

Original Research

Effect of Sustainable Supplier Selection on Procurement Performance of Chartered Public Universities in Kenya

Andolo Dan Ojijo¹ 

Department of Management Science, Maseno University, Kisumu, Kenya

Received 7 July 2023 Revised 7 August 2023 Accepted 12 August 2023

Abstract

Public universities have recognized the power they hold as influential entities within communities, and with this power comes the responsibility to select suppliers who share on their vision. By prioritizing sustainability in their procurement strategies, universities can lessen their environmental impact and serve as examples for other organizations. Embracing sustainability in supplier selection requires the acknowledgement of the interrelatedness between economic, social, and environmental factors. It mandates organizations to consider long-term consequences of traditional purchasing considerations, such as cost and quality, rather than short-term gains. However, the absence of clear guidelines and policies on sustainable supplier selection results in inefficiencies in decision-making within most universities. Consequently, their ability to prioritize partnerships with eco-friendly, socially responsible, and economically viable suppliers is hindered. The purpose of this study was to analyze the impact of sustainable supplier selection (SSS) on the procurement performance of public universities. A cross-sectional research design was employed, utilizing a population of 40 employees from the procurement department, selected from ten chartered public universities in Kenya. The findings revealed that public universities have embraced sustainable supplier selection, although to varying degrees. Moreover, the coefficient of determination was 0.472 implying that the sustainable supplier selection criteria used by the universities accounted for 47.2% of their procurement performance. The study constitutes a model utility for fostering sustainable procurement practices within the confines of public universities. It recommends the development of robust approaches to evaluating supplier environmental and social performance that could significantly heighten business sustainability levels.

Keywords: Environmental purchasing, Supplier selection, Sustainability.

¹ Corresponding author's Email: andolo3000@gmail.com

Introduction

Sustainability in procurement has become increasingly important in today's world where organizations are realizing the social, economic, and environmental impacts of their purchasing practices. The process of choosing suppliers entails making strategic decisions to enable successful implementation of green supply chain management practices (Gupta and Barua 2017; Yu *et al.* 2018). Consequently, supplier selection is crucial for the sustainable development of an organization (Lo *et al.* 2018)

In today's volatile business environment, marked by growing demands from customers, organizations often prefer to outsource rather than produce all components in-house to meet delivery requirements. As a result, the importance of selecting suitable suppliers cannot be emphasized enough as it is a vital component for achieving success within the organization (Wetzstein *et al.*, 2016).

Public universities in Kenya are no exception to this trend and have recognized the benefits of sustainable supplier selection. The successful operation of public universities in Kenya depends heavily on a sustainable supply chain system. Universities need to select suppliers who can provide goods and services that are not only of high quality but also sustainable. Sustainable suppliers help universities to reduce their carbon footprint and promote social welfare by ensuring that the sourcing and distribution of goods and services are ethical (Barbosa & Behdad, 2019).

According to Luthra, Garg & Haleem, (2017), consumers and investors both are becoming increasingly aware of ethical and environmental responsibilities of businesses and corporations. They argue that suppliers play a significant role in achieving these responsibilities, and companies have started to realize the importance of sustainable supplier selection in order to source materials or goods that are not only ethically produced but also have minimal environmental impact.

Sustainable supplier selection involves a thorough evaluation of a supplier's environmental and social performance, as well as their financial stability and performance. The evaluation should also consider the supplier's diversity and their adherence to ethical standards. Sustainable supplier selection leads to the procurement of high-quality products and services, increased competitiveness, job creation, and promotion of a sustainable supply chain (Bakeshlou *et al.*, 2017).

The ISO 14001 certification for green suppliers is utilized as a chief evaluation criterion in the procurement process to promote eco-consciousness. Gavronski *et al.* (2011) argue that to effectively extend sustainable practices throughout the supply chain, environmental considerations must be incorporated into supplier selection, assessment, and collaboration. Partnering with eco-friendly suppliers in the early stages enhances the possibility of implementing green practices in subsequent phases. The procurement of sustainable materials is reliant on the vital roles played by eco-friendly suppliers. Collaborations with said suppliers can bring about environmental benefits, influence customer perceptions of a company, and ultimately affect sales and revenue (Green Purchasing Guide, 2011).

Criteria Used for Identifying Sustainable Suppliers

The literature review examines different factors that are used to evaluate suppliers in supplier selection processes. These factors can be classified into two main categories: economic characteristics, such as pricing, quality, and throughput times, and environmental characteristics, such as greenness, resource consumption, and pollution emission (Yu *et al.*, 2018). However, it is important to note that supplier selection criteria can vary based on different factors, including the country and industry in which the selection is taking place. Additionally, these criteria are heavily influenced by cultural norms, government regulations, as well as political and environmental conditions (Mathiyazhagan *et al.*, 2018).

The selection of green suppliers greatly influences both the initial costs and ongoing costs in green procurement (Dubey *et al.*, 2013). Hence, the authors were motivated to identify the key factors that impact supplier selection in green procurement. Previous studies have reported multiple criteria that have been considered in the supplier selection problem. Bakeshlou *et al.* (2017) considered cost, quality, service, technological capability, and environmental aspects, while Gupta and Barua (2017) included collaboration, environmental investments, resource accessibility, environmental management, research and design, green procurement capabilities, regulatory pressures, and customer demands.

Recently, Islam *et al.* (2018) considered various factors such as environmental criteria, suppliers using non-hazardous chemicals, energy saving and waste reduction initiatives, eco-friendly transportation, suppliers operating with environmental objectives, carbon reduction targets, collaboration, knowledge transfer, technical know-how, and supplier environmental conformance. Another study by Mathiyazhagan *et al.* (2018) considered management, technology, manufacturing, and cost as key criteria in supplier selection. For this research, the researcher reviewed existing literature and consulted industry experts to finalize the parameters relevant to the Kenyan. Ultimately, nine criteria were identified as significant in the selection of green suppliers within the university procurement structure:

Supplier Understanding of green policy: It is imperative that suppliers possess a comprehensive understanding of the green policy and procedures employed by customer firms. The green policy primarily aligns with the business objectives and operational objectives of the firm, taking into consideration the political, economic, social, and technological environment. Green policy assists green procurement professionals in identifying the most appropriate green procurement process and procedures that enable the firm to achieve its sustainability goals (Ahsan and Rahman, 2017).

