
Suppliers Sourcing Strategy and Sustainable Procurement Performance Among Kenya Tea Development Agency Factories in Region 5, Kenya

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Abstract: *Companies involved in a supply chain must coordinate their operations through adoption of inbound logistics strategies so as to enhance business performance. KTDA factories have adopted inbound logistics strategies with the aim of turning around their performance as well as reduce operational costs leading to sustainable procurement performance. However, despite this KTDA tea factories still experience wide variations in earnings. The drop in earnings and high variation in tea bonuses among factories has been blamed on operational cost at the factory. This points out that although inbound logistics have been adopted, they have not resulted in sustainable procurement performance. The purpose of this study was to determine the relationship between suppliers sourcing strategy and sustainable procurement performance. The study adopted correlation research design. The target population of the study was 188 staff drawn from the 16 KTDA managed Region 5 factories. A census method was used to collect data from the production managers, ICT managers, procurement Managers, leaf base managers, factory unit managers and directors using a structured questionnaire. The findings revealed that suppliers sourcing strategies had a positive significant correlation with sustainable procurement performance ($r = 0.545$, $p < 0.05$). The study recommends that KTDA sourcing strategies need to aligned to organizational sustainability goal, develop procedures and policies on material handling with sustainability goal. The results of this study may advice on policy formulation in relation to sourcing strategies and sustainable procurement performance. Other researchers may benefit from the literature on inbound logistics and sustainable procurement performance since the current study provided a basis for further studies.*

Keywords: sustainable procurement performance, supplier sourcing strategy, sourcing strategies

INTRODUCTION

Sustainable procurement takes into account social and environmental factors in addition to economic factors. Sustainable procurement performance (SPP) ensures that purchases of goods

Publication of the European Centre for Research Training and Development-UK and services made satisfy a company's requirements in a way that benefits the business and society at large while having the fewest adverse effects on the environment, (ISO, 2017). A review of the literature on techniques and sources for sustainable supplier selection was published in 2019 in Iran by Alikhani *et al.*, Multi-Criteria Decision-Making (MCDM) strategies were shown to be the most popular, according to the findings. Selecting sustainable suppliers is an essential SSCM choice because of the overall effect it has on the organization's sustainability performance. The upstream supply chain was established in a study in Germany that it must be integrated for this decision to yield the greatest benefits, (Zimmer, Frohling, & Schultmann, 2016).

Studies on supplier sourcing and sustainable performance many have been conducted in developed countries like China, Iran, Spain, India, Germany and United Kingdom Many adopted different methodologies in their studies with some using empirical literature investigation, stochastic programming approach, multi-method approach with some using secondary data to measure the study variables.,(China, Li, *et al.*, 2019; Ghadge, 2018; Koberg & Longoni, 2019; Luthra, *et al.*, 2017; Torabi, *et al.*, 2015; Zimmer, *et al.*, 2016).

Procurement practices should be looked at as part of organizational strategy and be involved in the budgeting process, supplier choice and consolidation, concern for the environment and issues touching on quality and technological advances. Organizations should address and manage environmental and social issues that impact organization (Carter & Liane, 2011) and use supply chain strategies that enable them gain competitive advantage (Belfit *et al.*, 2011).

In order to encourage and promote tea cultivation on small farms, Kenya Tea Development Authority was founded in 1964 as a division of Special Crops Development Authority (SCDA). Kenya Tea Development Authority, one of the biggest private tea management companies in the country, changed its name to Kenya Tea Development Agency Limited in 2000 and was incorporated as a private company under the Companies Act CAP 486, (KTDA, 2013). Kenya's small-scale tea industry is managed by KTDA with seven tea-growing regions represented by the board of directors who oversees the company management. KTDA is in charge of overseeing 66 factories which use the same type of business strategy. The company receives tea from small-scale farmers, process it and ensure proper marketing. Good supply chain management techniques are needed both upstream and downstream for all of these activities since they involve complex supply chains with value addition. Supply chain activities may be disrupted, resulting in losses, which could prevent KTDA factories from operating efficiently if proper supply chain management procedures are not put into place (KTDA, 2023).

