De Abrew, K.D.S., Chandanie, H. and Ranasinghe, P.H.G.M.A., 2026. Prioritising construction procurement decision factors for achieving sustainable development. In: Waidyasekara, K.G.A.S., Jayasena, H.S., Chandanie, H. and Tennakoon, G.A. (eds). *Proceedings of the 14th World Construction Symposium*, 10-11 July 2026, Sri Lanka. pp. 1359-1372. DOI: https://doi.org/10.31705/WCS.2026.99. Available from: https://ciobwcs.com/papers/

PRIORITISING CONSTRUCTION PROCUREMENT DECISION FACTORS FOR ACHIEVING SUSTAINABLE DEVELOPMENT

K.D.S. de Abrew[1], H. Chandanie[2] and P.H.G.M.A. Ranasinghe[3]

ABSTRACT

The construction industry plays a critical role in advancing sustainable development due to its significant environmental, economic, and social impacts. However, procurement decisions in construction are still frequently driven by cost considerations rather than sustainability objectives. Therefore, this study investigates and prioritises construction procurement decision factors that significantly influence the achievement of sustainable development in construction projects. The main objectives were to prioritise existing procurement decision factors that support sustainability attainment and synthesise sustainability-sensitive procurement decision factors. The study utilises a quantitative research approach. The identification of thirty procurement decision factors was divided into five categories which are selection of the procurement method, construction materials, equipment acquisition, decision regarding labour, and selection of suppliers. A survey was conducted targeting construction professionals and academics using a structured questionnaire. Several statistical tests were performed on collected data including the Shapiro-Wilk test, Kruskal-Wallis test, and weighted mean ranking. The findings reveal that material related procurement decision factors and equipment acquisition related decision factors are the most significant in achieving sustainable development. Furthermore, study revealed that any of the labour related decision factors are not sustainability sensitive. The second most influential cluster were supplier selection and procurement method related decision factors to achieving sustainable development in construction. The implications of the study to offer evidence based guiding principles on how procurement strategies can be designed to incorporate sustainable development for to policymakers, construction professionals.

Keywords: *Construction Procurement; Construction Projects; Procurement Decision Factors; Sustainable Development.*

1. INTRODUCTION

Construction is a global industry that has a substantial influence on economic, social, and environmental development (Chhabra & Grover, 2024). Procurement strategically drives

---

[1] Undergraduate, Department of Building Economics, University of Moratuwa, Sri Lanka, deabrewkds.21@uom.lk

[2] Senior Lecturer, Department of Building Economics, University of Moratuwa, Sri Lanka, chandanieh@uom.lk

[3] Lecturer, Department of Building Economics, University of Moratuwa, Sri Lanka, ranasinghephgma.20@uom.lk

the construction industry and contributes to the long-term success of construction projects (Jayasinghe et al., 2025). According to Bolomope et al. (2022) Construction Procurement (CP) consists of a set of interconnected activities such as project requirements identification, tender document preparation, bid invitation and evaluation, supplier or contractor selection, contract negotiation and award and management of contract performance. Procurement decisions in construction can be defined as the procedure of selecting the most appropriate procedures, contractors, suppliers and resources at projects which are made by multiple stakeholders across different project stages initial planning and design to execution and end (Ruparathna & Hewage, 2015). In addition, effective assessment and consideration of the diverse factors related to procurement decisions will ensure minimisation of cost overruns, delays, and quality problems, which will positively improve its performance (Hassan & Mukarram, 2025). Procurement decisions in construction require considering multiple interconnected factors, and integrating these factors leads to improved overall project performance (Hassan & Mukarram, 2025). Babaeian et al. (2022) explain that most of the fundamental decisions are made during the early stages of a project, however Ruparathna and Hewage (2015) have identified CP activities are effective throughout the entire project lifecycle, such as planning to close of the project, and are critical towards the compliance with quality, cost, and time goals. Together, these studies highlight that procurement decisions are distributed across multiple project stages rather than occurring at one specific point in time.

Procurement in construction much beyond the expectations of the economic effects but as a tool to move environmental and social policy (Naoum & Egbu, 2016). According to Ogunsanya et al. (2023), CP is the value-of-money based on the whole life cycle, with a substantial responsibility of care to ensure that the effects to the environment are minimised at the expense of social benefit to the community. Halwatura and Kodithuwakku (2022) have mentioned CP plays a crucial role in achieving sustainability objectives because it translates environmental social and economic goals into practical project outcomes and serves as a key mechanism for integrating sustainability into construction delivery. Sustainability is an integrated framework that prioritises everyone's quality of life by establishing connections between social and economic factors in addition to environmental factors (Adel et al., 2023). In construction, the goal is to balance environmental sustainability and social equality with economic realities (Halwatura & Kodithuwakku, 2022). Therefore, it can be emphasised that decision-making is not a single, isolated act but a complex and ongoing process in CP (Naoum & Egbu, 2016).

