

**GREEN SOURCING AND ECONOMIC SUSTAINABILITY OF GENERAL HOSPITALS
IN RIVERS STATE, NIGERIA**NYECHE Eruchi Precious¹ NWULU Chinyere Stella² IKEGWURU MacKingsley³^{1,2}Department of Marketing, Faculty of Administration and Management
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Rivers State University Nkpolu-Oroworukwo, Port Harcourt**Abstract**

This study investigated the relationship between green sourcing and economic sustainability of general hospitals in Rivers State. The study adopted a survey research design. The study was conceptualized using green sourcing as predictor to economic sustainability with cost minimization, competitive ability and resilience as measures. The population of the study consisted 59 general hospitals in the 23 Local Government Areas of Rivers State. The sample size of the study was the same as the population. This used structured questionnaire to collected primary data from heads of Procurement Department and Inventory Unit of each of the 59 general hospitals. Pearson's Product Moment Correlation (PPMC) was used to test the hypotheses formulated for the study, with the help of the Statistical Packages for Social Sciences Version 23.0. The study found that the existence of significant relationship between green sourcing and economic sustainability of general hospitals in Rivers State. Thus, the study concluded that green sourcing significantly relates to economic sustainability of general hospitals in Rivers State; and recommends that administrators of general hospitals should consider energy consumption, waste generation, emissions and overall environmental impact in their sourcing decisions, if they aspire to improve economic sustainability in terms of cost minimization, competitive ability and resilience.

Keywords: Competitive ability, cost minimization, economic sustainability, green sourcing, resilience

Introduction

Businesses all over the world are coming to realization that the environment is significant to their operations (Das, 2018). Societies have understood that the safety of the environment, people and communities directly and indirectly stem from business operations. Due to this understanding, new initiatives have emerged to regulate organizations with a focus on reducing harm to the environment. This has led to the green concept, also referred to "sustainability practices" (Shao & Ünal, 2019).

One of the most effective ways an organization can practice sustainability is through its procurement processes (Ghosh, 2019). Green procurement policies are applicable to all organisations, regardless of size and ownership. It ranges from simple decisions to purchase renewable energy or office paper from sustainable and recycled sources to comprehensive ones like complying with environmental requirements (Vejaratnam et al., 2023).

Teaching hospitals procure a wide range of goods ranging from electronic devices and surgical instruments to papers, towels, hospital gowns, packaging materials, and office supplies. Green sourcing as a key indicator of green procurement has emerged as one of the budding business concepts that carry a promise to alleviate the externalities that dominate procurement practices, aimed at meeting up with environmental standards (Das, 2018).

There has been mixed feelings towards green sourcing. Firms involved in green sourcing have been associated with growth in revenue, reduction in production costs, effective risk management, and an accumulation of intangible assets such as brand equity (Mulani, 2008), while argue that green sourcing exacerbate operating costs and reduce efficiency (Shao & Ünal, 2019). The absence of clarity on the outcomes of green sourcing calls for a study that would shed some light on this debate, and increase empirical literature on the contemporary issue of green phenomenon. This study

therefore sought to determine the nexus between green sourcing and economic sustainability of teaching hospitals in Rivers State.