Statement of the Problem

KTDA factories have adopted sourcing strategies with the aim of turning around their performance as well as reduce operational costs leading to sustainable procurement performance. However, despite this KTDA tea factories still experience wide variations in earnings. The drop

in earnings and high variation in tea bonuses among factories has been attributed to operational cost at the factory. This points out that although sourcing strategies have been adopted, they have not resulted in sustainable procurement performance. Most of the previous studies have focused on sourcing strategies and performance but limited studies have been done on sustainable procurement performance. Many others have been done on government corporations, telecommunication industry, cement manufacturing industries, transportation firms and other sectors leaving the tea industry largely unexplored. In addition, many of the studies have reported varying degrees of effects of sourcing strategies on various aspects of business performance with some reporting contradicting findings. There is the need therefore for a study to show the relationship between sourcing strategy and sustainable procurement performance.

REVIEW OF LITERATURE

According to Guide (2013), supplier sourcing entails identifying, evaluating, selecting, and engaging with a suitable supplier who can provide quality goods and services, allowing the organization to get the best value in terms of both product and cost. This process necessitates the management of suppliers through continuous evaluation and quality initiatives, as well as the management and mitigation of supply risks. The goal of sourcing suppliers is to evaluate the efficiency of quality, delivery, and cost in relation to profitability in order to promote more sustainable business activities.

In their study in Germany on sustainable supplier management, Zimmer, Frohling and Schultmann (2016), used models for sustainable supplier selection, monitoring, and development. According to their findings, the Analytic Hierarchy Process (AHP), Analytic Network Process, and interest in sustainable supplier management have all increased.

AHP and Multi-criteria Optimization and Compromise Solution (VIKOR) were combined by Luthra, Govindan, Kannan, Mangla, & Garg (2017) to evaluate sustainable supplier selection criteria from a supply chain viewpoint in an Indian car maker. Environmental costs, product quality, cost, Occupation, Health and Safety programs, and the most crucial criteria for choosing a sustainable supplier were found to be environmental capabilities.

Ghadge, Karantoni, Chaudhuri, & Srinivasan (2018), in United Kingdom, studied the trends in big companies' sustainability performance for supplier selection across supply chain tiers and geographical areas. With the help of hierarchical multiple regression analysis, secondary data on 83 large, international companies discussing sustainable procurement methods was analyzed. In order to develop the hypotheses, the dynamic capabilities view and stakeholder theory was used. The findings reveal that the performance of large firms' sustainable procurement varies throughout supply chain tiers and improves in the direction of the final consumer. There are no

discernible differences between geographic regions due to the standardization of legislation and the adaptable capacities of multinational, huge corporations.

Torabi, Baghersad, & Mansouri (2015), in Iran did a study to solve supplier selection in a disrupted supply chain using a two-stage stochastic programming approach. Because disruptive events have an effect on the supply bases that are chosen as well as the overall demand that suppliers must meet, they came to the conclusion that they should be taken into account when choosing a supply portfolio.

In China, Li, Fang, & Song (2019), developed a methodology for identifying sustainable supply chain management techniques that may be utilized to assess and select suppliers. Sustainable suppliers were chosen using the TOPSIS (Technique for Order Performance by Similarity to Ideal Solution) technique. Then it was advised to employ an integrated weighing approach to assign various criteria weights based on arbitrary and factual data. In order to support the suggested method, the energy firm owned by the Chinese government participated in a case study. The findings demonstrated that managers can analyze suppliers more successfully, suppliers can identify their performance gaps, and suppliers are ranked more precisely when various uncertainties are taken into account.