The lowest-price award continues to dominate procurement with minimal regard to life-cycle costs, environmental impacts, or social value (Domingo et al., 2019).In the study of Ershadi et al. (2021) have identified rather than sustainability purpose, implementation of sustainable procurement practices is limited due to financial risks, poor regulatory frameworks, and supply chains, which have a cumulative effect of cost overruns, delays and quality failures that compromise the performance of projects and sustainable development objectives in most cases. Domingo et al. (2019) indicates that existing sustainable procurement measures are excessively focused on the environmental field, and such dimensions as social and economic, including labour standards, rural economic growth, and value innovation are relatively overlooked.

Numerous research has been conducted on various issues related to procurement including the process of selection, performance of projects connected with procurement approaches and models (Rahmani et al., 2022). Ogunsanya et al. (2023) develop construct-based models and barrier clusters for sustainable procurement. Osuizugbo and Adenuga (2024) identified decisive factors for sustainable procurement on stakeholders' perspectives within the Nigerian context. In line with this, a research gap still exists to study and prioritise the construction procurement decision factors, in various project phases, that have the maximum impact in achieving the goal of sustainability. Specifically, no study has systematically prioritised procurement decision factors across multiple categories spanning procurement method, materials, equipment, labour, and suppliers with explicit reference to all three sustainability dimensions simultaneously. This gap is particularly pronounced in developing-country construction contexts, where sustainability-oriented procurement policy is still emerging. Therefore, the study aims to investigate and prioritise construction procurement decision factors that significantly influence the achievement of sustainable development in construction projects through below objectives.

1. Investigating general procurement decision factors through literature.
2. Prioritising existing procurement decisions that supports attainment of sustainability in construction industry.
3. Synthesising and discussing sustainability sensitive procurement decision factors.

For the purposes of this study, 'sustainability-sensitive procurement decision factors' are defined as those procurement decisions that, when appropriately applied, demonstrably contribute to one or more dimensions of sustainable development namely, environmental protection, economic efficiency, and social equity in construction project delivery.

2. LITERATURE REVIEW

2.1 PROCUREMENT AND SUSTAINABILITY IN CONSTRUCTION PROJECTS

The successful completion of construction work is positively connected with efficient procurement processes, including clear control requirements and quality assurance, underscoring the significance of methodical and organised procurement activities (Jayasinghe et al., 2025). Effective assessment and consideration of the diverse factors related to procurement decisions will ensure minimisation of cost overruns, delays, and quality problems, which will positively improve its performance (Hassan & Mukarram, 2025). The built environment has a crucial role in determining a sustainable development since constructions are major consumers of natural resources and lead to other problems being climate change, depletion of resources and even the generation of waste (Opoku et al., 2022). Therefore, there is growing expectation that the construction sector applies sustainable practices that will encourage effective utilisation of resources, protection of the environment, and both economic and social gains in the long run (Ajayi & Oyedele, 2018). Beyond environmental performance, procurement decisions also carry significant economic and social implications. Economically, procurement strategies influence whole-life value, cost efficiency, and local economic development through supplier and labour sourcing decisions (Ogunsanya et al., 2023). Socially, procurement provides a mechanism for advancing labour rights, community benefit, and inclusive participation of marginalised groups in the construction supply chain (Loosemore et al., 2023). Sustainable construction seeks to achieve a balance of these three aspects of sustainability through the reduction of environmental degradation and generation of economic value and enhancement of social well-being (Opoku et al., 2022). Construction industry is required to integrate sustainability considerations into its project planning, design, and implementation processes to ensure responsible development and long-term project performance (Halwatura & Kodithuwakku, 2022).

Procurement activities define the decision of materials, technologies, suppliers and construction methods over the course of construction (Bolomope et al., 2022). Procurement in construction projects entails the planning, contracting, and management of contracts involved in the supply and maintenance of construction works and hence plays a major role in determining the efficiency of resources, waste management, and environmental performance (Opoku et al., 2022). Sustainable procurement strategies that include the adoption of energy-saving technologies, facilitating material reuse, introducing waste segregation, and the use of the whole-life costing strategies may help to minimise environmental impacts and enhance the project value and performance over time (Halwatura & Kodithuwakku, 2022). Therefore, effective assessment and of procurement decision factors are essential to support sustainability objectives, minimise cost overruns and delays, and improve overall project performance.