Supplier awareness of the environmental consequences associated with their products: Being knowledgeable about the complete life cycle of a product and its effects on the local environment greatly assists in the development of environmentally friendly products with minimal ecological impacts. To ensure this knowledge is effectively applied, customers are responsible for accurately conveying the necessary specifications and technical know-how to suppliers, thereby enabling them to adhere to required quality standards (Bakeshlou *et al.*, 2017).

Supplier firm senior management support for green initiatives: The active involvement of senior management is essential in order to successfully adopt green procurement programs. It is imperative to promptly approve budgets and allocate funds without unnecessary delays to enable the upgrading of infrastructure to meet the specific requirements of green procurement (Mosgaard, 2015). Opting for suppliers who prioritize sustainability can significantly impact a company's own sustainable practices. When suppliers are committed to sustainability, it creates a ripple effect along the supply chain, promoting sustainable practices at every stage of production. This collaboration allows companies to align their sustainability goals with those of their suppliers, resulting in a more environmentally responsible supply chain.

Supplier's clear strategic goals on green program: The green procurement policy and performance measures of the supplier firm must be in line with the strategic vision and mission of the company. Otherwise, there will be a cost and loss implication for the firm due to the mismatch. Additionally, the purchasing structure should align with the firm's strategic goals to fully benefit from green procurement programs. The utilization of third-party audits by supplier firms has proven to be advantageous both directly and indirectly. Specifically, third-party audits that focus on green procurement goals, policies, and performance standards are crucial for the advancement of green programs. These audits aid firms in identifying gaps, obstacles, threats, and vulnerabilities, evaluating mitigation strategies, assessing crisis management plans, and evaluating the firm's insurance coverage. This comprehensive approach ensures safety, security, and sustainability (Ahsan and Rahman, 2017).

Supplier's Internal Environmental Coordination: It is essential for suppliers to establish effective coordination mechanisms that ensure harmony and efficiency within their internal operations. Effective internal coordination within a supplier's organization leads to better productivity, enhanced operational efficiency, and improved overall performance. When all employees are aligned towards a common goal and equipped with clear roles and responsibilities, they can work harmoniously towards achieving organizational objectives. By synchronizing processes, departments, and individuals, suppliers can eliminate redundancy, streamline operations, and reduce operational costs. Moreover, internal coordination enables suppliers to respond quickly to market changes and customer demands.

Supplier Social Responsibility: To achieve sustainable sourcing, companies must collaborate with suppliers who share their commitment to social responsibility. This entails evaluating suppliers based on certain criteria such as their environmental practices, labor conditions, community impact, and adherence to ethical standards. It becomes essential to select suppliers who demonstrate strong social responsibility and are aligned with the company's sustainability goals.

Ensuring fair labor conditions is another crucial aspect of supplier social responsibility. Suppliers must provide safe and healthy working conditions for their employees, comply with local labor laws and regulations, and respect workers' rights. They should also prohibit child labor, forced labor, and any form of discrimination. Compliance with international labor standards, such as those set by the International Labour Organization (ILO), is highly encouraged.

Suppliers have a responsibility to positively impact the communities where they operate. They can achieve this by supporting local initiatives, promoting community development, and engaging in philanthropic activities. This could include investing in education and healthcare, supporting local businesses and industries, and contributing to social welfare programs. By actively participating in community development, suppliers demonstrate their commitment to social responsibility.

Finally, adherence to ethical standards is also fundamental to supplier social responsibility. Suppliers must conduct their business with integrity and transparency, ensuring fair competition, and respecting intellectual property rights. They should also comply with anti-corruption laws and ensure responsible sourcing of raw materials. Collaboration with suppliers who uphold such ethical standards ensures a sustainable and responsible supply chain.

Supplier's ability to provide innovative, sustainable solutions or products: With the increasing demand for sustainable practices, it is essential for companies to collaborate with suppliers who can offer environmentally-friendly alternatives. Innovation often leads to the development of more sustainable practices and products. Suppliers who are constantly researching and implementing innovative ideas can offer new, greener alternatives that can replace traditional, less sustainable options. These advancements may include the discovery of new materials, more efficient manufacturing processes, or the introduction of eco-friendly packaging. Ultimately, this commitment to innovation promotes sustainability throughout the supply chain and helps companies stay at the forefront of environmentally-friendly practices.

Suppliers ISO Certification: The ISO 14001 certification specifically focuses on environmental management systems. Suppliers with this certification have demonstrated their commitment to minimizing their environmental impact and adhering to sustainable practices. By selecting suppliers with ISO certifications, organizations can have greater confidence in their sustainable procurement practices. These certifications provide documented evidence that suppliers have implemented effective environmental management systems, reducing the risks of environmental non-compliance. Consequently, organizations can mitigate reputational damages associated with any kind of sustainability misconduct by their suppliers. Moreover, Supplier ISO certification fosters a culture of continuous improvement. ISO requires certified suppliers to regularly monitor and review their environmental performance, setting objectives for improvement. By opting for certified suppliers, organizations can be assured that their partners are actively working towards enhancing their sustainability practices and aligning with evolving global standards.

