practices in general hence there is a need to know if Pharmaceutical companies in Nairobi are aware of green procurement practices as it is one of the GSCM elements. Abuko (2011) study shows that adoption of Green Supply Chain practice influenced to a great extent quality improvement, efficiency, cost saving and productivity. He found out that most respondents were not aware of GSCM practices. However none of this study has sought to establish the effect of green supply chain management practices on performance.

Summary of Literature

The study has reviewed the supply chain management theory, logistics management theory, multi-attribute utility theory and price premium theory and their contribution on the effects of green supply chain management practices on performance of Kenyan Universities. The study has also reviewed the conceptual framework showing the relationship between green supply chain management practices and performance, this chapter also reviews the empirical studies relating to the study objective and critique of the existing literature.

The literature review confirms that there is a link between GSCM practices and supply chain performance. Whereas there is awareness on GSCM practices in various countries and organizations around the world, it does not apply in Kenya where no studies have been carried out on GSCM practices and performance in Kenya. It is therefore clear that there is need to find out the role of green supply chain management practices on supply chain performance at Kenya electricity generating company limited. These GSCM practices improved on the efficiency of their supply chain activities and further reduce waste through reverse logistics. Eventually, scholars consider these practices as increasing the performance of an organization and with it may come profitability and competitive advantage.

Research Gaps

Green supply chain management as an innovation helps to achieve sustainability by incorporating functions that help to save the natural environment. Various firms have adopted the practice worldwide for benefits accrued with it. Green supply chain management implementation has various drivers promoting it namely; regulation costs markets and company initiatives like corporate social responsibility (CSR) and global warming. According to study done by Italian researchers on over 4000 manufacturing firms in seven developed countries showed that green supply chain management increases environmental performance. They found that the main motivating factor to green supply chain management adoption was to improve the firm's

reputation and improve market image. Green supply chain management can be used as a managerial tool for improving environmental performance. The benefits of green supply chain management may not lead to short term increase in profits but the enhanced reputation and innovation may take time to affect the profits (Testa *et al*, 2010). Most firms have not adopted it fully due to lack of awareness and lack of knowledge on the green supply chain management concept (Nimawat *et al*, 2012).

Application of GSCM practices is expected to have a role on supply chain performance. Localized sourcing will lead to reduced short procurement distance and inventory costs. Reverse logistics will reduce space and time; this is expected to have an impact in reliability and responsiveness. Waste management solutions will reduce solid wastes and as such affect Supply Chain Management costs. Green procurement leads to timely delivery of materials, products and improved service to customers. This study sought to establish the effects of green supply chain management practices on performance of Kenyan Universities**.**

Research Methodology

The proposed study used descriptive design. The unit of observation was the University of Nairobi and the unit of analysis of the study was the six colleges in University of Nairobi. The study targets six colleges within University of Nairobi with 143 members of staff in the administration department that are believed to contribute to the overall performance of the University. The study used stratified random sampling to select the respondents. The study carried out a census on all the 143 respondents of the Administration Department of University of Nairobi given that the number of targeted respondents is not vast and that all the respondents are reachable within time frame set. According to Njoroge (2012) time, finances, population size and accuracy desired are the overriding factors to be considered when determining whether to go census or sampling.

Table 1: Sample Size

College	Population	Proportion	Sample
College of Health Sciences	25	100%	25
College of Architecture & Engineering	22	100%	22
College of Health & Sciences	25	100%	25
College of Agriculture & Veterinary Sciences	28	100%	28
College of Biological & Physical Sciences	20	100%	20
College of Education & External Studies	23	100%	23
Total	**143**		**143**

The study collected primary data. The data was collected using a questionnaire because it provides a standardized tool for data collection and observes neutrality during survey. The study carried out a pilot study to pre-test the validity and reliability of data collected using the questionnaire. The study selected a pilot group of 10 individuals from the target population of the

staffs at the administration department to test the reliability of the research instrument. This study collected the data using a self-administered questionnaire. Quantitative data was analyzed using descriptive statistics using Statistical Package for Social Sciences (SPSS) version 20. Qualitative data was analyzed through content analysis and was presented in pros form. Multiple regression analysis together with correlation was used to determine the relationships between dependent variable (Performance) and independent variables (Reverse Logistics, Waste Management System, Green Procurement and Green Packaging).The ANOVA test was used to establish the findings from the study and results presented in graphs and where appropriate.