2.2 PROCUREMENT DECISION FACTORS

Project success is largely dependent on the procurement method selected, such as design-bid-build, design-build, integrated project delivery, public-private partnerships, and construction management (Zhong et al., 2023). There is not a single best approach; instead, the choice is influenced by contextual circumstances, customer objectives, and project complexity (Bolomope et al., 2022; Naoum & Egbu, 2016). Ajayi and Oyedele (2018) indicates the need to adopt high quality, durable, and reusable materials to minimise replacement and pre-mature replacement, improve the lifecycle performance and reduce the amount of waste. Furthermore, Waris et al. (2019) discloses a strong model of equipment selection that encompassed important factors, such as life cycle cost, performance, system capability, operational convenience, environmental impact, and social benefits. sustainable procurement focuses on using equipment that are less harmful to the environment, have greater operational efficiencies and extended life cycles (Islam et al., 2020).Moreover the selection between direct and contracted labour is a key procurement decision; although overall cost overruns are generally similar, direct labour can reduce unit costs by eliminating contractor profit but is more prone to time overruns and is therefore mainly used for maintenance works (Osei-Asibey, 2021).In addition qualification assessment of suppliers is usually, environmental performance, social responsibility practices, economic stability and adherence to labour and industry standards (Tosa-Williamsa & Nsikan, 2024). According to Hoseini et al. (2021) procurement managers are also keen on suppliers who can guarantee the material to be of international quality and safety because high quality of the inputs is directly linked with successful project outcome. According to the above factors the below Table 1 illustrates the general procurement decision factors under the categories of decision factors related to selection of procurement method, construction materials, Equipment acquisition, labour and supplier selection.

Table 1:Procurement decision factors

Category	Decision factor	Source
Selection of procurement method	Selection of contract type	[1]
	Decision on contract award criteria	[2]
	Prequalification for contractors	[2]
	Timing of contractor involvement	[3]
	Design changes requirement during project execution	[4],[5]
	Project schedule and speed	[4],[6]
	Scope of the work for respective parties	[6]
Construction materials	Select high-quality, durable, and reusable materials	[7],[8]
	Conduct precise materials estimation to prevent over/under ordering	[7],[8],[12], [9]
	Implement just-in-time delivery systems	[7],[8], [9],
	Ensure effective protection during transportation, loading, and unloading	[7],[8],[12]
	Minimise packaging materials	[7],[8]
	Collaborate with suppliers to facilitate small quantity supply	[7],[8],[9]
	Establish mutual agreements for take-back schemes	[7],[8],[9]
	Reduce the waste allowance	[7],[8]
Equipment acquisition	Environmental impact assessment	[12],[13],[10]
	Worker health and safety considerations when acquiring equipment	[15]
	Integration of LCA in procurement	[12],[13],[14]
	Equipment acquisition method	[10],[11]
	Social benefits evaluation	[13]
Supplier selection	Supplier location	[22]
	Required supplier qualifications	[22],[23],[24],[25]
	Decisions on time duration on delivery	[24],[25],[32]
	Delivery cost	[22],[24],[25]
	Required material or equipment qualification	[22],[23],[32]
Decision on labour	Skilled and unskilled labour composition	[20],[19]
	Social procurement practices in labour procurement	[21]
	Direct labour and contracting labour	[16]
	Local vs. foreign labour decisions	[20]
	Labour-only procurement	[17],[18]

[1] Niriella & Gamage (2022);[2] Almuhannadi & Ghareeb (2024);[3] Osuizugbo et al. (2024);[4] Agbaxode et al. (2024);[5] Eriksson (2017);[6] Naoum and Egbu (2016); [7] Ajayi & Oyedele (2018); [8] Ajayi et al. (2017);[9] Chidiobi et al. (2024); [10] Polavarapu & Rao (2023));[11] Polavarapu & Rao (2023);[12] Scherz et al. (2023);[13] Waris et al. (2019);[14] Petroutsatou et al. (2023),[15] Zuraidi et al. (2025);[16] Osei-Asibey (2021);[17] Akinkunmi et al. (2018);[18] Awodele et al. (2019);[19] Hussain et al. (2020);[20] Juricic et al. (2021);[21]

Category	Decision factor	Source
Loosemore et al. (2023);[22] Ghafoori & Abdallah (2025);[23] Hoseini et al. (2021);[24] Cengiz et al. (2017);[25] Tosa-Williamsa and Nsikan (2024)		

The above factor categories relate to sustainable development dimensions as follows. Material-related decisions directly support environmental sustainability through resource efficiency and waste reduction, and economic sustainability through whole-life cost optimisation (Ajayi & Oyedele, 2018). Equipment acquisition decisions contribute to environmental sustainability via reduced emissions and lifecycle impact, and to social sustainability through worker health and safety considerations (Waris et al., 2019; Zuraidi et al., 2025). Supplier selection decisions span all three dimensions environmental performance, economic stability, and social responsibility (Hoseini et al., 2021; Tosa-Williamsa & Nsikan, 2024). Procurement method selection influences economic sustainability through cost and risk allocation, and social sustainability through contractor prequalification criteria that may embed sustainability requirements (Naoum & Egbu, 2016; Bolomope et al., 2022). Labour decisions, while primarily associated with social sustainability through fair employment and skills development (Loosemore et al., 2023; Juricic et al., 2021), were found to have a comparatively indirect link to environmental and economic sustainability outcomes in this study.