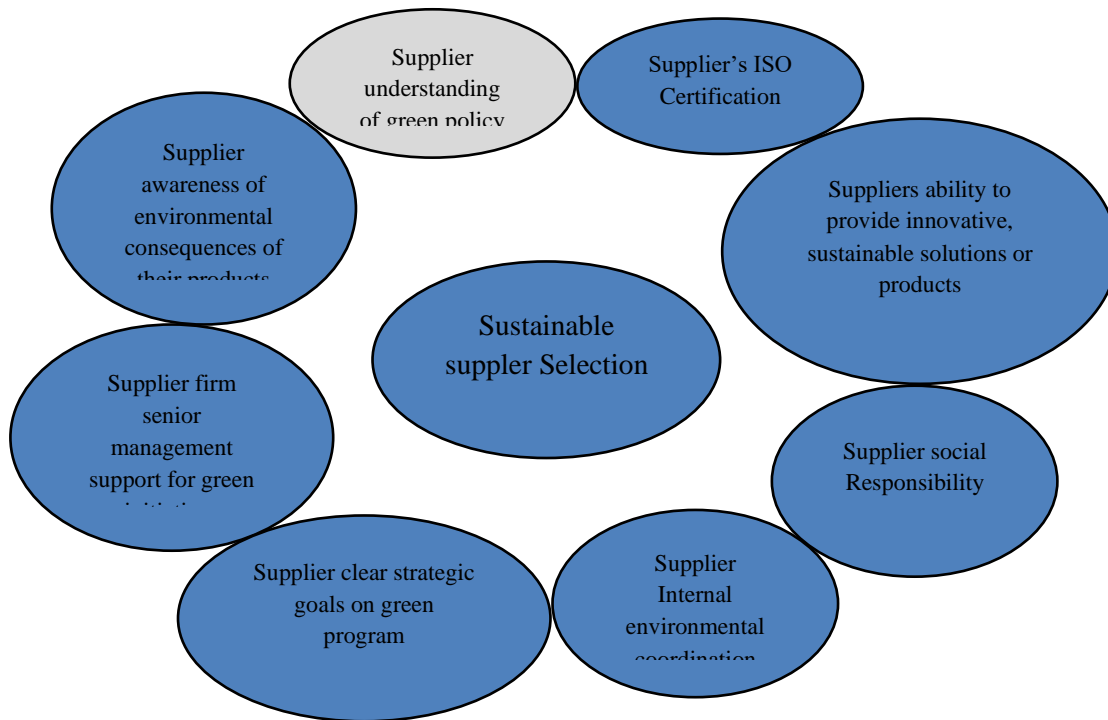


Figure1. Measures of Sustainable Supplier Selection

Source: Modified from Ahsan and Rahman (2017), Bakeshlou *et al* (2017) and Islam *et al* (2018)

Statement of the Problem

Public universities in Kenya play a crucial role in fostering educational growth and development within the nation. As they operate within limited financial resources, sustainable supplier selection becomes imperative to achieve their goals effectively. However, these institutions face inherent challenges, such as inadequate supplier evaluation systems resulting in suboptimal decision-making processes. Without appropriate evaluation criteria, universities struggle to identify suppliers who align with sustainability standards in areas such as environmental protection, labor practices, and product quality. Consequently, they may inadvertently engage with suppliers that fail to meet sustainability requirements, leading to ethical and reputational risks. Furthermore, the absence of clear guidelines and policies on sustainable supplier selection continues to create inefficiencies in decision-making in most of these universities. This hampers their ability to prioritize partnerships with eco-friendly, socially responsible, and economically viable suppliers. Urgent measures are thus needed to address these challenges and foster a more sustainable supplier selection process within Kenyan public universities.

Research Objective

The main aim of the study was to examine the Effect of Sustainable Supplier Selection on Procurement Performance of Chartered Public Universities in Kenya

Literature Review

Theories Guiding the study

Effective and sustainable supplier selection is a crucial aspect of supply chain management for organizations aiming to promote social and environmental sustainability. With growing concerns about ethical sourcing, companies are increasingly seeking to collaborate with suppliers that align with their sustainability goals. The study on sustainable supplier selection incorporates theories and approaches to facilitate informed decision-making. These include the following:

Sustainable Development Theory

At the core of studying sustainable supplier selection lies the theory of sustainable development. This theory according to Carter & Rogers, (2008) emphasizes the need to meet the present needs of a society without compromising the ability of future generations to meet their own needs. By integrating sustainable development principles into supplier selection, organizations strive to ensure that economic, environmental, and social aspects are given equal weight. This theory propels the exploration of methodologies, tools, and criteria that can effectively assess the sustainability performance of suppliers.

The adoption of sustainable development theory introduces additional criteria for supplier evaluation. Traditional supplier selection primarily focuses on cost and quality, but sustainable development theory expands this scope to include environmental and social factors. Organizations carefully assess potential suppliers based on their environmental impact, ethical practices, labor conditions, and commitment to sustainable resource management. This holistic evaluation ensures that suppliers align with the principles of sustainable development.

By incorporating sustainable development theory into supplier selection, organizations promote forward-thinking procurement practices that yield both immediate and long-term benefits. Sustainable suppliers typically provide products or services with reduced environmental impact, ensuring minimal resource depletion and waste generation. Additionally, these suppliers often maintain high social standards, maintaining fair labor practices and respecting human rights. By sourcing from such suppliers, organizations enhance their brand reputation and minimize the risk of harmful incidents or scandals related to supplier misconduct. In addition, sustainable suppliers frequently exhibit greater resource efficiency, leading to reduced waste and energy consumption, thereby resulting in cost reduction for organizations. Moreover, sustainable practices stimulate innovation and technological advancements, thereby improving operational efficiency and lowering production costs. Consequently, organizations can simultaneously meet their economic and environmental objectives.

Sustainable development theory also mitigates supply chain risks, further enhancing procurement performance. Organizations relying on unsustainable suppliers face a range of risks, including legal liabilities, reputational damage, and disruptions due to unethical practices or environmental non-compliance. Selecting suppliers based on sustainable practices minimizes these risks by promoting transparency, accountability, and

compliance with regulatory frameworks. Therefore, a sustainable supply chain is better equipped to withstand external shocks, ensuring continuity and business resilience.

Triple Bottom Line Theory

The triple bottom line theory, coined by John Elkington (1998), suggests that organizations should not only focus on financial profitability but also consider the social and environmental consequences of their actions. This theory emphasizes the need to achieve a balance between profit, people, and the planet. By incorporating these three dimensions, organizations can make informed decisions that promote sustainability and create long-term value.

The triple bottom line theory is a fundamental concept within sustainable supplier selection. Also referred to as the three-pillar approach. Organizations using this theory in supplier selection strive to balance these three pillars in their decision-making process. Through assessing suppliers' performance in terms of social responsibility, environmental impact, and economic viability, companies can make more sustainable choices. The theory advocates for evaluating a supplier's commitment to fair labor practices, health and safety standards, and environmental stewardship. By prioritizing socially and environmentally responsible suppliers, organizations can align their procurement practices with sustainable goals (Johnson, (2019).

