

SUSTAINABLE PROCUREMENT PRACTICES AND PERFORMANCE OF CEMENT MANUFACTURING INDUSTRY IN MACHAKOS COUNTY, KENYA

¹ABDIRIZAK MOHAMED MUHUMED, ²DR. SAMSON NYANG'AU PAUL

Abstract: Globally substantial adverse changes in the environment as a result of economic activities of individuals and organizations have become a subject of critical concern hence in light of increased global warming, environmental degradation, reduced water catchment reserves, costs of waste management, health concerns, natural resource depletion as well as reduced and unpredictable weather changes have made society to be more conscious of their environment and enact legislations and policies relating to environment conservation. Organizations are continuously reviewing their procurement operations and processes to ensure they are sustainable in light of diminishing resources. A sustainable procurement practice not only has an impact on performance but also on its brand reputation as it is perceived as a corporate social responsibility. Cement manufacturing emissions are considered to be a major cause of global warming and health hazard as a result of the hazardous air emission. Therefore, this study was aimed at determining the sustainable procurement practices and performance of cement manufacturing industry in Machakos County. The study was guided by the following specific objectives: To determine the influence of reverse logistics on performance, to examine the influence of Green purchasing on performance, to analyze the influence of legal and regulatory framework on performance and finally to determine the influence of employee competency on performance of cement manufacturing industry in Machakos County. The theories that were used for the study were system theory, stakeholder theory, human capital theory and institutional theory. To realize this objective, a survey research design was adopted. The target population of the study constituted both managerial and staff members of cement manufacturing in Machakos County in the department procurement, waste management department, health and safety department and human resource department from which the target population was 529 respondents with a sample size of 105 respondents. The study used stratified sampling which makes up 20% of the target population. Primary data was collected from heads of departments and employees from the different manufacturing companies in Machakos. A fact sheet was used to summarize the data collected before analyzing using (SPSS) to obtain descriptive statistics; data collected was presented in the form of frequency tables. The study concluded that reverse logistics significantly and positively influenced performance of cement manufacturing companies in Machakos County. Further, the study concluded that green purchasing has a significant and a positive effect on Performance of cement manufacturing companies in Machakos County. The study also concluded that legal and regulatory framework had significant and a positive effect on performance of cement manufacturing companies in Machakos County. Finally, the study concluded that employee competency had a significant and positive effect on the performance of cement manufacturing companies in Machakos Count.

Keywords: reverse logistics, green purchasing, legal and regulatory framework and employee competency.

1. INTRODUCTION

According to WSSD (2002), there has been an increased sensitization and advocacy from both the governments and other stakeholders to implicitly and explicitly promote public procurement policies that enhance the manufacturing and processing of environmentally friendly goods and services. The EU and UN both noted that sustainable procurement was a crucial conduit for the achievement of the long-term strategy, consequently the EU formulated a ten years strategy with a focus on employment, research and development, climate change, sustainability, education and fighting poverty and social exclusion (European Commission, 2010).

In Africa, while sustainable procurement is still in the developmental stages, however, some countries have spearheaded the implementation of sustainable procurement practices. According to the Public sector procurement (2002) South Africa enacted and implemented national laws that made it mandatory that an environmental impact assessment is diligently undertaken on all large development state entities projects, moreover, provinces and municipalities were to be involved in the formulation and implementation of all green procurement policy.

In Kenya, the public procurement and disposal act, 2005 as well as the Constitution of Kenya 2010 are the cornerstone of major policies and legislative reforms intended to promote environmental protection through sustainable procurement of all business activities in both the private and public sector (Odhiambo, 2008). Moreover, there has been a gradual shift of focus from the conventional production processes and distribution systems by organizations to the integration of green procurement in their operations with collaboration with suppliers' as it has been widely realized that coordinated action is vital for the sustainability challenges (Awasthi, and Goyal, 2010).

Statement of the problem

In Kenya cement manufacturing is a major contributor of green house gas emissions that release a lot of carbon to the environment. These emissions can not only have an adverse effect on the long-term health of individuals but also is a major cause of global warming Shradhha and Nehal (2014). According to Kenya Solid Waste Management (2013) 42% of Kenya GDP and 70% of overall employment is derived from the manufacturing sector that non-renewable natural resources However, only about a mere 10% of the total waste generated by the industry is recycled indicating an urgent need for the manufacturing firms to use more sustainable procurement measures.