3. RESEARCH METHODOLOGY

The research method is quantitative research since it statistically prioritises procurement decision factors which impact in achieving the goal of sustainability. Consequently, 30 general procurement decision factors were established in five categories as demonstrated in Table 1. The study was then done through a questionnaire survey to gather the data, asking respondents to rank the level of significance of each factor using a five-point Likert scale, ranging from “Not Significant” to “Highly Significant” in determining whether the procurement decision factors have a significant effect on the realisation of sustainable development in construction projects. According to Barella et al. (2024), the quantitative research approach intends to establish relationships, patterns, or trends in the data and extend the findings to a larger population. This approach is directly aligned with the research objectives of ranking and prioritising procurement decision factors across a professional population, as it enables systematic comparison and generalisation of perceived factor significance. Purposive sampling was employed to target professionals with direct knowledge of both construction procurement practices and sustainability objectives, ensuring that responses were grounded in practical experience. The sample size of 75 was determined based on established guidelines for quantitative survey studies in the construction field (Barella et al., 2024).

Initially, the collected data were evaluated for normality using the Shapiro-Wilk test, as it is more sensitive than other normality tests in identifying deviations from a normal distribution and is suitable for large sample sizes (Khatun, 2021). Based on the results, since the p-value was ≤ 0.05 (indicating that the data were not normally distributed), the Kruskal-Wallis test was applied. Specifically, the Kruskal-Wallis test was applied to verify that the significance ratings of procurement factors were not systematically influenced by respondents' professional designation, thereby confirming that the aggregated rankings are representative of the broader professional population rather than reflecting the bias of any single occupational group. All statistical analyses were carried out using IBM SPSS statistics 26 software. Subsequently, quantitative data collected through the questionnaire survey were analysed using descriptive analysis.

The mean of any data set is the average rate of response in the application of Likert scale of analysis of a data, the mean value reveals the rating of the opinion of the statements under analysis (Yaska & Nuhu, 2024). Accordingly, the following formula was used for the calculation of mean.

$$Mean = \frac{\sum_{i=1}^{5} x_i \times f_i}{n} \qquad (01)$$

Where, f_i= is the total response of a statements (ranging from 1 to 5), n=total number of respondents and Xi is the Likert scale value (weight).

Standard deviation is a convenient measure of dispersion that is often applied to estimate the extent to which the data deviates or disperses around the mean by taking the positive square root of the variance is the expected value of the standard deviation (Yaska & Nuhu, 202). Thuss, it was used in this study to determine the spread of the findings on the participant's opinion on the sustainability sensitive construction procurement decisions factors. Accordingly, the following formula was used.

$$Standard\ deviation = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}} \qquad (02)$$

where, xi=Weight assigned to each response based on the level of agreement, $\bar{x}$= Mean of the dataset and n= Number of respondents.

In line with the threshold utilised by Hussain et al. (2025) to identify factors with highest importance level in that study, the weighted mean rating greater than 4.00 was used as the benchmark to identify the most influential decision factors. The standard deviation was also determined to ascertain the amount of deviation of the rating of the respondents with a lower value showing more agreement between the respondents.

4. FINDINGS AND ANALYSIS

The questionnaire was distributed as an online survey via Google form targeting 75 industry professionals and academic researchers with familiarity regarding construction procurement and sustainable development. The survey yielded a response rate of 77.33% (58 responses), successfully achieving the required sample size for the study. First section of the questionnaire survey collected the background data of the respondents such as experience, designation, awareness of the sustainability and the construction procurement. Figure 1 illustrates the background of the respondents.

Accordingly, the inner layer of the chart represents the professional designation of the respondents, and the outer layer represents the highest education qualification of the professionals. The composition of this sample reflects the diverse group of construction professionals indicating that the data is representative and reliable for drawing meaningful conclusions. Experience levels among respondents with the largest group having more than 10 years of experience (38%). While 19% of respondents have 1–5 years of experience, the remaining 81% have more than 5 years of experience, indicating that the questionnaire responses are reliable and gather from well-experienced professionals.

