



ASSESSMENT OF THE BARRIERS OF SUSTAINABLE PROCUREMENT ADOPTION IN NIGERIAN CONSTRUCTION INDUSTRY

ADEBISI Ibrahim Adekunle and SAIDU Minin Mohammed
Department of Quantity Surveying, Ahmadu Bello University, Zaria

Correspondence: smminin@yahoo.com

ABSTRACT

Sustainable Procurement (SP) is a strategic tool for achieving sustainable development, balancing economic, social, and environmental objectives in project delivery. Sustainable Procurement (SP) integrates environmental, social, and economic considerations into public procurement to achieve long-term value for money and sustainable development outcomes. Despite its global adoption and documented benefits, SP remains nascent in the Nigerian construction industry. This study aims to assess and rank the critical barriers impeding the adoption of SP in Nigeria. A quantitative research approach was employed. Through a comprehensive literature review, 16 barriers to SP adoption were identified. A structured questionnaire was distributed to a purposively selected sample of 99 construction professionals (Architects, Quantity Surveyors, Structural and Services Engineers) in Nigeria. Seventy-nine valid responses were analysed using descriptive statistics (mean scores, standard deviation). The analysis revealed that all 16 barriers are significant impediments to SP adoption. The most critical barriers are: (1) lack of expertise in applying green building materials, (2) lack of awareness of SP concepts, and (3) lack of understanding of the SP concept. This study provides the first empirically published ranking of SP adoption barriers within the Nigerian construction context. It offers crucial insights for policymakers, industry regulators, and professionals by pinpointing the most severe obstacles. The findings underscore the need for targeted educational interventions, policy reforms, and cross-disciplinary collaboration to foster a conducive environment for SP adoption.

KEYWORDS: Barriers, Construction Industry, Green Building Materials (GBM), Nigeria, Sustainable Procurement.

INTRODUCTION

Globally, Sustainable Procurement (SP) is defined by UNEP (2015) as meeting organisational needs while generating societal and environmental benefits and minimising harm, and has emerged as a critical tool for embedding sustainability into infrastructure development. Sustainable Procurement balances economic efficiency with environmental stewardship and social equity (Kennard, 2006; UNEP, 2013). The construction industry is a significant driver of

economic growth but also a major consumer of resources and a contributor to environmental degradation (Shen *et al.*, 2017). In response, Sustainable Procurement (SP) has emerged as a strategic process to integrate sustainability principles; economic, environmental, and social, into the procurement of goods, services, and works (UNEP, 2017). By leveraging their substantial purchasing power, which can account for up to 20% of GDP in developing countries like Nigeria, governments can use

SP to drive market transformation towards sustainability (Hyacinth *et al.*, 2017).

In developed economies, SP has been linked to benefits such as whole-life cost savings, improved transparency, enhanced brand image, and reduced environmental impact (Ageron *et al.*, 2012; McMurray *et al.*, 2014). However, its adoption varies significantly, with developing countries like Nigeria lagging (Adebayo, 2015). The Nigerian Public Procurement Act (2007) focuses primarily on the Lowest Responsive Bid and procedural transparency, with no explicit provisions for sustainability criteria (Hyacinth *et al.*, 2017). This legal and policy gap, coupled with industry-specific challenges, has stifled SP adoption.

Existing research has identified diverse barriers to SP across different national contexts, including lack of awareness, higher initial costs, corruption, and unavailability of green materials (Walker & Brammer, 2009; Mensah & Ameyaw, 2012; Shen *et al.*, 2017). However, these barriers are context-specific, and their significance in the Nigerian construction industry remains underexplored. Therefore, this study seeks to fill this gap by assessing and ranking the barriers to SP adoption in Nigeria.

LITERATURE REVIEW

The Concept of Sustainable Procurement

Sustainable Procurement (SP) moves beyond traditional procurement's focus on initial cost to incorporate environmental and social considerations throughout the project lifecycle (Kennard, 2006). It is defined as a process whereby organisations meet their needs for goods, services, and works in a way that achieves value for money on a whole-life basis, generating benefits for society and the economy while minimising environmental damage (UNEP, 2017). The three pillars of SP are:

- Environmental: Minimising negative ecological impacts throughout a product's

life cycle (extraction, manufacture, use, disposal) (Musa & Aderonmu, 2016).

- Social: Promoting fair labour practices, human rights, community benefits and social equity (Hyacinth *et al.*, 2017).
- Economic: Achieving value for money through whole-life costing, including operational efficiency, local economic development, maintenance, and disposal costs (Hyacinth *et al.*, 2017).