The legal and legislative laws such as the public procurement and disposal act, 2005, Kenya Solid Waste Management by laws of 2007, The Factories Act (Cap 514 of the Laws of Kenya), The Environmental Management and Co-ordination Regulations, 2006 are among the major reforms that the government have implemented to enhance sustainable procurement practices (Odhiambo, 2008). However, despite these legislative reforms and the ability of sustainable procurement to mitigate the effect of climate change and global warming not all manufacturing companies have integrated sustainable procurement practices in their operations (Nasiche and Ngugi, 2014).

Locally, numerous studies have been carried out with regards to sustainable procurement practices in the manufacturing sector such as Erick Otieno (2017) investigated green economy strategies adoption on financial performance at Bamburi cement additionally; Siyad bdullahi (2017) analyzed the role of green procurement on procurement performance of manufacturing in Kenya with a focus on Coca-Cola Company. Finally, Wanjiru (2018) conducted a research on the factors influencing adoption of green procurement practices by manufacturing firms in Kenya with a focus on Kiambu county firms. However, none of these and other studies gave insight on sustainable procurement practices on performance. This apparent knowledge gap is the underlying purpose of this study and therefore this research seeks to investigate the sustainable procurement practices on performance of cement manufacturing companies in Machakos County.

Objectives

- i. To determine the influence of reverse logistics on performance of cement manufacturing companies in Machakos County.
- ii. To examine the influence of green purchasing on performance of cement manufacturing companies in Machakos County.
- iii. To determine the influence of legal and regulatory framework on performance of cement manufacturing companies in Machakos County.
- iv. To establish the influence of employee competency on performance of cement manufacturing companies in Machakos County.

2. THEORETICAL REVIEW

System theory

According to Li and Geiser (2009) system theory advocates to the inter-related and interdependence of all parts in an organization, therefore, a change in one end of an organization will consequently affect the whole organization. Consequently, an organization is an open system that interacts with its environment in a bid to find and maintain an equilibrium as the organization adapts to changing environment. In the same vein, Mele, and Polese (2010) argued that a

systems theory should be perceived in a theoretical perspective in which a phenomenon can be seen as a complete element and not as simply as the sum of elementary parts. The underlying emphasis should be on the interactions of the individual element and on the relationships between those parts in order to understand an entity's organization, functioning and outcomes.

Human capital theory

According to Shaw (2009) human capital consists of knowledge, skills and abilities of the people employed in an organization. It consists of a key of the market worth of a company. Therefore, basing on the above clarification, one is forced to define the human capital theory as models that suggest employee acquire the knowledge, skills and capabilities that are vital to the organization. In concurrence, Olaniyan and Okemakinde (2008) argued that human Capital theory emphasizes on the importance of employee competency with the aim of improving the competence of the employees and its trickle effect on efficiency and productivity of workers through gradual enhancement of cognitive inventory of economically productive human functionality.

Institutional theory

According to Scott (2001).institutional theory argues that organizations are not only production systems but also include social and cultural systems; organization choices and actions are constrained and influenced by social behaviors, norms, and values within the environment hence, organizations sometimes have the desire and need to adopt and adhere to rules and practices created from environmental pressure, which may not be the organization's original intent. Institutional theory as proposed by Hirsch (1975) is concerned with how external pressures influence an organization decision-making and emphasizes the role of social and cultural pressures imposed on organizations that influence its practices and structures.

Stakeholder theory

According to Friedman and Miles (2006) stakeholders are those individuals that are either affected by the activities of the organization such as employees and customers or affect the way the organization operates such as investors and suppliers. Therefore, stakeholder theory emphasizes on involving all stakeholders in the operation of the organization. According to Baldwin (2002) the concept of stakeholder management was developed so that organizations could recognize, analyze and examine the characteristics of individuals or groups influencing or being influenced organizational behavior. Thus, management is carried out over three levels: the identification of stakeholders; the development of processes identifying and interpreting their needs and interests; and finally construction of relationships with the entire process structured around the organization's respective objectives.

