ADOPTION OF GREEN SUPPLY CHAIN AND EFFECT ON SMEs' SUSTAINABILITY PERFORMANCE IN NIGERIA

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Abstract

This study is an examination of the correlation between Green Supply Chain Management (GSCM) adoption and SMEs' (Small and Medium-sized Enterprises) sustainability performance in Nigeria, with particular focus on Abia, Akwa Ibom, and Cross River States. The study was motivated by the growing environmental concerns associated with industrial activities and the increasing need for organizations to adopt environmentally sustainable operational practices. The specifics of the study included investigation of the effect of green procurement on the SMEs' environmental sustainability and economic performance. The survey research design was utilized, where a structured questionnaire copies were administered to SMEs across the selected states. A total of 392 questionnaire copies were distributed, while data were analyzed using regression and correlation statistical techniques. The findings reveal that green procurement significantly improved SMEs' economic performance, while green manufacturing positively influenced environmental sustainability performance. Consequently, the researchers recommend that increased investment in green technologies, environmentally sustainable procurement systems, workforce training, and stronger regulatory support will encourage SMEs' adoption of GSCM in Nigeria.

Keywords: Green Supply Network Practices, Green Procurement, Green Manufacturing, Sustainability Performance, SMEs, Nigeria.

Introductory Overview

Environmental sustainability has become one of the most pressing concerns confronting businesses globally. Over recent decades, organizations have increasingly been compelled to adopt environmentally friendly operational systems due to increased environmental deterioration. The SMEs, which constitute a substantial proportion of businesses worldwide, have attracted growing attention

because of their collective contribution to industrial activities, employment generation, and environmental impact.

GSCM has become a very crucial approach for organizations seeking to integrate environmental sustainability into supply chain operations. GSCM involves incorporating environmental considerations into every stage of production and distribution processes, including sourcing, procurement, manufacturing, transportation, packaging, warehousing, and disposal activities. Organizations across the world are increasingly adopting green operational systems in response to customer expectations, government regulations, and competitive pressures. Consumers are becoming more environmentally conscious and now demand products manufactured through environmentally responsible processes. Consequently, firms are gradually transitioning from traditional production systems toward eco-friendly supply chain practices that reduce waste, minimize carbon emissions, conserve resources, and improve operational efficiency.

For SMEs, the adoption of green supply chain practices presents opportunities for reducing operational costs, enhancing organizational reputation, improving customer satisfaction, and strengthening long-term competitiveness. Environmentally sustainable practices such as green procurement and green manufacturing are increasingly recognized as essential components of organizational sustainability.

Despite these advantages, many SMEs in developing countries continue to face difficulties in implementing green supply chain initiatives due to financial limitations, inadequate technical expertise, weak institutional support, and insufficient environmental awareness. In Nigeria, green supply chain management remains relatively underdeveloped, especially among SMEs operating within the manufacturing and commercial sectors.

This study therefore, investigates the influence of GSCM on the sustainability performance of SMEs in Nigeria, with emphasis on green procurement and green manufacturing practices within Abia, Akwa Ibom, and Cross River States.

Statement of the Problem

Unarguably, SMEs contribute meaningfully to economic growth, employment generation, and industrial development. However, many SMEs rely on production systems that consume excessive resources and generate considerable environmental pollution.

Although large corporations in developed economies have increasingly adopted environmentally sustainable operational systems, the level of green supply chain adoption among Nigerian SMEs remains relatively low. The inadequate integration of green procurement and green manufacturing practices among SMEs has contributed to waste generation, environmental degradation, excessive carbon emissions, and inefficient resource utilization. Despite the documented benefits of green supply chain management, many SMEs still lack the financial capacity, technological expertise, and institutional support required for implementing environmentally sustainable practices. Existing studies have largely concentrated on developed economies, leaving limited empirical evidence regarding the influence of GSCM on SMES' sustainability performance within developing countries such as Nigeria. Consequently, there remains insufficient understanding of how green procurement and green manufacturing affect the economic and environmental performance of Nigerian SMEs.

Objectives of the Study

The broad objective is an examination of the effect of GSCM on the sustainability performance of SMEs in Nigeria. The research specific aims were:

1. To determine the influence of green procurement on SMEs' economic performance.
2. Examine the relationship between green manufacturing on SMEs' environmental performance.

Hypotheses

H01: Green procurement has no significant effect on SMEs' corporate performance.

H02: Eco-friendly manufacturing has no significant influence on SMEs' environmental performance.

Literature Review

Conceptual Review

GSCM or Green Supply Chain Management, in full, refers to the integration of environmental sustainability principles into supply chain activities. It involves environmentally responsible sourcing, production, transportation, packaging, warehousing, distribution, and disposal systems aimed at reducing ecological damage while improving operational efficiency.

Organizations implementing green supply chain systems are increasingly focusing on practices such as eco-design, recycling, renewable energy utilization, waste reduction, green logistics, and environmentally friendly procurement systems. Green procurement involves purchasing products and services based on environmental sustainability considerations in addition to cost and quality factors. It encourages organizations to collaborate with environmentally responsible suppliers and acquire products with minimal environmental impact.

Green manufacturing refers to environmentally sustainable production processes designed to minimize pollution, reduce waste, conserve energy, and improve resource efficiency. Green manufacturing systems emphasize recycling, renewable energy usage, emission reduction, and cleaner production technologies.