Results and Discussions

Descriptive and inferential statistics have been used to discuss the findings of the study. Specifically the chapter reviews the responded rate, reliability test, demographic information, descriptive statistics and regression analysis. The sample size that was used for this study was 143 administrators. A total of 140 questionnaires were duly filled and returned. This translates to a response rate of 97.9%. According to Kothari (2007), 50% is adequate for analysis and reporting and response rate of 70% and over is excellent and hence the response rate in this study was excellent for deductions and conclusions made.

Reliability Results

A pilot study was conducted with a selected pilot group, the pilot study was conducted to test the validity and reliability of the research instruments. The validity of the instruments was enhanced by having objective questions included in the questionnaire. The findings for this study show that all the variables had coefficients greater than 0.7, thus the instrument was considered to be reliable. Reverse logistics had a Cronbach alpha of 0.812, green procurement had a Cronbach alpha of 0.798, green packaging had a Cronbach alpha of 0.713, water management systems had a Cronbach alpha of 0.763 and performance had a Cronbach's alpha of 0.782. This clearly shows that the research instrument was reliable and hence no amendments were needed.

Table 2: Cronbach reliability alpha

Construct	Cronbach reliability alpha	No of items	Comment
Reverse logistics	0.812	5	Accepted
Green procurement	0.798	4	Accepted
Green packaging	0.713	5	Accepted
Waste management system	0.763	5	Accepted
Performance	0.782	4	Accepted

Correlation Analysis

The results revealed that there was a strong positive correlation between Reverse logistics and performance as shown by $r = 0.771$, statistically significant $p = 0.001<0.01$; there was a positive

correlation between Waste Management System and performance as shown by r = 0.805, statistically significant P = 0.000; there was a positive correlation between Green procurement and performance as shown by r = 0.764, statistically significant P = 0.001; there was a positive correlation between Green packaging and performance as shown by r = 0.791, statistically significant P = 0.001. This implies that Reverse logistics, Waste Management System, Green procurement, Green packaging with performanceare related. The findings concur with Green and Zelbst (2012) who found that generally, the adoption of GSCM practices by manufacturing organizations leads to improved environmental performance and economic performance, which in turn, positively impact operational performance. Operational performance enhances organizational performance.

Table 3: Correlations Coefficient

		Performance	Reverse logistics	Waste Management	Green procurement	Green packaging
Performance	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	140				
Reverse logistics	Pearson Correlation	.771**	1			
	Sig. (2-tailed)	.001				
	N	140	140			
Waste Management	Pearson Correlation	.805**	.344	1		
	Sig. (2-tailed)	.000	.060			
	N	140	140	140		
Green procurement	Pearson Correlation	.764**	.511	.519	1	
	Sig. (2-tailed)	.001	.049	.071		
	N	140	140	140	140	
Green packaging	Pearson Correlation	.791**	.333	.435	.296	1
	Sig. (2-tailed)	.001	.068	.064	.182	
	N	140	140	140	140	140

Regression Analysis

Model Summary

The four independent variables namely Reverse logistics, Waste Management System, Green procurement, Green packaging that were studied; explain a variation 71.4% of performance of

Kenyan Universities as represented by adjusted R^2. This therefore means that other factors not studied in this research contribute 28.6% of performance of Kenyan Universities. This shows that there are other factors that influence performance of Kenyan Universities. The findings are related to the findings Omonge (2012) who found out that the competitiveness to the banks resulting from the green supply chain practices includes improved operational efficiency, increased customer base, offering superior services, reduction in waste level and all these leads to improved financial performance

Table 4: Model Summary

Model	R	R Square	Adjusted R Square
1	.857[a]	.735	.714

Analysis of Variance

The table 5 shows the analysis of variance. The results indicated that the model was significant since the p-value is 0.000 which is less than 0.05. The model is statistically significance in predicting how reverse logistics, green procurement, green packaging and waste management system influence performance of Kenyan Universities. F calculated (93.557) at level of significance 0.005 is greater than F critical (2.439).This shows goodness of fit of the model.