Sustainable Procurement in Developing Countries

In developing nations like Ghana and Kenya, public procurement is a major economic driver, making reforms crucial (Hyacinth *et al.*, 2017). In Ghana, government procurement constitutes over 18% of GDP and half the national budget, much of which is funded by overseas aid, linking procurement reform directly to aid effectiveness. Kenya has also advanced its system, notably with the 2007 Public Procurement and Disposal Act.

The push for Sustainable Public Procurement (SPP) is driven by environmental concerns and its potential to foster sustainable development. Following a 2012 recommendation in Kenya to create an SPP strategy, Ghana launched its own initiative in 2010. This was formalised through a three-year, \$2.7 million Swiss-funded project managed by Ghana's Public Procurement Authority (PPA) (Hyacinth *et al.*, 2017; Schweizer, 2010). The project aims to embed principles of sustainability, transparency, and accountability into the procurement process.

In practice, Kenya has implemented SPP-related policies, such as awarding 10% of public contracts to youth-owned businesses and promoting the use of solar power and energy-saving appliances. In Ghana, the PPA is leading awareness campaigns, which have been well-received by internationally engaged companies seeing new business opportunities. However, local firms still

require sensitisation and technical support. A significant challenge for Ghana is that its primary Public Procurement Act is not yet fully complete, making it risky to implement a comprehensive SPP system (Hyacinth *et al.*, 2017).

Barriers to Sustainable Procurement Adoption

A synthesis of global literature reveals a consistent set of challenges to SP implementation. Walker and Brammer (2009), in a UK study, identified financial constraints, lack of awareness, and conflicting priorities as primary barriers. In Ghana, Mensah and Ameyaw (2012) found that a lack of understanding of SP concepts, higher initial costs, and absence of government interest were most significant. McMurray *et al.* (2014) highlighted a lack of resources, expertise, and political support in Malaysia. In China, Shen *et al.* (2017) reported that the lack of attractiveness of green building materials (GBM) to consumers, unavailability of GBM, and lack of government incentives were major hurdles. Other commonly cited barriers include corruption, technical concerns with GBM, and a lack of top management commitment (de Souza Dutra *et al.*, 2017). This study consolidates these into 16 key barriers for investigation in the Nigerian context.

Drivers and Enablers

Drivers or facilitators of sustainable procurement are forces which create positive pressure to develop, adopt and implement sustainable procurement strategies by creating opportunities or threats which must be addressed by the procurement function in any organisation (Kariuki & Kwasira, 2012). These drivers will enable the creation of conditions favourable to the effective and efficient introduction, adoption, implementation and acceptance of sustainable procurement processes and

practices. However, drivers appear to be similar across regions or countries.

The drivers/facilitators of sustainable procurement for increased focus on sustainability include; increased pressure for greater corporate responsibility and accountability; possible damage to the environment throughout the production processes; growing awareness of the operational, financial and reputational risks of unsustainable business practices; Corporate environmental vision; Good understanding of the business benefits; Implementing green procurement goals to job descriptions and incentive programs for key staff; Initiatives taken by the government; Availability of green product information from reliable database; Clear requirements of green characteristics for performance-based specification; Availability of advanced green technology for construction purpose; Adequate life-cycle considerations for projects; Selecting materials by their low risks to the environment; Facilitating cross references for green performance assessment of buildings (e.g. BEAM-Plus); Adopting green practices or procedures (e.g. waste management); Design of products for reduced consumption of material or energy; Design of products for reuse, recycling, recovery of material, component parts (Akenroye *et al.*, 2013; McMurray *et al.*, 2014; Wong *et al.*, 2016). Factors such as scarcity of resources, legislation and legal frameworks, stakeholder pressure and concerns together with reputational risk and opportunities are likely to drive public organisational measures for sustainable procurement.

RESEARCH METHODOLOGY

Research Approach

Quantitative data was required due to the nature and volume of data needed, and for the possibility of generalisability. A cross-sectional survey was conducted using a

structured questionnaire administered to construction professionals in Kaduna State, Nigeria, a region with significant consultant density. The study focused on the economic dimension of SP due to its direct link to value-for-money outcomes.