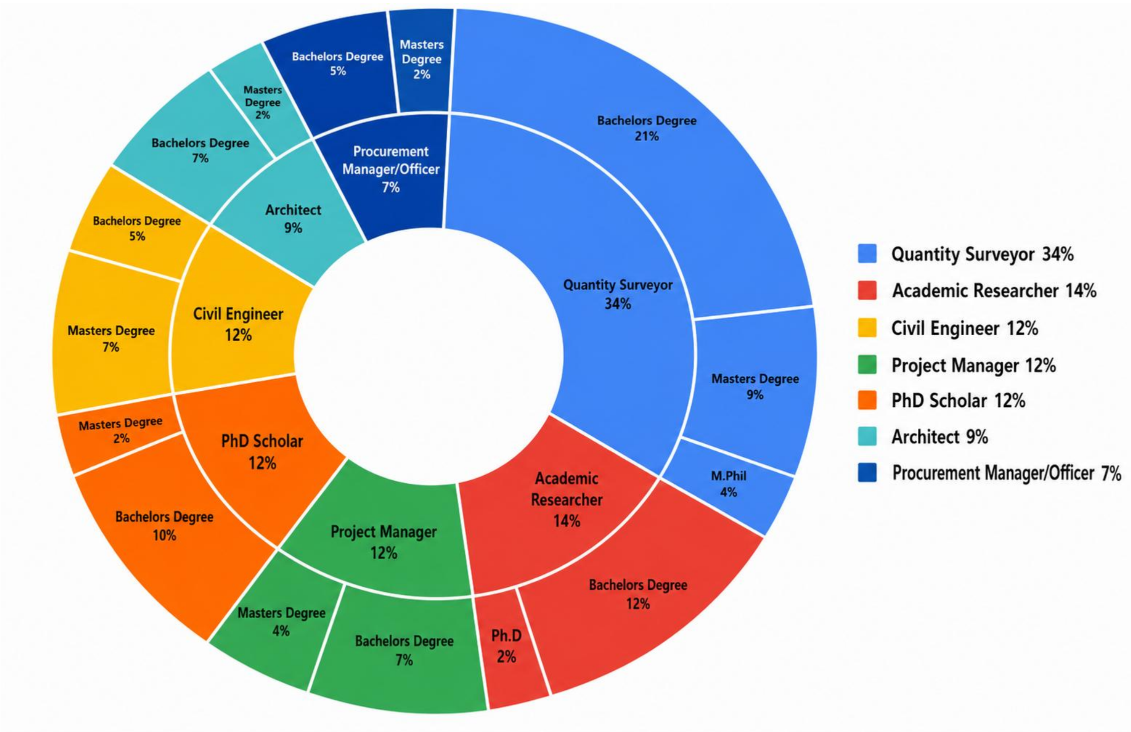

Figure 1:Profile of the Sample

4.1 SUSTAINABILITY SENSITIVE CONSTRUCTION PROCUREMENT DECISIONS FACTORS

The Shapiro-Wilk test was employed to assess the normality of the data distribution using SPSS software. The null hypothesis (H_0) stated that "The data sample from the questions follow a normal distribution". the P value ≤ 0.05 for all questions rejecting the null hypothesis (H_0). This indicated that the data were not normally distributed. As a result, the Kruskal-Wallis test was used as a non-parametric test to identify the correlation between the professional designation of the respondents and their responses. Kruskal-Wallis test was performed for all questions. For this test null hypothesis (H_0) stated as "the distribution of the sample same across categories of professional designation". The P value > 0.05, retaining the null hypothesis (H_0) for all the questions. This proved that all the answers which are provided by the respondents are not dependent on their professional designation category. Therefore, an equal sample size from each professional group is not required. Subsequently, the weighted mean rating method was applied to evaluate the relative rankings of each decision factors, in descending order of significance, with the results summarised in Figure 2.

These decision factors range from "Select high-quality, durable, and reusable materials" under the materials category, which was ranked the highest, to "Labour-only procurement," under the labour decision category which was ranked the lowest. In line with the threshold, the weighted mean rating greater than 4.00 was used as the benchmark to identify the most influential decision factors. Accordingly, 14 of the 30 factors surpassed this threshold and were considered highly significant in attainment of sustainability through procurement decision factors as illustrates in Table 2.

Table 2:Sustainability sensitive procurement decision factors

Decision factor	Mean	SD	Rank
Select high-quality, durable, and reusable materials	4.50	0.884	1
Environmental impact assessment	4.43	0.84	2
Worker health and safety considerations when acquiring equipment	4.33	1.033	3
Prequalification for contractors	4.29	0.955	4
Required material or equipment qualification	4.29	0.859	5
Reduce the waste allowance	4.24	0.844	6
Integration of LCA in procurement	4.21	0.874	7
Conduct precise materials estimation to prevent over/under ordering	4.12	1.01	8
Minimise packaging materials	4.07	1.024	9
Required supplier qualifications	4.07	0.953	10
Social benefits evaluation	4.05	0.907	11
Supplier location	4.05	0.999	12
Decision on contract award criteria	4.03	1.025	13
Timing of contractor involvement	4.02	1.017	14
Ensure effective protection during transportation, loading, and unloading	4.00	1.009	15
Skilled and unskilled labour composition	4.00	0.991	16
Project schedule and speed	3.98	1.1	17
Decisions on time duration on delivery	3.98	1.017	18
Implement just-in-time delivery systems	3.95	1.016	19
Delivery cost	3.95	1.05	20
Establish mutual agreements for take-back schemes	3.91	0.904	21
Design changes requirement during project execution	3.90	1.021	22
Equipment acquisition method	3.79	1.104	23
Selection of contract type	3.72	1.24	24
Social procurement practices in labour procurement	3.62	1.006	25
Scope of the work for respective parties	3.60	0.917	26
Collaborate with suppliers to facilitate small quantity supply	3.59	0.918	27
Direct labour and contracting labour	3.55	1.062	28
Local vs. foreign labour decisions	3.43	0.957	29
Labour-only procurement	3.36	1.055	30