Theoretical Framework

The study is anchored on the Institution-Based Perspective and the Resource-Based View (RBV) Theory. The Institution-Based Perspective explains that organizations adopt sustainability practices because of societal expectations, stakeholder pressures, government regulations, and industry standards. Firms operating within environmentally conscious environments are more likely to implement sustainable operational systems in order to maintain legitimacy and competitiveness.

The RBV Theory holds that firms achieve sustainable edge through valuable organizational resources and capabilities. Green innovation capabilities, technological expertise, organizational knowledge, and environmentally sustainable operational systems constitute strategic resources that enhance organizational performance.

Methodology

The study is based on a survey research design because it allows the collection and analysis of data from a large population. Structured questionnaires based on a five-point Likert structure were administered to SMEs operating within Abia, Akwa Ibom, and Cross River States.

A total of 392 questionnaire copies were administered, while 377 retrieved and analyzed. The Statistical Package for Social Sciences (SPSS) version 27 was utilized for data analysis. Regression and correlation analyses were employed to test the hypotheses.

The instrument's reliability was established using Cronbach's Alpha technique, and the coefficients obtained exceeded 0.70, which indicated strong reliability and measurement consistency.

Test of Hypotheses

Test of Hypothesis 1

Ho1: Green procurement has no significant effect on consumer on SMES economic performance.

Table 3: Regression analysis on effect of green procurement on the SMES sustainability (economic) performance.

Model	Un-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.066	.061		19.119	.000
Green Procurement	-.784	.055	-.047	-.464	.426

Source: Field Survey, 2026

Result Interpretation:

EGP= 1.066+.78GP---------- implicit

EGP= a + b1GP+ e---------- explicit

Where:
EGP = Effect of Green Procurement
GP= Green Procurement
β1 = Coefficient of x
e = error of margin

Green Procurement was accepted as the independent variable used in testing the effect of green procurement on the SMES economic performance. From the table 2 above, indicates that adoption of green procurement increases by .78.4%, showing that green procurement has significant effect on SMES sustainability (economic) performance within the study areas, as the significance level of t- test is less than 0.05. Hence the result of the regression analysis led the researchers into rejecting the null hypothesis which states that Green Procurement don't have significant outcome on the SMEs' sustainability (economic) performance. Hence, the researchers hereby accept the alternate hypothesis which states that Green procurement has significant effect on the SMES economic performance within the study scope.

Test of Hypothesis 2

Ho2: Eco-friendly manufacturing has no significant correlation to the SMEs environmental performance.

Test Table 4: Correlation Analysis on Green Manufacturing on SMES sustainability (environmental) Performance

		GSCM	Sustainable_ Performance
Green Manufacturing	Pearson Correlation	1	.531**
	Sig. (2-tailed)		.001
	N	101	101
Sustainability (environmental) Performance	Pearson Correlations'	.531**	1
	Sig. (2-tailed)	.000	
	N	100	100

Source: Field Survey, 2026. **Correlation is significant at the 0.01 level (2-tailed).

Interpretation:

Table 4 presents the Pearson Product Moment Correlation analysis conducted to evaluate Hypothesis One (H). The statistical result revealed a positive and statistically significant relationship between green manufacturing practices and the environmental sustainability performance of SMEs operating within the selected study areas ($r = 0.531$; $p < 0.01$). The computed t-value exceeded the critical t-value, while the probability value of 0.000 was lower than the 0.01 significance threshold, indicating statistical significance. Consequently, the null hypothesis, which postulated that green manufacturing has no significant relationship with SMEs' environmental sustainability performance, was rejected. In its place, the alternative hypothesis was accepted, confirming that green manufacturing significantly influences the environmental sustainability performance of SMEs within the study locations.

Discussion of Findings

The findings revealed that green procurement significantly influences SMEs' economic performance. SMEs implementing environmentally sustainable procurement systems experienced improvements in operational efficiency, organizational productivity, and cost management.

The study further established that green manufacturing significantly enhances environmental sustainability performance among SMEs. Firms adopting environmentally sustainable manufacturing systems recorded reductions in pollution, waste generation, and inefficient resource utilization.

The findings support previous empirical studies which established that green supply chain management contributes positively to organizational sustainability, operational performance, environmental protection, and long-term competitiveness.

Limitations of the study and suggestions for further study

The study is limited by its geographical confinement to only three states in Nigeria, which restricts the transferability of findings to SMEs in other geopolitical zones with different regulatory and infrastructural conditions. Future research should extend geographical coverage to include SMEs across all six geopolitical zones of Nigeria to enhance generalizability and enable comparative analysis.

Conclusion

The study concluded that green supply chain management significantly improves the sustainability performance of SMEs in Nigeria. Specifically, green procurement positively affects economic performance, while green manufacturing enhances environmental sustainability. The study therefore established that environmentally sustainable operational systems contribute substantially to organizational efficiency, environmental protection, waste reduction, and competitive advantage.

Recommendations

The following recommendations are made based on the findings and conclusion;

1. SMEs should integrate environmental sustainability into procurement policies and operational systems.
2. Organizations should invest in environmentally sustainable technologies and green manufacturing systems.
3. Government agencies should strengthen environmental regulations and support SMEs through incentives and training programs.
4. SMEs should reinvest savings generated through green operational practices into innovation, research, and workforce development.
5. Continuous environmental awareness campaigns should be organized to encourage the adoption of green supply chain management practices among SMEs.

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