Conceptual framework

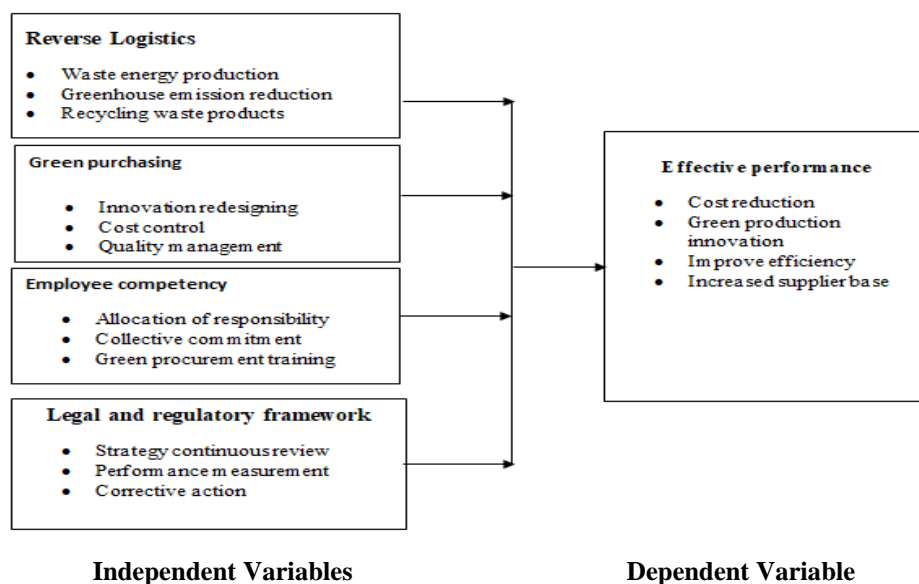


Figure 1

Critique of the literature review

According to Carter and Rogers (2008) the perceived general consensus on sustainability refers to the consideration of the social, economic and environmental aspects of an organization's business and its interaction with these elements; however, a review of existing literature demonstrates that sustainability has not been defined and applied consistently in research and that it's not certain if the application of the ideals of sustainability adds value to businesses and thereby increasing the chances of economic success as it appears that little grounded research has been carried out. Nasiche and Ngugi (2014) noted that although green procurement would help control a number of evils such as global warming and climate change, not all manufacturing companies will taken up to the idea of accepting sustainable procurement.

Farzin and Nezhad (2010) posits that education may simply be a market signal of the potential productivity of a worker since there is hardly any other way for firms to determine the productive attributes of a worker. Voss (2005) noted that stakeholder theory does not respond to the needs or demands of stakeholders given that these are dynamic, latent or difficult to discern. Moreover, stakeholder theory ignores that Stakeholder groups and subgroups may have multiple interests, multiple roles and they differing widely in terms of interests, involvement and influence capacity. They are all bundled in one group as they have a common stake, but they do not necessarily share a common objective (Winn, 2001).

Research Gaps

Despite the grave importance and benefits accrued to sustainable procurement practices the number of research that have analyzed the influence of sustainable procurement practices on procurement performance is procurement challenges influencing implementation of electronic procurement is inadequate at best. Research by Eshikumo (2017) analyzed green manufacturing and operational performance of cement manufacturing firms; however this study focused on all manufacturing firms in Kenya. Gatari (2014) investigated the challenges facing the implementation of green procurement in the manufacturing sector with a focus on Unga limited.

Nevertheless, the study lacked a dependent variable and therefore failed to illustrate how procurement performance is affected by the challenges. Okeyo (2017) investigated green economy strategies adoption on financial performance in Bamburi cement, however, the researcher by omission or commission did not explain the influence of green economy adoption on procurement performance These studies among others have not specifically addressed the knowledge gap of the influence sustainable procurement practices has on performance of cement manufacturing in Machakos county.

3. RESEARCH METHODOLOGY

This study adopted a descriptive research design. This study therefore, will target 529 respondents that are member staff of the department of health and safety, procurement department, human resource department and waste management department under the study their objective opinion and insight was valuable. A simple random sampling was used to a population sample and a target population of 529 respondents in all the four cement manufacturing company. The simple random sampling technique presents each individual in the population of study with an equal chance or probability to be selected (Cooper and Schindler, 2006). (Mugenda and Mugenda, 2003) considers a sample size of 10% -50% as sufficient enough, this study therefore, made use of 20% of the population size. The target respondents was assured of the confidentiality of their information. The questionnaire was self-administered to the respondents and was collected after three days. The questionnaires were pilot tested before the actual data collection. The researcher was interested in testing the reliability of the research instruments, the questionnaire hence validity of data collected. For this research both primary and secondary data collecting methods was used. The information gathered from the respondents was of a qualitative and quantitative nature. The data was summarized and then analyzed by the use of descriptive statistics comprising of tables, graphs and percentages. The MS Excel, statistical software was used to analyze the collected information. This is because the MS Excel provides simplified analysis that is easy to interpret and present.