"Selecting high-quality, durable, and reusable materials" was identified as the most significant factor in this study, and together with the other three material-related factors that surpassed the threshold (as shown in Figure 2), this demonstrates the substantial impact of material-related procurement decisions on achieving sustainable development. Conversely, all the decision factors that are related to labour were below the threshold which verifies their relatively lower importance in attaining sustainability. This indicates that, despite labour considerations being still significant in the delivery of the project they are seen to have a less direct influence on sustainable development. Moreover, equipment acquisition–related factors, such as "Worker health and safety considerations when acquiring equipment" and "Environmental impact assessment," were ranked as the second and third most significant factors, highlighting the critical role of responsible equipment selection in promoting environmental protection and social well-being. Within the supplier selection category, the factor that was determined to be the most important was the required material or equipment qualification with highest mean (4.29). This further confirms that material- and equipment-related considerations are highly relevant in supplier selection and reinforces that the highest-ranked factors play a critical role in achieving sustainable development in construction projects. Moreover, the current study has identified the prequalification of the contractors as the most important factor within the procurement method selection category which is strategically crucial in ensuring that sustainability outcomes are achieved. In contrast least important factors that affect sustainable development are under the category of labour decisions. These factors are ranked low, potentially because on sustainability performance of labour-related procurement concerns are more indirect than the other categories. Furthermore, the analysis of significant decision factors to achieve sustainable development, were clustered according to the categories identified in the literature, as illustrated in Figure 2 below.