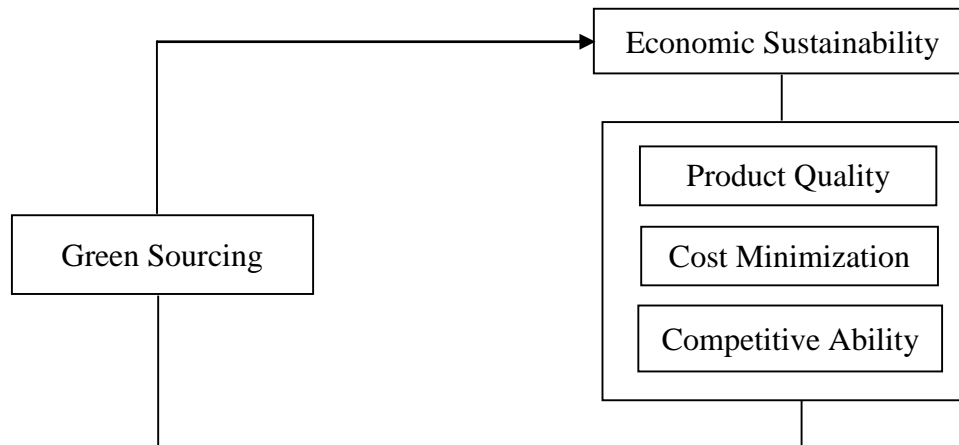


Fig. 1: Conceptual framework of relationship between green sourcing and economic sustainability of teaching hospitals in Rivers State.

Literature Review

Natural Resource-Based View (NRBV)

NRBV (Hart, 1995) states that firms develop competitive edge by relating to the biophysical ecosystem. This means that competitive advantage is created through the relationship between internal capacities and the external environment (Chandler, 2012). The connection between the external and internal environment of a firm creates cost leadership as well as quality differentiation (Porter, 2015).

NRBV further asserts that if an asset or a group of resources can help a firm build competitive advantage, then that resource cannot be substituted, is rare and valuable, not replicable and is not possessed by other firms (Hart, 2015). In the health industry, NRBV is relevant to acquiring eco-friendly raw materials since the natural world is a key to success in the health industry.

Concept of Green Sourcing

The concept of sourcing reflects “a move toward buying rather than making required materials or components (Das, 2018). From a strategic sourcing perspective, procurement emphasizes transactions between suppliers and buyers (Balkow 2012); whereas sourcing refers to more complex transactions, integration and coordination of sourcing and production activities across buying locations (Shao & Unal, 2019).

According to Vejaratnam et al. (2023), green sourcing is the process of establishing suppliers and purchasing goods that are not detrimental to the environment. This involves buying materials that can be used multiple times and those that do not emit toxic gases (Shao & Ünal, 2019). Materials that can be used and reused through recycling lead to resource use efficiency which in turn saves non-renewable resources from quickly depleting (Das, 2018).

Min and Choi (2019) view green sourcing as an environmentally conscious purchasing practice that reduces or eliminate sources of waste and promotes the sustainability (e.g. recycling and reclamation) of purchased materials without adversely affecting performance requirements of such materials.’

Economic Sustainability

Barbier et al. (2018) describe economic sustainability is an integrated part of sustainability and means that we must use, safeguard and apply in sustaining resources (human and material) to create

long-term value by optimal use, recovery and recycling. In the context of general hospitals, economic sustainability involves ensuring that healthcare facilities can maintain their operations, provide quality care to patients, and contribute to overall economic well-being, while also being financially viable in the long term.

This means that economic sustainability encompass revenue generation, cost management, resource allocation, and efficiency improvement. Economic sustainability is inextricably linked to both environmental and social sustainability (Vejaratnam et al., 2023). Thus, this study adopts cost minimization, competitive ability and resilience as measures of economic sustainability.

Cost minimization refers to a technique used to save the unit cost of a product without compromising its quality (Gao et al., 2022). According to Mukucha et al. (2021), cost minimization attempts to minimize undesirable costs. Omusebe et al. (2018) defined cost minimization as the process of permanently reducing expenses involved in providing a products without impairing the quality of the product.

According to Porter (2006) and Fatkhutdinov (2008), competitive ability is the ability of a company to produce the competitive products, its advantage against the other companies in this area within the country and beyond it. Appohwood et al. (2019) emphasized that the competitive ability of a company may be assessed only within a group of companies belonging to the same industry or the companies producing the like products thus competitive ability analyzes how enterprises manage the totality of their competencies to achieve prosperity or profit.

Resilience refers to the ability of a system, organization, or individual to withstand and adapt to challenges, disruptions, or adversity, and to quickly recover and thrive in the face of such challenges. It is the ability of a system to cope with, recover from, and adapt to adversity or disturbances while maintaining its core functions, structures, and identity (Walker et al., 2004). Resilience in the context of general hospitals in Rivers State refers to the capacity of these healthcare facilities to withstand and adapt to challenges, disruptions, and emergencies while maintaining essential healthcare services and ensuring the well-being of patients and staff.