According to Smith & Martin, (2020), the implementation of the triple bottom line theory in supplier selection enhances transparency and accountability among suppliers, as it necessitates their adherence to ethical practices and sustainable processes. This heightened transparency ensures that suppliers are held responsible for their actions, resulting in a more conscientious supply chain. Moreover, organizations gain a competitive advantage by choosing suppliers who align with the principles of the triple bottom line. Such suppliers are increasingly appealing to consumers due to their commitment to social and environmental responsibility, thereby boosting a company's reputation and fostering customer loyalty and market share. Additionally, integrating the concept of the triple bottom line into supplier selection enables organizations to proactively minimize risks. By assessing suppliers' sustainability performance, organizations can identify potential risks associated with environmental compliance, labor issues, or disruptions in the supply chain. This proactive approach equips organizations to effectively manage uncertainties and mitigate adverse impacts.

Life Cycle Assessment Theory

The life cycle assessment theory (LCA) plays a significant role in sustainable supplier selection as it emphasizes the importance of evaluating the full life cycle impact of products. This theory considers all stages of a product's life, from raw material extraction to disposal. By assessing suppliers based on their life cycle impact, organizations gain a comprehensive understanding of the sustainability performance of their suppliers. This theory aids in discouraging environmentally damaging practices and encouraging suppliers to adopt more sustainable alternatives.

Life Cycle Assessment (LCA) theory involves the systematic evaluation of products or services considering their entire life cycle. It encompasses three main stages: the inventory analysis, impact assessment, and interpretation. Through LCA, organizations can identify the environmental impact at each stage of a product's life cycle, allowing for informed decision-making based on sustainability criteria. Organizations incorporate LCA theory into the supplier selection process to ensure that they choose suppliers with the lowest environmental impact across the product's life cycle. By analyzing raw material extraction, production processes, transportation, usage, and disposal, LCA provides objective data that supports sustainable supplier selection. By utilizing this theory, companies can evaluate suppliers based on their environmental impact, helping to identify those who are engaging in environmentally conscious practices.

Empirical Literature Review

Zhu, Liu, Li, Yang, and Miao (2022) conducted an empirical study on Sustainable Supplier Selection and Evaluation (SSSE) for Effective Supply Chain Management. The objective of this research was to explore methodologies and techniques that can be employed to choose and assess suppliers in a manner that promotes sustainability within the supply chain. The authors emphasized the growing significance of sustainability considerations for organizations in today's business landscape. To accomplish their objectives, the researchers gathered primary data from a sample of companies across different industries. They employed a structured questionnaire to collect information pertaining to supplier selection and evaluation criteria, with a specific focus on factors related to sustainability. The major findings of this study included the identification of specific evaluation criteria for the selection of sustainable suppliers, such as considering suppliers' environmental certifications, waste management practices, and adherence to regulatory standards. The researchers also highlighted the importance of assessing suppliers' dedication to social responsibility, including their policies on human rights, labor conditions, and community engagement.

Ouko and Juma (2020) conducted a study to examine the impact of supplier evaluation on the performance of the procurement function in private health institutions located in Kisumu County, Kenya. The study used a cross-sectional survey with a population consisting of 75 procurement personnel from 25 private health institutions. The findings demonstrated that the supplier quality commitment, supplier financial stability, and supplier competence, had a significant impact on the performance of the procurement function within private health institutions. It was concluded that supplier quality commitment is an essential requirement for enhancing the effectiveness of the procurement function. Additionally, supplier financial stability helps to optimize procurement performance by reducing costs related to the re-advertisement of tenders. Furthermore, supplier competence was found to have a positive influence on procurement performance. The study recommended prioritization of supplier quality commitment in order to ensure the procured goods and services meet the required standards and customer needs.

Johnson and Peacock, (2018) conducted a study focusing on the relationship between sustainable supplier selection criteria and firm performance. The research analyzed the importance of sustainable supplier selection in achieving enhanced business outcomes.

To investigate the relationship, the authors used a quantitative research approach. They collected data through a comprehensive survey that was distributed to a sample of organizations across diverse industries. The survey included questions related to sustainable supplier selection criteria and the subsequent impact on firm performance. Responses were collected and analyzed using statistical measures. The study revealed a positive correlation between sustainable supplier selection criteria and firm performance meaning that organizations that prioritize sustainable supplier selection experience several benefits, including improved operating efficiency, reduced costs, enhanced reputation, and increased customer loyalty.

Sabiti and Mulyungi (2018) conducted a study to investigate the impact of supplier selection on the procurement performance of manufacturing firms in Rwanda, specifically focusing on the case of Bralirwa. The study utilized a Descriptive Research Design and targeted a population of 550 individuals, including shareholders, contractors, suppliers, and employees of Bralirwa Ltd. The sample size chosen for the study was 55, which represented 10% of the target population. The findings of the study revealed that supplier selection contributed to a significant increase of 76.4% in procurement performance. Consequently, the study concluded that supplier selection played a crucial role in enhancing the efficiency of procuring goods and services, improving the overall supply chain competency within Bralirwa Ltd departments, optimizing resource utilization, and ultimately enhancing market position and profitability for the company.

Changalima, Ismail, and Mchopa (2023) conducted a study that aimed to investigate the impact of supplier selection and supplier monitoring on the efficiency of public procurement in Tanzania. The researchers employed a structured questionnaire to collect survey data from 179 public entities involved in procurement activities in Tanzania. The collected data was then analyzed using structural equation modeling (SEM). The findings of the study indicated that both supplier selection and supplier monitoring have a positive and significant influence on the efficiency of public procurement in terms of reducing costs. Consequently, this study offers valuable insights to procurement professionals on the importance of choosing appropriate suppliers and implementing supplier monitoring practices to enhance procurement efficiency and achieve cost reduction objectives.

Salam and Ali (2020) conducted a study investigating the correlation between sustainable supplier selection (SSS) and the financial performance of buyers in an emerging economy. They aimed to understand the factors that drive SSS and explore its impact on a buyer's financial performance. Data was collected from 235 professionals in supply chain and procurement in Thailand. The study utilized partial least squares based structural equation modeling (PLS-SEM) and the PROCESS tool to test the structural relationship. The findings indicated that firms that prioritize sustainability during supplier selection achieve better financial results compared to their competitors. The analysis identified six potential paths that explain SSS, with suppliers' focus on human rights and safety being the most influential determinants. Additionally, the study found significant evidence supporting the relationship between SSS and buyers' financial performance. Lastly, it revealed that resource investment has a significant moderating effect on sustainability efforts.