A hybrid Strengths, Weaknesses, Opportunities, and Threats (SWOT-QFD) systematic framework was developed by Vahidi *et al.*, (2018) in Iran, to pinpoint the most important sustainability requirements, an illustration case study was used to show how useful the framework is, employing a case study from the electronics sector, Aghajani, & Ghadimi, (2018) suggested employing Multi-Agent Systems (MASs) to automate and streamline the process of selecting sustainable suppliers and allocating orders in the medical device.

A comprehensive literature review on extending sustainability to suppliers was done by Koberg & Longoni (2019), in Spain, was done using a structured literature review analysis of previously published studies was used in the study's design with the aim of evaluating contributions, compiling knowledge, and identifying managerial implications as well as potential research directions. From the study, collaboration and supplier evaluation are efficient ways to raise sustainability. The results show, though, that assessment alone is insufficient, and businesses must adopt a collaborative approach. This study aimed to accomplish this by incorporating supplier evaluation techniques, codes of conduct, and collaborative activities into their performance, like surprise visits and scorecards.

Alikhani, Torabi & Altay (2019), in Iran, used a multi-method approach based on quantitative empirical investigations and analytical modeling to study the selection of strategic suppliers based on risk and sustainability criteria. Using interval type-2 fuzzy sets and an extended super-efficiency DEA model with both desired and undesirable inputs and outputs, the study monitored decision maker inputs and evaluated providers. This strategy deals with supplier selection,

Publication of the European Centre for Research Training and Development-UK sustainability, and supplier risk factors all at once. The study's findings suggest that making decisions without taking sustainability criteria or risk factors into account can be detrimental.

Studies on supplier sourcing and sustainable performance many have been conducted in developed countries like China, Iran, Spain, India, Germany and United Kingdom. Many adopted different methodologies in their studies with some using empirical literature investigation, stochastic programming approach, multi-method approach with some using secondary data to measure the study variables. A study by Koberg & Longoni (2019) reported that supplier assessment alone is insufficient in achieving sustainable performance and recommended that businesses should adopt a collaborative approach. This suggests that supplier sourcing strategy should be investigated in collaboration with other inbound logistic strategies in order to establish their collective relationship with sustainable procurement performance. There was need to determine supplier sourcing strategies and sustainable procurement performance in the tea industry in Kenya.

Research design

A correlation research design was adopted since it respond to questions like "what, who, and how" of a phenomenon (Donald & Pamela, 2006). Insights into current phenomena relating to circumstances, activities, and relationships were gained through this research design (Salaria, 2012). The design calculates the degree to which various variables are related and determine whether and how much there is a relationship between two or more quantifiable variables, (Mugenda & Mugenda, 2003).

Kenya's South Rift Region produces more tea compared to other regions hence the study was undertaken in the entire 16 KTDA region 5 Factories, also known as Kericho Highlands. The region has a high tea production and small-scale farmers expect factories to pay them well for the tea leaves supplied at the end of the month as well as at the end of the year in the form of bonuses. The payout usually varies from year to year and that the amount paid is unique to an individual factory rather than the region as a whole. This has led to more farmers opting to deliver their tea leaves to private as well as multinational tea companies' factories in the region hence a study on inbound logistics and sustainable procurement performance added value to KTDA managed factories.

Production managers, ICT managers, Procurement Managers, Leaf Base Managers, Factory Unit Managers, and Directors in Region 5 KTDA factories in Kenya were the target population. The target population was selected based on their knowledge on the operations of Kenya tea development authority factory in relation to inbound logistic and sustainable procurement performance. Since the target population in the study is manageable the study used census method in that data were collected from all the Production managers, ICT managers, Procurement Managers, Leaf Base Managers, Factory Unit Managers, and Directors drawn from the 16 Region 5 KTDA factories.

RESEARCH FINDINGS

The findings are as per Table 1.