Model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

β_0 = Constant

Y= Performance

X1= Reverse Logistics

X2= Employee competency

X3= Green purchasing

X4= Legal and regulatory framework

β_i = Coefficients of regression for the independent variables X_i (for $i = 1,2,3,4$)

ε = error term

4. REGRESSION RESULTS

Significance of Independent Variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	692	.033		.000	.000
Reverse logistics	.881	.040	.817	24.402	.000
Green purchasing	.637	.045	.637	16.252	.002
Legal and regulatory framework	.553	.052	.735	11.189	.003
Employee competency	.467	.123	.151	11.210	.001

a. Dependent Variable: Sustainability

The results in Table 4.18 indicate that reverse logistics significantly and positively influenced performance of cement manufacturing companies in Machakos County. This indicates that reverse logistics affect performance of cement manufacturing companies in Machakos County given by multiple linear regression model which revealed that operational restructuring strategy is significantly and positively affect performance of performance of cement manufacturing companies in Machakos County and thus for every unit increase in reverse logistics, performance increases by 88.1%.

Further, green purchasing has a significant and a positive effect on Performance of cement manufacturing companies in Machakos County. The results shows that for every unit increase in green purchasing, performance of Performance of cement manufacturing companies in Machakos County increases by 0.637%. This indicates that green purchasing were effective in influencing performance of cement manufacturing companies in Machakos County .

Legal and regulatory framework had significant and a positive effect on performance of cement manufacturing companies in Machakos County. The result shows that for every unit increase in legal and regulatory framework, performance of cement manufacturing companies in Machakos County increases by 0.553%.

Employee competency had a significant and positive effect on the performance of cement manufacturing companies in Machakos County. The result shows that for every unit increase in employee competency, performance of cement manufacturing companies in Machakos County increases by 0.467 %. These results indicate that the employee competency was effective in influencing performance of cement manufacturing companies in Machakos County

5. CONCLUSION

The study concluded that reverse logistics significantly and positively influenced performance of cement manufacturing companies in Machakos County. Further, the study concluded that green purchasing has a significant and a positive effect on Performance of cement manufacturing companies in Machakos County. The study also concluded that legal and regulatory framework had significant and a positive effect on performance of cement manufacturing companies in Machakos County. Finally, the study concluded that employee competency had a significant and positive effect on the performance of cement manufacturing companies in Machakos County.

Suggestions for Further Research

The study has identified the sustainable procurement practices on performance of cement manufacturing companies in Machakos County. However, this study calls for a further investigation of each single factor to ensure that the issue of sustainable procurement practices is fully addressed not only in companies but also across the financial institutions. Since this study concentrated on sustainable procurement practices on performance of cement manufacturing companies in Machakos County, further studies should be done in other sector for comparison purposes and allow for generalization of the findings. This study further recommends that since the study was limited to only four variables, a similar study could be conducted with additional variables. Different models besides regression could also be used on similar studies to get an in-depth understanding of the relationships between the variables being studied.

REFERENCES

- [1] Brundtland, G. H. (1985). World commission on environment and development. *Environmental policy and law*, 14(1), 26-30.
- [2] Ebner, D., and Baumgartner, R. J. (2006, September). The relationship between sustainable development and corporate social responsibility. In *Corporate responsibility research conference*. 2006). Queens University, Belfast Dublin.
- [3] Sadorsky, P. (2014). The effect of urbanization and industrialization on energy use in emerging economies: implications for sustainable development. *American Journal of Economics and Sociology*, 73(2), 392-409.
- [4] Mensah, S., and Ameyaw, C. (2012). Sustainable procurement: the challenges of practice in the Ghanaian construction industry. In *West Africa Built Environment Research (WABER) Conference 24-26 July 2012 Abuja, Nigeria*.
- [5] Setyowati, N., Sudjatmiko, S., Mukhtar, Z., Fahrurrozi, F., Chozin, M., and Simatupang, P. (2018). Growth and yield responses of cauliflower on tithonia (*Tithonia diversifolia*) compost under organic farming practices. *International Journal of Agricultural Technology*, 14(7 Special Issue), 1905-1914.
- [6] Smith, J. (2005). Dangerous news: Media decision making about climate change risk. *Risk Analysis: An International Journal*, 25(6), 1471-1482.
- [7] Center, E. C. Japan (ECCJ). 2007. Overview of Energy Saving Technologies in Textile Industry.
- [8] Vaidya, K., Sajeev, A. S. M., and Callender, G. (2006). Critical factors that influence e-procurement implementation success in the public sector. *Journal of public procurement*, 6(1/2), 70-99.
- [9] Will, M., Vogelzang, L., Wanyonyi, M., and Hoeffler, H. (2008). Capacity Development Concept for Value Chain Development: Promotion of Private Sector Development in Agriculture (PSDA). *Kenyan Ministry of Agriculture and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH*.
- [10] Alene, A. D., Manyong, V. M., Omany, G., Mignouna, H. D., Bokanga, M., and Odhiambo, G. (2008). Smallholder market participation under transactions costs: Maize supply and fertilizer demand in Kenya. *Food policy*, 33(4), 318-328.
- [11] Awasthi, A., Chauhan, S. S., and Goyal, S. K. (2010). A fuzzy multicriteria approach for evaluating environmental performance of suppliers. *International Journal of Production Economics*, 126(2), 370-378.
- [12] Genchev, S. E., Glenn Richey, R., and Gabler, C. B. (2011). Evaluating reverse logistics programs: a suggested process formalization. *The International Journal of Logistics Management*, 22(2), 242-263.
- [13] Muhia, D. W., and Afande, F. O. (2015). Adoption of e-procurement strategy and procurement performance in state corporations in Kenya (A case of Kenya Revenue Authority). *Industrial Engineering Letters*, 5(6), 1-24.
- [14] Tseng, S. M., and Wu, P. H. (2014). The impact of customer knowledge and customer relationship management on service quality. *International journal of quality and service sciences*, 6(1), 77-96.