In their study, Hussain & Al-Aomar (2018) developed a model to evaluate the influence of sustainable supplier selection on the performance of service supply chains. The assessment of supplier sustainability was based on five main criteria, which were derived from previous literature and validated by industry experts. These criteria include Environment Management, Social Responsibility, Green Products, Technology Standards, and Health and Safety Management. Each criterion was further characterized by three sub-criteria. In order to validate the model, empirical data was collected from a large sample of supply chain experts working in major service firms in the United Arab Emirates (UAE). Structural Equation Modeling was employed to analyze the collected data and draw conclusions. The results of the study demonstrated a valid structure of the proposed model, based on the selected criteria as latent variables, and confirmed their positive influence on the performance of service supply chains. This confirmed the suitability of the model for assessing supplier sustainability in service supply chains. However, the criteria related to Environmental Management and Technology Standards were found to have a higher impact on performance, while the competitiveness aspects of performance were deemed more important compared to economic factors.

Nsikan, Affiah, Briggs, and Koko (2022) conducted a research study focusing on Sustainable supplier selection factors and supply chain performance within the Nigerian healthcare industry. The objective of the study was to examine the key sustainability factors that were mostly taken into consideration by supply chain managers in Nigeria's healthcare sector during the supplier selection process. The study employed a quantitative survey approach to collect and analyze primary data from a considerable sample size of 116 logistics and supply chain executives working in 58 healthcare organizations across Nigeria. Results from the study indicated that economic sustainability emerged as the most significant factor influencing the selection of healthcare suppliers in the context of this research. Furthermore, the selection of economically sustainable suppliers was found to have a strong positive correlation with the overall supply chain performance. On the other hand, the selection of suppliers based on social sustainability factors exhibited a moderate correlation with performance.

Laulita (2021) conducted a study with the objective of examining the impact of implementing sustainable supplier selection on supplier performance in the mining industry in Indonesia, while also considering the moderating effect of ethical culture. The study employed hypothesis testing and gathered data from 104 participants. The data analysis was conducted using the Structural Equation Model. The findings revealed that the dimensions of sustainable supplier selection, encompassing economic, social, and environmental aspects, have a direct and significant influence on supplier performance in the mining industry. Additionally, the research highlighted the significant moderating effect of ethical culture on the relationship between sustainable supplier selection and supplier performance.

Govindan *et al* (2023) conducted an analysis at a home appliances company in India to evaluate and select suppliers. The study presented a theoretical framework based on the practice-based view approach to examine key performance indicators (KPIs) for establishing sustainable collaboration. Additionally, the researchers proposed a novel three-phase model for supplier evaluation and selection, which assessed current suppliers based on KPIs to demonstrate the applicability of the theoretical framework. The model

utilized the best-worst method (BWM) to determine the weights of KPIs and employed the TODIM approach for supplier evaluation., a supplier classification grid was developed to analyze the impact of different selection strategies. The BWM analysis revealed that "quality" emerged as a strong KPI in terms of suppliers' potential, while "information disclosure" gained importance when considering suppliers' desirability for strengthening sustainable relationships. The TODIM grid analysis indicated that suppliers performing well in both metrics should be retained as the best suppliers, while those performing poorly in both areas should be switched.

Summary of Literature and Research Gaps

A considerable gap in knowledge and research exists regarding sustainable supplier evaluation in Kenyan public universities. Despite the country's dedication to sustainable development and growing emphasis on responsible sourcing, there is a lack of studies examining the vital connection between sustainable supplier evaluation and overall sustainable practices. An analysis of existing literature reveals the scarcity of research in this crucial area, highlighting a significant knowledge gap that needs attention. The only comparable study conducted in Kenya, Ouko and Juma's (2020) research on the impact of supplier evaluation on procurement function performance in private health institutions in Kisumu County, discovered that supplier quality commitment, financial stability, and competence significantly influenced procurement performance. However, other studies reviewed from various parts of the world, such as the works of Johnson and Peacock (2018), Nsikan, Affiah, Briggs, and Koko (2022), Laulita (2021), and Hussain & Al-Aomar (2018), also found that sustainable supplier selection is a predictor of procurement performance. However, these studies were carried out in various private sectors. Nonetheless, within the Kenyan context, public universities have been grappling with unpaid bills, putting them at loggerheads with their suppliers and threatening their normal operations yet there is alarming scarcity of studies exploring this fundamental aspect of sustainability in supplier selection.

Research Methodology

Research Design

The study used cross sectional research design. According to Creswell & Creswell (2017), Cross-sectional research design is widely employed to gather data at one specific point in time. This research design is relevant to this study because it aims to provide a snapshot or a cross-section of a population or a sample, enabling researchers to analyze various factors and explore associations between variables meaning that it helps to identify relationships between variables within a particular population or sample. Smith, (2015) however argues that this research design does not capture changes or developments over time but it's relatively efficient and cost-effective, and is limited in its ability to establish temporal causality.

Area of Study

The research was carried out in ten public universities in Central Kenya, the Coast region, the Rift Valley region, and the Nyanza region of Kenya, all of which are chartered

and ISO 9001 certified. These universities have well-established and efficient quality management systems that govern the operations of all departments within their respective university communities. The opinions of participants from these selected public universities were deemed representative of the entire public university community, as they all adhere to similar procurement procedures and are guided by the Public Procurement and Disposal Regulations of Kenya, 2020.

Data Collection Method

Prior to the distribution of the data collection instrument, the respondents were initially identified selectively and informed about the intent of the survey through telephone communication. To carry out the survey, a structured questionnaire in Microsoft Forms was distributed electronically for the respondents to complete. The collected data was then analyzed to produce the final results of the study. According to González-Ramírez, *et al.* (2019), Microsoft Forms was chosen as the tool for this study because it allows researchers to create and customize surveys in various formats, including multiple choice questions, rating scales, and open-ended responses. Additionally, it facilitated the distribution of the questionnaire through email or a link, enabling a broad audience to be reached within a limited timeframe. The utilization of Microsoft Forms was also preferred for data collection due to its capability to promptly capture and analyze data in real-time.