Table 1 Suppliers sourcing strategy adopted by KTDA tea factories

Sourcing strategy	1	2	3	4	5	N	M	SD
The company during sourcing for suppliers evaluate their efficiency of quality, delivery and cost so as to make a saving.	5 (3.0%)	6 (3.6%)	3 (1.8%)	111 (65.7%)	44 (26.0%)	169	4.08	0.83
Our company have adopted suppliers sourcing strategies with economic advantages and that which create positive social impact	6 (3.6%)	8 (4.7%)	3 (1.8%)	127 (75.1%)	25 (14.8%)	169	3.92	0.82
Our suppliers sourcing strategies are aligned to organizational sustainability initiatives with those of the suppliers/customers so as to save and reduce costs;	5 (3.0%)	6 (3.6%)	3 (1.8%)	98 (58.0%)	56 (33.1%)	169	4.15	0.86
We consider results-oriented supplier during sourcing for suppliers	3 (1.8%)	7 (4.1%)	4 (2.4%)	111 (65.7%)	44 (26.0%)	169	4.10	0.77
We review suppliers' knowledge of the various supplier sustainability initiatives before awarding the tenders	5 (3.0%)	8 (4.7%)	3 (1.8%)	113 (66.9%)	40 (23.7%)	169	4.04	0.84
Suppliers' overall performance regarding corporate sustainability is one of the key indicators we check during sourcing of suppliers	3 (1.8%)	8 (4.7%)	5 (3.0%)	110 (65.1%)	43 (23.4%)	169	4.07	0.79
Overall						169	4.06	0.82

The findings as per Table 1 reveals that majority of the respondents who were 155 (91.7%) agreed that their organization during sourcing for suppliers evaluate their efficiency of quality, delivery and cost so as to make a saving. Respondents who were 11 (6.6%) disagreed that their organization during sourcing for suppliers evaluates their efficiency of quality, delivery and cost so as to make a saving while 3 (1.8%) respondents were undecided. The mean of 4.08 and

standard deviation of 0.83 implies that the KTDA factories during sourcing for suppliers evaluate their efficiency of quality, delivery and cost so as to make a saving.

Respondents who were 152 (89.9%) agreed that their organization had adopted suppliers sourcing strategies with economic advantages and that which create positive social impact. Respondents who were 14 (8.3%) disagreed that their organization had adopted suppliers sourcing strategies with economic advantages and that which create positive social impact while 3 (1.8%) respondents were undecided. The findings reveals that KTDA factories have adopted suppliers sourcing strategies with economic advantages and that which create positive social impact as revealed by a mean of 3.92 and standard deviation of 0.82.

Respondents who were 154 (91.1%) agreed that their suppliers sourcing strategies were aligned to organizational sustainability initiatives with those of the suppliers/customers so as to save and reduce costs. Respondents who were 11 (6.6%) disagreed that their suppliers sourcing strategies were aligned to organizational sustainability initiatives with those of the suppliers/customers so as to save and reduce costs. Respondents who were 3 (1.8%) were undecided. Suppliers sourcing strategies adopted by KTDA were aligned to organizational sustainability initiatives with those of the suppliers/customers so as to save and reduce costs as revealed by a mean of 4.15 and standard deviation of 0.86.

Majority of respondents 155 (91.7%) agreed that they consider results-oriented supplier during sourcing for suppliers. The respondents who were 10 (5.9%) disagreed that consider results-oriented supplier during sourcing for suppliers, while 4 (2.4%) respondents were undecided. A mean of 4.10 and a standard deviation of 0.77 implies that KTDA factories considers results-oriented supplier during sourcing for suppliers.