Sampling and Data Collection

The target population comprised registered professionals: 2,932 Architects (ARCON, 2019), 1,279 Engineers (COREN, 2019), and 2,774 Quantity Surveyors (QSRBN, 2019), totalling 6,985. Using Kish's (1965) formula at 95% confidence level and 5% margin of error, a sample size of 99 was determined. Purposive sampling technique was employed to ensure only respondents who had exposure to procurement processes were engaged. The

primary data collection instrument was a structured questionnaire divided into two sections. Section A captured demographic information, while Section B presented the 16 barriers identified from literature. The sixteen (16) items were coded B1-B16 capturing awareness/capacity (e.g., B1, B7, B9), organisational (B8, B15), market/supply (B4, B6, B12), economic/cost (B2, B13), institutional/policy (B3, B11, B10), and consumer factors (B14, B16). The questionnaires employed a 5-point Likert scale (1 = Not Significant to 5 = Extremely Significant) to rate the 16 barriers identified from literature. Sections captured demographic data, SP understanding, GBM knowledge, and barrier significance.

Table 1: Response rate

Metric	Count
Administered	99
Retrieved	86
Response Rate	86.87%

Table 1 shows a robust field response (86.87%), which supports generalisability within the sampled professional community. From the 99 copies of questionnaire

distributed, 86 were returned (86.87% response rate); 79 (Table 2) were fully completed and used for analysis.

Table 2: Adequacy of response

Category	Frequency	Percentage
Properly filled	79	79.80%
Not properly filled	7	7.07%
Not retrieved	13	13.13%
Total	99	100.00%

With 79 (Table 2) valid instruments (79.80%), the dataset comfortably exceeds common thresholds for survey adequacy in construction management studies.

Data Analysis

Data were analysed using SPSS v25. Descriptive statistics (frequencies, means,

standard deviations) were used to rank barriers. The questionnaire was pre-tested for clarity and content validity, with inputs from academic experts. Reliability was confirmed using Cronbach's Alpha, which yielded a coefficient of 0.821, indicating high acceptable internal consistency.

RESULTS

Demographic Profile of Respondents

Table 3: Professional discipline

Discipline	Frequency	Percentage
Architect	26	32.91%
Quantity Surveyor	29	36.71%
Structural Engineer	12	15.19%
Services Engineers (M&E)	12	15.19%
Total	79	100.00%

Table 3 gives a balanced representation across design (architects), cost/procurement (QS), and engineering (structural/M&E) cohorts enables meaningful comparative

analysis. These respondents comprised Quantity Surveyors (36.71%), Architects (32.91%), Structural Engineers (15.19%), and Services Engineers (15.19%).

Table 4: Years of experience

Years	N	Percentage
1-5	16	20.25%
5-10	20	25.32%
10-15	18	22.78%
15-20	15	18.99%
>20	10	12.66%
Total	79	100.00%

Table 4 shows that majority (79.75%) had over five years of professional experience,

indicating a knowledgeable and seasoned respondents' pool.

Table 5: Understanding of SP concept

Level	N	Percentage
Little	7	8.86%
General	22	27.85%
Good	43	54.43%
Very Good	7	8.86%
Total	79	100.00%

In Table 5, 63.29% report good/very good understanding, which suggests an adequate knowledge base for judging barrier salience.

Table 6: Knowledge of green building materials (GBM)

Level	N	Percentage
Little	7	8.86%
General	28	35.44%
Good	35	44.30%
Very good	9	11.39%
Total	79	100.00%

55.69% report good/very good GBM knowledge in Table 6, supporting the validity of GBM-related barrier ratings.

Table 7: Experience with SP in projects

Experience	N	Percentage
None	8	10.13%
Little	22	27.85%
Some	34	43.04%
Good	15	18.99%
Very good	0	0.00%
Total	79	100.00%

Table 7 shows that a combined 62.02% have some/good SP experience exposure, underscoring rising but not yet mature practice. Note that, while 54.43% reported a good understanding of SP (Table 5), 27.85% had general understanding (Table 5), and only 18.99% had good practical experience with it (Table 7), confirming its infancy in the Nigerian industry. On GBM Knowledge 44.30% had good knowledge (Table 6), while 35.4% had general knowledge (Table 6). On SP experience, 43.04% had some experience, while 27.85% had little experience (Table 7).