Data Analysis

The data was analyzed using a combination of descriptive and inferential statistics. Descriptive analysis involved the use of frequencies and percentages. Additionally, measures of central tendency such as mean and mode were utilized whenever relevant.

Table 1. displays the results indicating the extent to which public universities have implemented sustainable supplier selection, as identified in the study. It is evident that most universities have adopted these practices, except for one criterion: considering supplier social responsibility. This criterion received a below-average mean score of 2.4250.

The survey also revealed that public universities place significant importance on the supplier's understanding of the green policy, their clear strategic goals regarding green programs, and their awareness of the environmental consequences linked to their products. These criteria received high mean scores of 3.75, 3.60, and 3.52, respectively. These findings demonstrate that the surveyed institutions have embraced the evaluation criteria established in the study, although there are variations among the different universities.

However, it is worth noting that the procurement departments of these universities do not prioritize suppliers' ISO certification, particularly in relation to environmental management efforts. This oversight may compromise the quality of the goods and services provided by the suppliers. Additionally, the survey found that there is also a lack of emphasis on supplier firm senior management support for green initiatives, with a mean score of 2.95. This may contribute to delayed payments to suppliers, as dissatisfied customers are likely to arise from this inadequate support.

Table 1. Extent of SSS Criteria by Public Universities in Kenya

Supplier selection strategies		very high	high	average	low	very low	Mean
Supplier understanding of green policy	Count	11	16	8	2	3	3.7500
	N %	27.5%	40.0%	20.0%	5.0%	7.5%	
Supplier awareness of environmental consequences associated with their products	Count	11	15	2	8	4	3.5250
	N %	27.5%	37.5%	5.0%	20.0%	10.0%	
Supplier firm senior management support for green initiatives	Count	7	8	7	12	6	2.9500
	N %	17.5%	20.0%	17.5%	30.0%	15.0%	
Supplier clear strategic goals on green program	Count	14	11	6	3	6	3.6000
	N %	35.0%	27.5%	15.0%	7.5%	15.0%	
Supplier internal environmental coordination	Count	9	9	8	6	8	3.1250
	N %	22.5%	22.5%	20.0%	15.0%	20.0%	
Supplier social responsibility	Count	5	4	8	9	14	2.4250
	N %	12.5%	10.0%	20.0%	22.5%	35.0%	
Supplier's ability to provide innovative, sustainable solutions or products	Count	9	7	8	12	4	3.1250
	N %	22.5%	17.5%	20.0%	30.0%	10.0%	
Supplier's ISO certification	Count	6	9	10	7	8	2.9500
	N %	15.0%	22.5%	25.0%	17.5%	20.0%	

Table 2. indicate that all criteria used to select and evaluate suppliers in public universities had positive and significant coefficients. The constant term was also positive, suggesting that an increase in any of the criteria used for supplier selection would result in an improvement in the procurement performance of the universities. The unstandardized beta (β) coefficients demonstrate the change in the dependent variable when the independent variable increases by one unit, while holding all other variables constant. In this case, a one-unit increase in the supplier's understanding of green policy would lead to a 0.341 increase in the universities' procurement performance. This relationship applies to all other criteria used for selecting sustainable suppliers.

These findings align with the research conducted by Ouko and Juma (2020), who investigated the impact of supplier evaluation on the performance of the procurement function in private health institutions in Kisumu County. They discovered that factors such as supplier quality commitment, supplier financial stability, and supplier competence significantly influenced the performance of the procurement function in private health institutions.

Similarly, Johnson and Peacock (2018) examined the relationship between sustainable supplier selection criteria and firm performance. Their study revealed a positive

correlation, indicating that organizations that prioritize sustainable supplier selection experience several benefits in terms of their overall performance. Sabiti and Mulyungi (2018), Changelima, Ismail, and Mchopa (2023), and Salam and Ali (2020) also obtained similar results in their respective studies. However, Salam and Ali's study differed slightly from the present study as they focused on the correlation between sustainable supplier selection and the financial performance of buyers in an emerging economy. Nonetheless, their findings supported the idea that firms prioritizing sustainability during supplier selection achieve better financial results compared to their competitors.

On the other hand, Laulita (2021) conducted a study specifically in the mining industry and found that the dimensions of sustainable supplier selection, encompassing economic, social, and environmental aspects, directly and significantly influenced supplier performance. This suggests that sustainable supplier selection not only positively affects buyers but also positively impacts suppliers.

Table 2. Effect of Sustainable Supplier Selection Criteria on Procurement Performance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.052	1.140		1.800	.082
Supplier understanding of green policy	.341	.155	.336	2.195	.000
Supplier awareness of environmental consequences associated with their products	.052	.141	.059	.371	.001
Supplier firm senior management support for green initiatives	.136	.156	.144	.875	.000
Supplier clear strategic goals on green program	.376	.194	.353	1.937	.002
Supplier internal environmental coordination	.231	.154	.239	1.502	.000
Supplier social responsibility	.210	.133	.232	1.581	.000
Supplier's ability to provide innovative, sustainable solutions or products	.427	.155	.433	2.759	.000
Supplier's ISO certification	.306	.141	.321	2.161	.000

Table 3. displays the R-square value, also referred to as the coefficient of determination, which signifies the proportion of the variance in the dependent variable that can be explained by the independent variables in this regression model. The calculated R-square for this model is 0.472. This indicates that sustainable supplier selection contributes to only 47.2% of the procurement performance of public universities in Kenya. On the other hand, the adjusted R-square, which serves the purpose of penalizing the inclusion of unnecessary variables in the model and avoiding overfitting,

has a value of 0.336. The difference between these two values, also known as the shrinkage, amounts to $(0.472 - 0.336) = 0.136$. As stated by Field (2018), a shrinkage in a regression model should fall within the range of 5% to 10%, indicating a good fit for the model. According to Greene (2012), the Durbin Watson statistic for the regression model was 1.435, which is in proximity to 2. This value suggests the absence of autocorrelation in the regression analysis.