Green Sourcing and Economic Sustainability

Green sourcing is fundamental to economic sustainability. Previous studies allude to the fact that many companies have found benefits from the implementation of green sourcing and studies have validated this claim in different contexts and industries. Rugasira et al. (2022) established that green sourcing enhances environmental sustainability of manufacturing in Kampala. Mukucha et al. (2021) revealed that green sourcing leads to improved procurement performance of restaurants, in terms of total cost of ownership, quality of materials and delivery performance.

Similarly, Augustine (2020) reported that green sourcing was an important enabler of firm success at Bayport savings & loans as well as Ghana's water company limited; Machio and Pauline (2018) showed that green sourcing has a direct positive influence on performance of sugar processing firms in Kenya; while Siyad and Marendi (2017) and Nderitu and Ngugi (2014) established that green procurement practices have positive relationship with organizational performance.

Also, Omusebe et al. (2017) examined the impact of green procurement on performance as well as effective purchasing administration in the public Sector, and established that implementing green purchasing improves performance in areas of costs, lead time as well as quality that are critical in purchasing administration in organizations. Karim et al. (2017) showed that sustainable procurement practices exhibit a significant relationship with financial performance of firms.

In addition, Sarhaye and Marendi (2017) established that green procurement contribute significantly to performance of production companies; and canvassed the imperative engaging in procurement

practices that ensures a safe ecosystem. Furthermore, Kimira et al. (2016) showed that adoption of green purchasing leads to enhanced performance and improved competitiveness of manufacturing companies; while Pembere (2016) showed that green purchasing enhances value chain performance in organizations.

Based on the foregoing reports of scholars, the present study hypothesizes as follows:

- a) **H_A**: Green sourcing significantly relate to cost minimization of general hospitals in Rivers State.
- b) **H_A**: Green sourcing significantly relate to competitive ability of general hospitals in Rivers State.
- c) **H_A**: Green sourcing significantly relate to resilience of general hospitals in Rivers State.

Methodology

This study adopted a survey research design with a correlational investigation type. The population of the study was fifty-nine (59) general hospitals spread across the twenty-three (23) Local Government Areas of Rivers State as enlisted in the Rivers State Health Facility Listing. The sample size of the study was the same as the population. The used a structured questionnaire to collect primary data from heads of procurement department and inventory unit of each of the fifty-nine 59 general hospitals. This means that a total of 118 respondents took part in the study. With the help of Statistical Packages for Social Sciences (SPSS) version 23.0, Pearson's Product Moment Correlation (PPMC) was used to test the link between green sourcing and indices of economic sustainability.

Table 1: Reliability Test - Cronbach's Alpha Analysis

S/N	Variables	Number of Items	Cronbach's Alpha Coefficients
1	Green Sourcing	3	0.855
2	Cost Minimization	3	0.750
3	Competitive Ability	3	0.710
4	Resilience	3	0.825

Source: SPSS Output form field data

Table 1 reveal that all the variables in the study produced high Cronbach’s Alpha coefficients indicating that, there is inter-item consistency among the variables in the study. This means that, if this study is conducted again in similar conditions, similar results would be obtained.

Table 2: Descriptive Statistics of Green Sourcing

	N	Sum	Mean	Std. Dev.	Variance
To what extent does your organization explore and evaluate suppliers of products that are energy efficient?	107	451	4.21	.701	.491
To what extent does your organization implement sourcing strategies that incorporate bio-degradable product features in your procurement processes?	107	416	3.89	1.102	1.214
To what extent does your organization engage with suppliers that have environmentally friendly business orientation?	107	411	3.84	1.117	1.248
To what extent does your organization incorporate life cycle assessment in the sourcing process, and consider re-usability as well as recyclability of products to be procured to minimize environmental impact?	107	397	3.71	1.073	1.151
Valid N (listwise)	107				

Source: SPSS Output, 2024.