Ranking of Barriers to SP Adoption

The descriptive analysis (Table 8) shows that all 16 barriers had mean scores above the mid-point of 3.0, confirming their significance. The top five most critical barriers are as follows:

1. Lack of expertise on applying green building materials (Mean = 4.30)
2. Lack of awareness (Mean = 4.29)
3. Lack of understanding of the SP concept (Mean = 4.27)
4. Lack of top management commitment (Mean = 4.10)
5. Unavailability of green building materials in the local market (Mean = 4.09)

Table 8: Ranking of barriers to SP adoption

Code	Barrier	Mean	Std. Dev.	Rank
B7	Lack of expertise on applying green building materials	4.30	0.84	1
B1	Lack of awareness	4.29	0.94	2
B9	Lack of understanding of the SP Concept	4.27	0.80	3
B8	Lack of top management commitment	4.10	0.87	4
B6	Unavailability of green building materials in local market	4.09	0.82	5
B3	Corruption existing among procurement practitioners	4.04	1.21	6
B2	Higher initial associated costs	3.90	1.05	7
B5	Technical concerns with using green building materials	3.85	0.89	8
B16	Lack of attractiveness of green building materials to consumers	3.82	1.14	9
B14	Low environmental awareness between housing consumers	3.81	0.83	10
B15	Lack of pressure to act	3.78	1.09	11
B10	Poor information dissemination on green building materials in market	3.76	0.72	12
B4	Lack of authoritative green building materials certification system	3.68	0.94	13
B11	Lack of incentives from the government	3.67	1.02	14
B12	Lack of capacity of small scale suppliers/contractors	3.58	0.81	15
B13	Bad experiences on purchasing green building materials	3.53	1.01	16

Capacity and cognition (B7, B1, B9) lead; organisational leadership (B8) and market readiness (B6) follow. Notably, “higher initial cost” (B2) is mid-ranked (7th), suggesting Nigerian professionals recognise lifecycle value but remain constrained by immediate capacity and market issues.

DISCUSSIONS

This study confirms that SP adoption in Nigeria is significantly hindered by knowledge and capacity deficits, particularly regarding GBM application. The prominence of knowledge and capacity-related barriers in this study aligns with global and regional evidence. Mensah and Ameyaw (2012) identified lack of basic education about SP as a critical barrier in Ghana, while Akenroye *et al.* (2013) explicitly linked Nigeria’s SP stagnation to the absence of professional training and conceptual clarity. Even in more advanced economies, Walker and Brammer (2009) found that organisations struggle not due to unwillingness, but because they do not know how to operationalise sustainable procurement. McMurray *et al.* (2014) further confirm that without technical guidance and internal expertise, SP remains theoretical. Our finding that lack of expertise, awareness, and understanding dominate the barrier landscape, and are consistently prioritised across all professional disciplines, which underscores that SP adoption in Nigeria is fundamentally constrained by human capital deficits, not merely policy or market failures. Furthermore, the prominence of lack of expertise, awareness, and understanding suggests a foundational gap in SP literacy among practitioners, consistent with findings in Ghana (Mensah & Ameyaw, 2012) but more acute than in Malaysia or China where institutional and market barriers dominate (McMurray *et al.*, 2014; Shen *et al.*, 2017). The findings align with but also contextualise global research. The prominence of knowledge-based barriers (B7, B1, B9)

underscores a fundamental lack of capacity and information dissemination in Nigeria. This is more acute than in the United Kingdom (UK) (Walker & Brammer, 2009) or China (Shen *et al.*, 2017), where market and financial barriers were more pronounced. The high ranking of lack of top management commitment, unavailability of GBM, and poor information dissemination reflects underdeveloped green market, and a systemic failure where neither demand-side (clients, consultants) nor supply-side (manufacturers, suppliers) are prepared for sustainable procurement, an issue also noted in China (Shen *et al.*, 2017). Meanwhile, corruption emerging as a top-6 barrier underscores governance challenges unique to Nigeria’s procurement context.

The persistence of corruption as a significant barrier (ranked 6th) points to deeper governance issues that the existing Public Procurement Act has not fully resolved. This, coupled with the high initial cost barrier (ranked 7th), creates a difficult environment for innovative, sustainable practices to compete with traditional, often less transparent, procurement routes. Also, contrary to assumptions, by higher initial costs ranking 7th, suggests that financial concerns may be secondary to knowledge and systemic barriers, aligning with Walker and Brammer’s (2009) UK findings but contrasting with Shen *et al.*’s (2017) China study.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study concludes that SP adoption in Nigeria’s construction industry is impeded primarily by human capital and knowledge barriers, followed by market and institutional constraints. Without addressing these foundational gaps, policy reforms alone will be insufficient. The significant variation in barrier perception across professions further

complicate a unified approach to overcoming the challenges, and also, indicates the need for targeted, role-specific interventions.