Table 3. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.687 ^a	.472	.336	1.07298	.472	3.465	8	31	.006	1.435
a. Predictors: (Constant), Supplier's ISO certification, Supplier firm senior management support for green initiatives, Supplier social responsibility, Supplier understanding of green policy, Supplier's ability to provide innovative, sustainable solutions or products, Supplier internal environmental coordination, Supplier awareness of environmental consequences associated with their products, Supplier clear strategic goals on green program										
b. Dependent Variable: Procurement performance										

Summary of the Findings and Conclusion

In conclusion, it has been determined that public universities in Kenya acknowledge the significance of sustainable supplier selection as a procurement practice and have taken measures to include corresponding criteria in their procurement policy guidelines. Nevertheless, these criteria differ among various public universities, with supplier social responsibility being least prioritized when selecting sustainable suppliers. The investigation additionally confirmed that the inclusion of sustainability practices in the supplier selection process greatly enhances the procurement performance of public universities. These enhancements manifest in various ways, including cost reduction, procurement of environmentally friendly products, shorter lead times, waste reduction, and improved control of stores.

Study's Recommendations

Public universities in Kenya play a crucial role in shaping the future of the nation by imparting knowledge and skills to the next generation of professionals. As centers of excellence, these institutions have a responsibility to uphold sustainable practices in all aspects of their operations. It is therefore on this backdrop that the study puts forward the following recommendations:

The study recommends the development of robust approaches to evaluating supplier environmental and social performance that could significantly heighten business sustainability levels. Those in decision-making roles would benefit from further study into efficient strategies for balancing cost-rise and sustainable supplier selection. Future research might also consider the transformational influence of technological advancements on the sustainability of supplier selection processes.

The universities should prioritize suppliers that demonstrate a commitment to ethical practices. This means that they should seek suppliers who adhere to fair trade policies, thus promoting social justice. Suppliers who provide fair and equitable working conditions, uphold human rights, and pay their employees a fair wage should be given preference.

Public universities should prioritize suppliers that have implemented environmentally friendly practices. This includes selecting suppliers who are keen on sustainable sourcing, waste management, and reduce their carbon footprint. By engaging with environmentally conscious suppliers, the universities contribute to the larger goal of environmental preservation and encourage a culture of sustainability within the academic community.

Public universities should establish partnerships with suppliers who are willing to engage in a sustainable dialogue. Suppliers who actively participate in discussions and initiatives aimed at improving sustainability practices should be encouraged. This collaborative approach fosters innovation and allows universities and suppliers to work together towards shared sustainability goals.

Public universities should consider the local community impact when selecting suppliers. Engaging with local suppliers not only supports the local economy but also reduces the environmental impact by minimizing transportation and carbon emissions. When possible, universities should prioritize local suppliers who align with their sustainability goals.

Continuous monitoring and evaluation are necessary to ensure the sustainability of supplier relationships. The universities should regularly assess suppliers' performance against agreed-upon sustainability criteria. This can be done through periodic audits or engagement with external organizations that specialize in sustainability assessments. This allows public universities to identify areas for improvement and make necessary adjustments to maintain sustainable supplier relationships.

Contributions of the Study to Policy and Academia

Policy Implications:

The findings of this research can have notable policy implications. Governments and regulatory bodies can use the findings of this study to develop guidelines and regulations that encourage businesses to adopt sustainable procurement practices. This research contributes to the wider social and environmental sustainability agenda by promoting responsible sourcing, reducing carbon footprints, and supporting initiatives for waste reduction and ethical labor practices. Policymakers are now equipped with evidence-based recommendations for implementing sustainable supplier selection processes, enabling them to design effective policies.

Academic Contributions:

The study on sustainable supplier selection yields invaluable contributions to both policy formation and academic pursuits. Additionally, it constitutes a model utility for fostering sustainable procurement practices within the confines of public universities. The

produced insights not only enrich the theoretical body, but also provide practical orientations for the promotion of sustainability in procurement processes. Researchers can develop new conceptual frameworks that help assess supplier sustainability beyond traditional economic considerations. These frameworks integrate environmental and social dimensions, allowing for a comprehensive evaluation of suppliers' overall sustainability performance.

Moreover, the findings of this study will enrich the existing body of academic literature in multiple disciplines. It can contribute to operations management, supply chain management, environmental management, and sustainable business practices. By investigating various aspects of sustainable supplier selection, researchers will generate empirical evidence and theoretical insights that can substantially contribute to the academic community's understanding of the topic.

Limitations of the Study

A number of shortcomings in this study were identified during the research process. First, the use of selective sampling may have omitted participants whose viewpoints would have considerably benefited in the formulation of theories and the testing of hypotheses. However, prior to the analysis, the gathered data underwent thorough examination and cleansing, including the consideration of non-responses and outlier responses, with the aim of enhancing the precision and validity of the findings.

Since the study used cross-sectional research design that relies on a single snapshot of data, it fails to capture changes or developments over time. Sustainable supplier selection is an ongoing process, subject to evolving practices, regulations, and market conditions. Without considering temporal effects, the study may miss important trends or fail to provide a comprehensive understanding of the supplier selection dynamics.

Finally, cross-sectional research that was used in this study is often limited in terms of its ability to generalize findings to a broader population. In this case, the study focused solely on public universities in Kenya, making it difficult to extend the findings to other higher education institutions or industries.

References

- Ahsan, M. and Rahman, A. (2017). Green public procurement implementation framework for manufacturing industry. *Journal of Cleaner Production*, 162, 1322-1339.
- Bakeshlou, E. A., Khamseh, A. A., Asl, M. A. G., Sadeghi, J., & Abbaszadeh, M. (2017). Evaluating a green supplier selection problem using a hybrid MODM algorithm. *Journal of Intelligent Manufacturing*, 28, 913-927.
- Bakeshlou, M., Eshtehardian, E., Movahedi, B., & Hafezi, M. (2017). A fuzzy AHP-TOPSIS multicriteria approach to green supplier selection: a case study from renewable energy industry. *Resources Policy*, 52, 439-451.