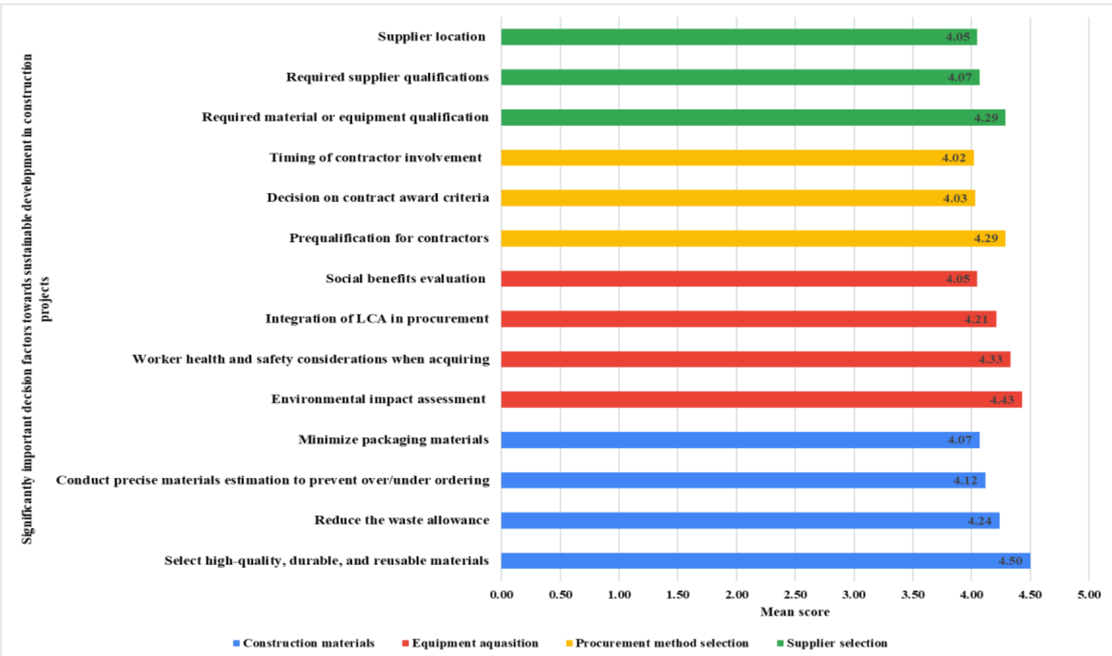

Figure 2: Categories of sustainability sensitive procurement decision factors

5. DISCUSSION

The study identified 14 out of 30 construction procurement decision factors as highly significant for achieving sustainable development, reinforcing that procurement is a key mechanism for translating environmental, social, and economic goals into project outcome. Moreover, the empirical findings of the study align closely with the literature. Findings are showing that materials and equipment choices are perceived as the primary levers for improving environmental performance, while social and labour aspects often receive less attention. According to Opoku et al. (2022), the provided factors such as material reuse, sustainable design, fuel-efficient machinery, low emission technology and low-carbon production technology, waste segregation are aligned with the above analysed material and equipment related categories. Ajayi and Oyedele (2018), emphasised that reusing materials and recycling help to optimisation of resources and cutting down on carbon emissions. Therefore, it is further findings are closely aligned with literatures. Further it is aligned with important factors, such as life cycle cost, environmental impact, and social benefits are important factors under supplier selection (Waris et al., 2019). In line with Gurgun and Koc (2020), contractor prequalification has progressively integrated the concerns of sustainability and life-cycle costs to make sure that the targeted environmental goals are realised after the procurement method selection. According to Akinkunmi et al. (2018), the lowest factor (mean=3.36) can be interpreted as an opinion that the labour-based procurement systems are commonly implemented to attain short-term cost-effectiveness rather than pursue the goals of sustainability. Together, these results prove that the empirical knowledge produced in this study is not isolated and part of a consistent trend in modern construction literature. More broadly, the lower ranking of labour-related factors may reflect a prevailing short-term cost-focus culture in construction procurement, where social sustainability levers are perceived as peripheral rather than integral to procurement decisions (Akinkunmi et al., 2018). In the Sri Lankan construction context specifically, labour decisions are often governed by informal industry norms and subcontractor relationships rather than formal procurement criteria, which may further explain their comparatively lower perceived sustainability sensitivity (Osei-Asibey, 2021). Addressing these social dimensions through policy intervention and formal procurement frameworks represents an important avenue for future practice development.

This research has implications for policy makers, project managers and procurement professionals in that it offers evidence-based advice on how to integrate sustainability into the procurement strategies to answer the key question of why such procurement decisions that are sensitive to sustainability are important. Simultaneously, the study is limited because it is based on perception-based quantitative data collected through a questionnaire survey. This means the results reflect the opinions and judgments of respondents rather than actual observations of real project practices. Future research might establish more procurement factors than those analysed in the current research and applies the case study research methods to examine how such decisions are applied in actual construction projects.

Furthermore, while the study targeted construction professionals and academics, it did not separately stratify or collect data from distinct stakeholder roles such as clients, main contractors, subcontractors, material suppliers, and regulatory bodies. The differing priorities and procurement responsibilities of these groups may yield varied perceptions of factor significance, and future research should explicitly include multi-stakeholder sampling to capture these perspectives.

6. CONCLUSIONS

The present study set out to examine prioritising existing procurement decisions that supports attainment of sustainability in construction industry and synthesising and discussing sustainability sensitive procurement decision factors. This was achieved through a literature review and the questionnaire survey. The findings indicated that, demonstrating that construction material related procurement decision factors are the most significant to achieving sustainable development and moreover the equipment acquisition related factor also similarly influenced to the attainment of sustainability. further it was revealed that as second most significant factors have come from the clusters of supplier selection and the procurement method selection related decision factors. These findings are significant as they offer insights that can be used to enhance construction procurement sustainability through the relative significance of factors of material related, equipment procurement, supplier selection and procurement method decision.

7. REFERENCES

Adel, G., Othman, A. A. E., & Harinarain, N. (2023). Integrated Project Delivery (IPD): An Innovative Approach for Achieving Sustainability in Construction Projects. *Lecture Notes in Civil Engineering*, *245*, 195–209. https://doi.org/10.1007/978-3-030-97748-1_16

Agbaxode, P. D. K., Saghatforoush, E., Dlamini, S., & Korsah, J. K. (2024). Integrated project delivery enablers to enhance conventional project delivery toward improving design documentation quality. *Built Environment Project and Asset Management*, *14*(6), 817–834. https://doi.org/10.1108/BEPAM-09-2023-0158

Ajayi, S. O., & Oyedele, L. O. (2018). Waste-efficient materials procurement for construction projects: A structural equation modelling of critical success factors. *Waste Management*, *75*, 60–69. https://doi.org/10.1016/j.wasman.2018.01.025

Ajayi, S. O., Oyedele, L. O., Bilal, M., Alaka, H. A., & Owolabi, H. A. (2017). Optimising material procurement for construction waste minimization: An exploration of success factors. *Sustainable Materials and Technologies*, *11*, 38–46. https://doi.org/10.1016/j.susmat.2017.01.001

Akinkunmi, O. G., Aghimien, D. O., & Awodele, O. A. (2018). Appraising the use of labour-only procurement system for building construction in Nigeria. *Organization, Technology and Management in Construction: An International Journal*, *10*(1), 1719–1726. https://doi.org/10.2478/otmcj-2018-0003

Almuhannadi, M. A., & Ghareeb, A. S. (2024). Enhancing design-bid-build project delivery: A comprehensive review and framework for contractor selection and project optimisation in the construction industry. *Organization, Technology and Management in Construction*, *16*(1), 63–80. https://doi.org/10.2478/otmcj-2024-0005

Awodele, O. A., Aghimien, D. O., Akinkunmi, O. G., & Aigbavboa, C. O. (2019). Labour-only procurement. *Journal of Engineering, Design and Technology*, *17*(2), 347–361. https://doi.org/10.1108/JEDT-06-2017-0060