Recommendations

Based on the findings, the following recommendations are proposed:

- Universities and polytechnics should embed SP principles and GBM applications into construction-related programs.
- Professional bodies (e.g., NIQS, NIA, COREN) and academic institutions should integrate SP and GBM application into their curricula, continuous professional development programs, and workshops to address the critical knowledge gaps.
- The government, through the Bureau of Public Procurement (BPP), should amend the Public Procurement Act (2007) to incorporate mandatory sustainability criteria and develop a national SP policy and implementation roadmap.
- The government and private sector should incentivise local manufacturing and distribution of GBM to improve availability and reduce costs associated with importation.
- Awareness campaigns and training should be tailored to different professional disciplines, addressing their specific concerns and highlighting the unique role each plays in the SP process.
- Strengthen procurement oversight and digitalise bidding processes to reduce discretion and enhance transparency.
- Non-Governmental Organisations and industry associations should lead public-private dialogues to demystify SP and showcase successful case studies.

LIMITATIONS AND FURTHER STUDIES

This study focused on construction consultants practicing in Kaduna State. Though, they cover projects all around the

country, but future research could widen the scope of the geographical residence of the professionals. Also, future research could explore the perspectives of the individual consultants, suppliers, contractors, clients, and government procurement officials to provide a more holistic view of the barriers and facilitators of SP. Longitudinal studies tracking SP policy implementation impacts are also recommended.

REFERENCES

- Adebayo, O. (2015). Embedding sustainability in the public procurement framework of developing countries: An empirical analysis of Lagos State Government. *Journal of Economics and Sustainable Development*, 6(18), 45-57.
- Ageron, B., Gunasekaran, A., & Spalanzani, A. (2012). Sustainable supply management: An empirical study. *International Journal of Production Economics*, 140(1), 168-182.
- Akenroye, T. O., Oyegoke, A. S. & Eyo, A. B. (2013). Development of a framework for the implementation of green public procurement in Nigeria. *International Journal, Procurement Management*. Vol. 6, Iss. 1, pp. 1-23.
- de Souza Dutra, C. T., Rohan, U., Branco, R. R., Chinelli, C. K., de Araujo, A. J. V. B., & Soares, C. A. P. (2017). Barriers and challenges to the sustainability requirements implementation in public procurement of engineering works and services. *Open Journal of Civil Engineering*, 7(1), 1-13. <https://doi.org/10.4236/ojce.2017.71001>
- Hyacinth, D. D., Babura, A. M., & Animashaun, A. O. (2017). Sustainable public procurement practice: Panacea to good governance

- in Nigeria. *International Journal of Scientific Research in Social Sciences & Management Studies*, 2(1), 1-12.
- Kariuki, A. N., & Kwasira, J. (2012). *Drivers and barriers of sustainable procurement in the construction industry* (Unpublished manuscript). Department of Construction Management, Jomo Kenyatta University of Agriculture and Technology.
- Kennard, M. (2006) Sustainable procurement, shaping the change, XXIII FIG Congress Munich, Germany, October 8-13, 1 - 10
- Kish, L. (1965). *Survey sampling*. Wiley.
- Mensah, S., & Ameyaw, C. (2012). Barriers to implementing sustainable procurement in Ghana's public sector. *Journal of Construction in Developing Countries*, 17(2), 25-42.
- McMurray, K., Islam, M. N., Siwar, C., & Fien, J. (2014). Implementing sustainable procurement in Malaysian public sector organizations. *Journal of Cleaner Production*, 85, 317-326. <https://doi.org/10.1016/j.jclepro.2014.03.046>
- Musa, D. A., & Aderonmu, P. A. (2016). Maximising the gains of public procurement act for improved sustainable practices in Nigeria. *Proceedings of the 2016 Annual General Meeting*, 1-18.
- Research and Markets. (2016). *Nigeria construction industry report 2016-2020*.
- Shen, L., Zhang, Z., & Long, Z. (2017). Significant barriers to green procurement in real estate development. *Resources, Conservation and Recycling*, 116, 160-168. <https://doi.org/10.1016/j.resconrec.2016.10.005>
- United Nations Environment Programme (UNEP). (2017). *Sustainable public procurement: A global review*. UNEP.
- UNEP. (2015). *Global review of sustainable public procurement*. United Nations Environment Programme.
- UNEP. (2013). *Sustainable public procurement implementation guidelines*. United Nations Environment Programme.
- Walker, H., & Brammer, S. (2009). Sustainable procurement in the United Kingdom public sector. *Supply Chain Management: An International Journal*, 14(2), 128-137. <https://doi.org/10.1108/13598540910946353>
- Wong, J. K. W., Chan, J. K. S. & Wadu, M. J. (2016). Facilitating effective green procurement in construction projects: An empirical study of the enablers. *Journal of Cleaner Production*. Vol. 135, pp. 859-871.