Table 2 depicts high mean scores of the questionnaire items ranging over 3.00, this means that greater number of the respondents expressed very high and high extents of acceptance to the research question with respect to green sourcing. However, it can be seen that question 1 which sought to determine the extent to which general hospitals in Rivers State explore and evaluate suppliers of products that are energy efficient, has the highest mean score of 4.21. This shows that question 1 has the strongest influence on the variables.

Table 3: Descriptive Statistics of Cost Minimization

	N	Sum	Mean	Std. Dev.	Variance
To what extent have you been able to identify and eliminate unnecessary expenses in your operations to achieve cost minimization?	107	414	3.87	1.133	1.285
To what extent have you been able to optimize your supply chain to reduce procurement and logistics costs?	107	444	4.15	1.139	1.298
To what extent have you been able to implement energy-efficient practices to lower utility costs?	107	435	4.07	.587	.345
To what extent have you been able to achieve cost savings through bulk purchasing and negotiating better terms with suppliers?	107	439	Table 3	.700	.489
Valid N (listwise)	107				

Source: SPSS Output, 2024.

Table 3 depicts high mean scores of the questionnaire items ranging over 3.00, this means that greater number of the respondents expressed very high and high extents of acceptance to the research question with respect to cost minimization. However, it can be seen that question 2 which sought to determine the extent to which general hospitals in Rivers State have been able to optimize their supply chain to reduce procurement and logistics costs, has the highest mean score of 4.15. This shows that question 2 has the strongest influence on the variables.

Table 4: Descriptive Statistics of Competitive Ability

	N	Sum	Mean	Std. Dev.	Variance
To what extent have you been able to differentiate your products or services from those of your competitors to enhance your competitive ability?	107	439	4.15	.628	.395
To what extent have you been able to leverage innovation to stay ahead of competitors in your market?	107	434	4.06	1.220	1.487
To what extent have you been able to understand and respond to market trends to maintain a competitive edge?	107	438	4.09	.524	.274
To what extent have you been able to build and maintain strong customer relationships to enhance loyalty and competitiveness?	107	446	4.17	.693	.481
Valid N (listwise)	107				

Source: SPSS Output, 2024.

Table 4 depicts high mean scores of the questionnaire items ranging over 3.00, this means that greater number of the respondents expressed very high and high extents of acceptance to the research question with respect to competitive ability. However, it can be seen that question 4 which sought to determine the extent to which general hospitals in Rivers State have been able to build and maintain strong customer relationships to enhance loyalty and competitiveness, has the highest mean score of 4.17. This shows that question 4 has the strongest influence on the variables.

Table 5: Descriptive Statistics of Resilience

	N	Sum	Mean	Std. Dev.	Variance
To what extent have you been able to develop and implement business continuity plans to ensure resilience in the face of disruptions?	107	451	4.21	.701	.491
To what extent have you been able to diversify your revenue streams to reduce dependence on a single market or product?	107	441	4.12	1.070	1.145
To what extent have you been able to build a flexible and adaptable organizational structure to respond to changing conditions?	107	418	3.91	1.069	1.142
To what extent have you been able to invest in technology and infrastructure to enhance your organization’s resilience?	107	403	3.77	1.202	1.445
Valid N (listwise)	107				

Source: SPSS Output, 2024.

Table 5 depicts high mean scores of the questionnaire items ranging over 3.00, this means that greater number of the respondents expressed very high and high extents of acceptance to the research question with respect to resilience. However, it can be seen that question 1 which sought to determine the extent to which general hospitals in Rivers State have been able to develop and implement business continuity plans to ensure resilience in the face of disruptions, has the highest mean score of 4.21. This shows that question 1 has the strongest influence on the variables.

Table 6: Correlations between Green Sourcing and Cost Minimization

		Correlations	
		Green Sourcing	Cost Minimization
Green Sourcing	Pearson Correlation	1	.713**
	Sig. (2-tailed)		.000
	N	107	107
Cost Minimization	Pearson Correlation	.713**	1
	Sig. (2-tailed)	.000	
	N	107	107

** . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output, 2024.

Table 6 reveals a correlation coefficient of 0.713** between green sourcing and cost minimization, indicating a strong positive relationship between green sourcing and cost minimization. More so, the probability value (0.000) is less than the critical value (0.05), this shows that the link between green sourcing and cost minimization is significant. Based on this, we accepted the alternate hypothesis that there is a significant relationship between green sourcing and cost minimization of general hospitals in Rivers State.