- Barbosa, J., & Behdad, S. (2019). The role of sustainable procurement in supplier selection and evaluation. *Journal of Industrial Engineering and Management*, 12(3), 469-490.
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
- Changalima, I. A., Ismail, I. J., & Mchopa, A. D. (2023). Effects of supplier selection and supplier monitoring on public procurement efficiency in Tanzania: a cost-reduction perspective. *Vilakshan-XIMB Journal of Management*, (ahead-of-print).
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications.
- Dubey, R., Gunasekaran, A., & Papadopoulos, T. (2013). Green supply chain management: theoretical framework and further research directions. *Benchmarking: An International Journal*, 20(5), 713-732.
- Elkington, J. (1998). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. New Society Publishers.
- Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics (5th ed.)*. Sage Publications.
- Gavronski, I., Pinheiro de Lima, E., Saurin, T. A., & Almeida, F. (2011). Supplier selection and sustainability performance: A relationship-based approach. *Journal of Cleaner Production*, 19(3-4), 266-274.
- González-Ramírez, M., Guerrero, L. A., & Lytle, A. (2019). A Review of Formative Assessments in the Era of Digital Learning. *Journal of Interactive Learning Research*, 30(1), 47-72.
- Govindan, K., Aditi, Kaul, A., Darbari, J. D., & Jha, P. C. (2023). Analysis of supplier evaluation and selection strategies for sustainable collaboration: A combined approach of best–worst method and TOMada de Decisao Interativa Multicriterio. *Business Strategy and the Environment*.
- Green Purchasing Guide. (2011). *Purchasing for Sustainability: A guide to green procurement*. United Nations Environmental Program.
- Greene, W. H. (2012). *Econometric Analysis (7th Ed.)*. Pearson Education Limited.
- Gupta, M., & Barua, M. K. (2017). Green supply chain management: a review and research direction. *Journal of Cleaner Production*, 162, 299-314.
- Hussain, M., & Al-Aomar, R. (2018). A model for assessing the impact of sustainable supplier selection on the performance of service supply chains. *International Journal of Sustainable Engineering*, 11(6), 366-381.

- Islam, S. U., Seuring, S., & Wagner, R. (2018). Green supplier selection and greenwashing risks: a fuzzy AHP and TOPSIS-based assessment. *International Journal of Production Research*, 56(1-2), 618-638.
- Johnson, M. (2019). The impact of triple bottom line theory on supplier selection. *Journal of Supply Chain Management*, 15(2), 45-63.
- Johnson, M. T., & Peacock, J. (2018). Examining the Relationship between Sustainable Supplier Selection Criteria and Procurement Performance. *Journal of Business Ethics*, 150(4), 1053-1067.
- Laulita, N. B. (2021). The impact of sustainable supplier selection to supplier performance in mining industry: ethical culture as moderating variable. *BISMA (Bisnis dan Manajemen)*, 14(1), 63-73.
- Lo, C. K., Yeung, A. C., & Cheng, T. C. (2018). Decoupling and sustainable development of the supply chain under heterogeneous green cost sharing behaviors. *Transportation Research Part E: Logistics and Transportation Review*, 111, 186-200.
- Luthra, S., Garg, D., & Haleem, A. (2017). Barriers to sustainable supplier management adoption in the Indian automobile industry. *Journal of Cleaner Production*, 162, 594-609.
- Mathiyazhagan, K., & Govindan, K. (2018). A review on supplier selection and evaluation in automobile industry supply chain. *Journal of Cleaner Production*, 195, 339-364.
- Mosgaard, M. A. (2015). Exploring supplier motivation for environmentally responsible behaviour in global supply chains. *Journal of Business Ethics*, 126(2), 265-278.
- Nsikan, J., Affiah, E. A., Briggs, I., & Koko, N. (2022). Sustainable supplier selection factors and supply chain performance in the Nigerian healthcare industry. *Journal of Transport and Supply Chain Management*, 16, 633.
- Ouko, S., & Juma, D. (2020). Effect of supplier evaluation on performance of the procurement function of private health institutions in Kisumu County, Kenya. *The Strategic Journal of Business & Change Management*, 7(2), 40 – 57
- Sabiti, G. B., & Mulyungi, P. (2018). Effect of Supplier Selection on Procurement Performance of Rwanda Manufacturing Firms: A Case Study of Bralirwa Limited. *International Journal of Research in Management, Economics and Commerce*, 8(5), 67-82
- Salam, M. A., & Ali, M. (2020). Building reputation through sustainable supplier selection: the case of an emerging economy. *European Journal of Management and Business Economics*, 29(3), 315-332.

Smith, A. B., & Martin, C. D. (2020). Enhancing supplier accountability through the triple bottom line approach. *International Journal of Procurement & Supply Chain Management*, 25(3), 78-95.


Smith, J. (2015). An Introduction to Cross-Sectional Research Design. *Journal of Social Research Methodology*, 10(1), 25-40. An Introduction to Cross-Sectional Research Design. *Journal of Social Research Methodology*, 10(1), 25-40.

ISO 14001(2015) Environmental management systems -- Requirements with guidance for use. International Organization for Standardization.

Wetzstein, N., Richard, H., & Wiedemann, A. (2016). Supplier selection in the context of increasing product complexity and uncertainty: A review of established approaches and a proposed extension. *International Journal of Production Economics*, 183, 579-593.

Yu, W., Jacobs, M. A., & Salisbury, W. D. (2018). Evaluating the effectiveness of green supply chain management practices: A hierarchical perspective. *Journal of Cleaner Production*, 172, 3225-3235.

Zhu, H., Liu, K., Li, X., Yang, T., & Miao, Q. (2022). Sustainable supplier selection and evaluation for an effective supply chain: A comprehensive review. *Journal of Cleaner Production*, 318, 128920.

<p>COPYRIGHTS</p> <p>©2023 The Author(s). This is an open access article distributed under the terms of the Creative Commons Attribution (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, as long as the original authors and source are cited. No permission is required from the authors or the publishers.</p>	
<p>HOW TO CITE THIS ARTICLE</p> <p>Ojjo, A. (2023). Effect of Sustainable Supplier Selection on Procurement Performance of Chartered Public Universities in Kenya. <i>International Journal of Management, Accounting and Economics</i>, 10(7), 447-467.</p> <p>DOI: 10.5281/zenodo.8265343</p> <p>DOR: 20.1001.1.23832126.2023.10.7.1.6</p> <p>URL: https://www.ijmae.com/article_176507.html</p>	