Majority of the respondents who were 153 (90.6%) agreed that they review suppliers' knowledge of the various supplier sustainability initiatives before awarding the tenders while respondents who were 13 (7.7%) disagreed that they review suppliers' knowledge of the various supplier sustainability initiatives before awarding the tenders while agreed that 3 (1.8%) respondents were undecided. KTDA review suppliers' knowledge of the various supplier sustainability initiatives before awarding the tenders as revealed by a mean of 4.04 and standard deviation of 0.84. Suppliers' overall performance regarding corporate sustainability is one of the key indicators checked during sourcing of suppliers. This is as per the respondents who were 153 (90.5%) who agreed and 11 (6.5%) disagreed while 5 (3.0%) respondents were undecided. Suppliers' overall performance regarding corporate sustainability is one of the key indicators KTDA check during sourcing of suppliers as revealed by a mean of 4.07 and a standard deviation of 0.79.

The mean of 4.08 and standard deviation of 0.83 implied that the KTDA factories during sourcing for suppliers evaluate their efficiency of quality, delivery and cost so as to make a

saving. This agrees with Guide (2013), who noted that supplier sourcing entails identifying, evaluating, selecting, and engaging with a suitable supplier who can provide quality goods and services, allowing the organization to get the best value in terms of both product and cost. This shows that KTDA managed factories continuously evaluate and manage their suppliers so as to mitigate supply risks by ensuring efficiency of quality delivery and cost in order to promote more sustainable business activities.

The findings revealed that KTDA factories have adopted suppliers sourcing strategies with economic advantages and that which create positive social impact as revealed by a mean of 3.92 and standard deviation of 0.82. The findings concur with Luthra, *et al* (2017) who established that the criterion for supplier selection entails; environmental costs, product quality, cost, Occupation, Health and Safety programs, and environmental capabilities. This revealed that KTDA factories through its suppliers sourcing strategies have actualized economical and social advantages.

Suppliers sourcing strategies adopted by KTDA were aligned to organizational sustainability initiatives with those of the suppliers/customers so as to save and reduce costs as revealed by a mean of 4.15 and standard deviation of 0.86. This agrees with the findings of Ghadge *et al* (2018), who found that firms' sustainable procurement improves consumer. This shows that KTDA factories suppliers sourcing strategies are aligned to sustainability. A mean of 4.10 and a standard deviation of 0.77 implied that KTDA factories considers results-oriented supplier during sourcing for suppliers. This is in agreement with Koberg & Longoni (2019), who established that collaboration and supplier evaluation are efficient ways to raise sustainability.

According to Alikhani *et al.*, (2019), making decisions without taking sustainability criteria or risk factors into account is detrimental. This is true since the findings revealed that KTDA review suppliers' knowledge of the various supplier sustainability initiatives before awarding the tenders as revealed by a mean of 4.04 and standard deviation of 0.84. The findings show that KTDA consider sustainability during sourcing of suppliers.

Suppliers' overall performance regarding corporate sustainability is one of the key indicators KTDA check during sourcing of suppliers as revealed by a mean of 4.07 and a standard deviation of 0.79. These findings agree with Koberg and Longoni (2019) who reported that supplier assessment alone is insufficient in achieving sustainable performance and that businesses should adopt a collaborative approach.

4.1 Relationship between suppliers sourcing strategy and sustainable procurement performance

The study sought to determine the relationship between suppliers sourcing strategy and sustainable procurement performance among KTDA factories in Kenya. Simple regression model was used to test the hypothesis **H₀₁**: *There is no statistically significant relationship*

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between supplier's sourcing strategy and sustainable procurement performance among KTDA factories, Kenya.

Table 2 Model Summary for suppliers sourcing strategy and sustainable procurement performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.545 ^a	0.297	0.293	0.76485

a. Predictors: (Constant), suppliers sourcing strategy

Table 2 revealed that suppliers sourcing strategy had positive significant relationship with sustainable procurement performance as shown by the value of (R = 0.545). The results showed that 29.7% of sustainable procurement performance is explained by supplier sourcing strategy (R Square = 0.297). However, other factors not in the study attributed to 70.3% variation in sustainable procurement performance.

ANOVA analysis was used to test suppliers sourcing strategy and sustainable procurement performance. The hypothesis was tested using 5% significant level.