Table 7: Correlations of Green Sourcing and Competitive Ability

		Correlations	
		Green Sourcing	Competitive Ability
Green Sourcing	Pearson Correlation	1	.424**
	Sig. (2-tailed)		.000
	N	107	107
Competitive Ability	Pearson Correlation	.424**	1
	Sig. (2-tailed)	.000	
	N	107	107

** . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output, 2024.

Table 7 reveals a correlation coefficient of 0.424** between green sourcing and competitive ability, indicating a moderate positive relationship between green sourcing and competitive ability. More so, the probability value (0.000) is less than the critical value (0.05), this shows that the relationship between green sourcing and competitive ability is significant; and that green sourcing can be used to achieve competitive ability among general hospitals in Rivers State. Based on this, we accept the alternate hypothesis that there is a moderate, significant relationship between green sourcing and competitive ability of general hospitals in Rivers State.

Table 8: Correlations of Green Sourcing and Resilience

		Correlations	
		Green Sourcing	Resilience
Green Sourcing	Pearson Correlation	1	.759**
	Sig. (2-tailed)		.000
	N	107	107
Resilience	Pearson Correlation	.759**	1
	Sig. (2-tailed)	.000	
	N	107	107

** . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output, 2024.

Table 8 reveals a correlation coefficient of 0.759** between green sourcing and resilience, indicating a strong positive relationship between green sourcing and resilience. The probability value (0.000) is less than the critical value (0.05), meaning that the relationship between green sourcing and resilience is significant. It also means that green sourcing can be used to achieve resilience among general hospitals in Rivers State. Hence, we accept the alternate hypothesis that there is a strong, significant relationship between green sourcing and resilience of general hospitals in Rivers State.

Discussion of Findings

The study reveals green sourcing has a strong positive relationship with cost minimization and competitive ability, as a moderate relationship with resilience of teaching hospitals in Rivers State. The study also showed that the relationship between green sourcing and all the indices of economic sustainability is statistically significant. These findings are in tandem with the findings of Rugasira et al. (2022) a moderately positive and statistically significant association exists between green sourcing and environmental sustainability.

The findings also align with the reports that green sourcing leads to improved procurement performance (Mukucha et al., 2021); enables business success (Augustine, 2020); influences business performance (Machio & Pauline, 2018; Siyad & Marendi, 2017) and effective purchasing administration in the public Sector (Ali, 2017).

In addition, our findings support reports that sustainable procurement practices exhibit significant relationship with performance of firms (Karim *et al.*, 2017; Sarhaye & Marendi, 2017); competitiveness of companies (Kimira et al., 2016) and value chain performance (Pembere, 2016) and improve organizational performance (Nderitu & Ngugi, 2014). Indeed, the current finding align with practical knowledge and research output that show eco-friendly purchasing practices as key determinants of firm performance.

Conclusion and Recommendations

The study investigated the correlation between green sourcing and economic sustainability of general hospitals in Rivers State. Based on the findings, the study concludes that green sourcing has positive significant relationship with economic sustainability of general hospitals in Rivers State.

Thus, when companies green source, it means that they acquire some or all of their materials or other items needed to run the business from eco-friendly sources. The idea behind this is to avoid wasteful use of natural resources, ensuring they will not be depleted and remain available for future generations to benefit from. The study therefore recommends that:

- a) Administrators of general hospitals should consider factors such as energy consumption, waste generation, emissions, and overall environmental impact in their sourcing decisions. They should request vendors to provide environmental reports, certifications, and conduct on-site audits on these vendors before establishing supply contracts with them, this will help general hospitals to minimize procurement and operations cost, build competitive stamina as well as increase overall economic sustainability.
- b) Administrators of general hospitals should adopt the 'going green concept' in their supplier sourcing decisions, to help them improve economic sustainability. This can be achieved by screening each vendor with green material standards and criteria.

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