- [15] Preuss, L., and Walker, H. (2011). Psychological barriers in the road to sustainable development: evidence from public sector procurement. *Public Administration*, 89(2), 493-521.
- [16] Gitimu, P., Workman, J., and Anderson, M. (2005). Influences of training and strategical information processing style on spatial performance in apparel design. *Career and Technical Education Research*, 30(3), 147-168.
- [17] Bartle, I. (2009). A strategy for better climate change regulation: towards a public interest orientated regulatory regime. *Environmental Politics*, 18(5), 689-706.
- [18] Todnem By, R. (2005). Organisational change management: A critical review. *Journal of change management*, 5(4), 369-380.
- [19] Walker, H., and Brammer, S. (2012). The relationship between sustainable procurement and e-procurement in the public sector. *International Journal of Production Economics*, 140(1), 256-268.
- [20] Were, A. (2016). Manufacturing in Kenya: features, challenges and opportunities. *A scoping exercise*, 11-22.
- [21] Rono, C. (2013). Lean manufacturing practices in a continuous process industry: A case study of Bamburi Cement Limited. *Unpublished MBA Project*.
- [22] Molonket, L., Ombuki, C., and Wawire, N. (2014). Effects of competition on the profitability of cement manufacturers in Kenya. *European Journal of Business and Social Sciences*, 3(7), 40-48.
- [23] Wanguu, K. C., and Kipkirui, S. E. (2015). The Effect of Working Capital Management on Profitability of Cement Manufacturing Companies in Kenya. *IOSR Journal of Economics and Finance (IOSRJEF)*, 53-61.
- [24] Christopher, P., Xin, H., and Linic, S. (2011). Visible-light-enhanced catalytic oxidation reactions on plasmonic silver nanostructures. *Nature chemistry*, 3(6), 467.
- [25] Eshikumo, S. M., and Odock, S. O. (2017). Green Manufacturing and Operational Performance of a Firm: Case of Cement Manufacturing in Kenya. *International Journal of Business and Social Science*, 8(4).
- [26] Nasiche, F., and Ngugi, G. K. (2014). Determinants of adoption of green procurement in the public sector: A case study of Kenya Pipeline Company. *International Journal of Social Sciences and Entrepreneurship*, 1(11), 351-372.
- [27] Otieno, E. N., and Frenette, L. (2017). Stable isotope evidence shows key farmland structure features driving Eastern Wild Turkey food selection. *Ornithological science*, 16(2), 121-129.
- [28] Geiser, B., Kruger, H., Lollmann, H. W., Vary, P., Zhang, D., Wan, H., ... and Zhang, L. B. (2009, April). Candidate proposal for ITU-T super-wideband speech and audio coding. In *2009 IEEE International Conference on Acoustics, Speech and Signal Processing* (pp. 4121-4124). IEEE.
- [29] Mele, C., Pels, J., and Polese, F. (2010). A brief review of systems theories and their managerial applications. *Service Science*, 2(1-2), 126-135.
- [30] Plieninger, T., Dijks, S., Oteros-Rozas, E., and Bieling, C. (2013). Assessing, mapping, and quantifying cultural ecosystem services at community level. *Land use policy*, 33, 118-129.