Table 3 ANOVA results for suppliers sourcing strategy and sustainable procurement performance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	41.243	1	41.243	70.500	.000 ^b
	Residual	97.695	167	.585		
	Total	138.938	168			

a. Dependent Variable: Sustainable Procurement Performance

b. Predictors: (Constant), Sourcing Strategy

Table 3 on ANOVA revealed that there existed significant relationship between suppliers sourcing strategy and sustainable procurement performance ($F_{(1,167)} = 70.500, p < 0.05$). The findings showed that the significance value is 0.000 which is below 0.05. This implies that there is a statistically significant relationship between suppliers sourcing strategy and sustainable procurement performance. ANOVA results shows that the model used was suitable for data analysis meaning that the model suits the data in explaining the relationship between sourcing strategy and sustainable procurement performance.

Table 4 Coefficients results for suppliers sourcing strategy and sustainable procurement performance

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.883	0.158		11.955	0.000
	Sourcing Strategy	0.407	0.048	0.545	8.396	0.000

a. Dependent Variable: Sustainable Procurement Performance

As presented on Table 4, it was established that there exists a significant positive relationship between suppliers sourcing strategy and sustainable procurement performance $\beta = 0.407$. The results were statistically significant ($p < 0.05$). The beta coefficient of 0.407 means that when suppliers sourcing strategy increases by an additional unit, sustainable procurement performance of KTDA factories increases by 0.407. From the coefficient of determination findings, the regression model now becomes:

$$Y = 1.883 + 0.407 X_1 \dots \dots \dots (i)$$

Where Y = Sustainable Procurement Performance, X_1 = Suppliers Sourcing Strategy

The study findings showed that suppliers sourcing strategy significantly influence sustainable procurement performance. The findings agree with Torabi, Baghersad, and Mansouri (2015), in Iran supplier selection should be taken into account when choosing a supply portfolio. It also agrees with China, Li, Fang, and Song (2019), who demonstrated that managers can analyze suppliers more successfully by identifying their performance gaps and ranking them more precisely when various uncertainties are taken into account.

The study concludes that the hypothesis **H₀₁**: “There is no statistically significant relationship between supplier’s sourcing strategy and sustainable procurement performance among KTDA factories, Kenya,” is **rejected** since the findings showed that there exists a significant positive relationship between supplier’s sourcing strategy and sustainable procurement performance ($\beta = 0.407$, $p < 0.05$).

CONCLUSIONS

The study findings reveal that suppliers sourcing strategies had a positive significant correlation with sustainable procurement performance ($r = 0.545$, $p < 0.05$). The findings showed that the

KTDA factories during sourcing for suppliers evaluate their efficiency of quality, delivery and cost so as to make a saving; they have adopted suppliers sourcing strategies with economic advantages and that which create positive social impact; their suppliers sourcing strategies were aligned to organizational sustainability initiatives with those of the suppliers/customers so as to save and reduce costs; they consider results-oriented supplier during sourcing for suppliers; they review suppliers' knowledge of the various supplier sustainability initiatives before awarding the tenders; and that suppliers' overall performance regarding corporate sustainability was one of the key indicators checked during sourcing of suppliers.

The study concludes that for KTDA factories suppliers sourcing strategies have a positive significant correlation with sustainable procurement performance. The study findings also show that KTDA factories evaluate their suppliers for efficiency, quality delivery and to save on cost; they have adopted suppliers sourcing strategies for economic advantages and positive social impact; their suppliers sourcing strategies were aligned to organizational sustainability initiatives with those of the suppliers and customers; they considered results-oriented supplier during sourcing for suppliers; they review suppliers' knowledge of the various supplier sustainability initiatives before awarding them tenders; and that suppliers' overall performance regarding corporate sustainability was the key indicators checked during sourcing of suppliers.

The study recommends that KTDA factories should; align suppliers sourcing strategies need to organizational sustainability goal by considering results-oriented supplier during sourcing for suppliers.

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