Table 5: Analysis of Variance

Model		Sum Squares	Df	Mean Square	F	Sig.
1	Regression	13.5	4	3.375	93.557	0.000
	Residual	4.87	135	0.036		
	Total	18.371	139			

Beta Coefficients

The regression equation was;

$Y = 1.471 + 0.426 X_1 + 0.241 X_2 + 0.333 X_3 + 0.111 X_4 + \varepsilon$

The regression equation above has established that taking all factors into account (reverse logistics, green procurement, green packing and waste management systems) constant, the performance of Kenyan Universities will be 1.471 units. The findings presented also show that there is a positive significant relationship between reverse logistics and performance of Kenyan Universities as shown by a coefficient of 0.426 (p-value=0.000). This shows that a unit increase in reverse logistics would lead to a 0.426 increase in performance of Kenyan Universities. In addition, there is a positive significant relationship between green procurement and performance

of Kenyan Universities as shown by a coefficient of 0.241 (p-value=0.021). A unit increase in green procurement leads to a 0.241 improvement in performance of Kenyan Universities.

Further, the findings show that there is a significant positive relationship between green packing and performance of Kenyan Universities as shown by a coefficient of 0.333 (p-value = 0.000). A unit increase in green packing would lead to a 0.334 increase in performance of Kenyan Universities. Lastly, there is a positive significant relationship between waste management systems and performance of Kenyan Universities as indicated by a coefficient of 0.111 (p-value = 0.032). The findings agree with Green and Zelbst (2012) who found that that generally, the adoption of GSCM practices by manufacturing organizations leads to improved environmental performance and economic performance, which in turn, positively impact operational performance. Operational performance enhances organizational performance.

Table 6: Beta Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.471	0.306		4.807	0.000
Reverse logistics	0.426	0.113	0.431	3.770	0.000
Green procurement	0.241	0.076	0.251	3.171	0.021
Green packaging	0.333	0.095	0.337	3.505	0.000
Waste management system	0.111	0.031	0.118	3.581	0.032

From these findings we can infer that reverse logistics influences the performance of Kenyan Universities most followed by green packaging, green procurement and waste management systems. Reverse logistics, green procurement, green packing and waste management systems were found to positively influence performance of Kenyan Universities.

Conclusions

From the finding the study revealed that there is a positive significant relationship between reverse logistics and performance of Kenyan Universities, this shows that a unit increase in reverse logistics would lead to increase in performance of Kenyan Universities. The study concludes that reverse logistics positively influence the performance of Kenyan Universities.

The study established that there is a positive significant relationship between green procurement and performance of Kenyan Universities, the study revealed that a unit increase in green procurement leads to increase in performance of Kenyan Universities. From the finding the study concludes that green procurement positively influence the performance of Kenyan Universities.

Further, the findings show that there is a significant positive relationship between green packing and performance of Kenyan Universities. A unit increase in green packing would lead to increase in performance of Kenyan Universities. The study thus concludes that green packing positively influence the performance of Kenyan Universities. The findings concur with Kirima (2014) who stated that the green process management is largely adopted where organizations indicated that their staff largely influences the performance of their organizations. The findings agree with Salma (2014) who found out an insignificant positive relationship between green operations practices adoption and financial performance.

Lastly the study found that there is a positive significant relationship between waste management systems and performance of Kenyan Universities as indicated by a coefficient of 0.111. From these findings we can infer that waste management system positively influences the performance of Kenyan Universities.

Recommendations

The study recommends that the management of Kenyan Universities should encourage proper utilization of materials and recycling of materials as the study found that reverse logistics affects the performance of Kenyan universities positively. The study recommends that the management of Kenyan Universities should integrate green procurement process in all its purchasing processes since it's characterized by a low environmental impact that is products environmentally friendly in nature and produced using environmentally friendly processes.

The study recommends that the management of Kenyan Universities should purchase products from manufacturers whose design products minimize consumption of materials and energy, that facilitate the reuse, recycle and recovery of component materials as the study found out that green packaging influences supply chain performance to a great extent. The study recommends that the management of Kenyan Universities should invest more in waste management systems as the study found out that waste management systems treats an controls post combustion emissions, treatment and recycle of waste created and allows for use of alternative fuels.

Areas of Further Study

The study sought to establish the effects of green supply chain management practices on performance of Kenyan Universities. A study should be conducted on the challenges in using green supply chain management practices in public Universities in Kenya. The study found that the study variables namely Reverse logistics, Waste Management System, Green procurement, Green packaging that were studied; explain a variation 71.4% of performance of Kenyan Universities as represented by adjusted R^2. This therefore means that other factors not studied in this research contribute 28.6% of performance of Kenyan Universities. The study recommends that other studies should be conducted to cover other factors that influence performance of Kenyan Universities to cover 28.6%.

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