Babaeian, J., Wilkinson, S., Kalatehjari, R., & Zou, Y. (2022). Designing for construction procurement: An integrated decision support System for Building Information Modelling. *Built Environment Project and Asset Management*, *12*(1), 111–127. https://doi.org/10.1108/BEPAM-07-2020-0132

Barella, Y., Fergina, A., Mustami, M. K., Rahman, U., & Alajaili, H. M. A. (2024). Quantitative methods in scientific research. *Jurnal Pendidikan Sosiologi Dan Humaniora*, *15*(1), 281. https://doi.org/10.26418/j-psh.v15i1.71528

Bolomope, M., Amidu, A., Ajayi, S., & Javed, A. (2022). Decision-Making framework for construction clients in selecting appropriate procurement route. *Buildings*, *12*(12), 2192. https://doi.org/10.3390/buildings12122192

Cengiz, A. E., Aytekin, O., Ozdemir, I., Kusan, H., & Cabuk, A. (2017). A multi-criteria decision model for construction material supplier selection. *Procedia Engineering*, *196*, 294–301. https://doi.org/10.1016/j.proeng.2017.07.202

Chhabra, P., & Grover, S. (2024). Navigating the path to sustainability: The construction industry's crucial role. *The Genesis*, *11*(2), 31–40. https://doi.org/10.47211/tg.2024.v11i02.007

Chidiobi, C. C., Booth, C. A., & Lamond, J. E. (2024). Prioritising materials procurement and construction waste management attributes. *Proceedings of the Institution of Civil Engineers - Waste and Resource Management*, *177*(1), 29–43. https://doi.org/10.1680/jwarm.22.00013

Domingo, L. M., García-Segura, T., Amalia Sanz, M., & Pellicer, E. (2018). Social sustainability in delivery and procurement of public construction contracts. *Journal of Management in Engineering*, *35*(2). https://doi.org/10.1061/(asce)me.1943-5479.0000674

Eriksson, P. E. (2017). Procurement strategies for enhancing exploration and exploitation in construction projects. *Journal of Financial Management of Property and Construction*, 22(2), 211–230. https://doi.org/10.1108/JFMPC-05-2016-0018

Ershadi, M., Jeffereis, M., Davis, P., & Mojtahedi, M. (2021). Achieving sustainable procurement in construction projects: The pivotal role of a project management office. *Construction Economics and Building*, *21*(1), 35–53. https://doi.org/10.5130/AJCEB.v21i1.7170

Ghafoori, M., & Abdallah, M. (2025). Multi-criteria decision support model for material and supplier selection in the construction industry. *International Journal of Construction Management*, *25*(4), 409–418. https://doi.org/10.1080/15623599.2024.2327251

Gurgun, A. P., & Koc, K. (2020). Contractor prequalification for green buildings—Evidence from Turkey. *Engineering, Construction and Architectural Management*, *27*(6), 1377–1400. https://doi.org/10.1108/ECAM-10-2019-0543

Halwatura, R. U., & Kodithuwakku, K. A. B. P. (2022). Incorporating sustainable procurement practices in the construction industry in Sri Lanka: Benefits and challenges. *PM World Journal*, *11*(10), 1–15.

Hassan, & Mukarram, M. (2025). Evaluating the effect of procurement performance evaluation variables on successful project delivery in north-western Nigeria. *International Journal of Environmental Design and Construction Management*, *8*(4). https://doi.org/10.70382/hijedcm.v08i4.044

Hoseini, S. A., Fallahpour, A., Wong, K. Y., Mahdiyar, A., Saberi, M., & Durdyev, S. (2021). Sustainable Supplier Selection in Construction Industry through Hybrid Fuzzy-Based Approaches. *Sustainability*, *13*(3), 1413. https://doi.org/10.3390/su13031413

Hussain, S., Hasmori, M. F., Balasbaneh, A. T., Khan, M. W., & Sohu, S. (2025). Contributing factors to key performance indicators of Saudi Arabian construction project success. *Journal of Advanced Research in Applied Sciences and Engineering Technology*, *50*(1), 151–167. https://doi.org/10.37934/araset.50.1.151167

Hussain, S., Xuetong, W., & Hussain, T. (2020). Impact of skilled and unskilled labor on project performance using structural equation modeling approach. *SAGE Open*, *10*(1). https://doi.org/10.1177/2158244020914590

Islam, M. H., Chavez, Z., & Bellgran, M. (2020). *An exploratory study on integrating sustainability aspects during the acquisition of production equipment*. https://doi.org/10.3233/atde200143

Jayasinghe, I. D., Domingo, N., & Le, A. (2025). The evolving landscape of procurement methods in the construction industry: A literature review. *CIB Conferences, 1*(1). https://doi.org/10.7771/3067-4883.2031

Juricic, B. B., Galic, M., & Marenjak, S. (2021). Review of the construction labour demand and shortages in the EU. *Buildings*, *11*(1), 1–17. https://doi.org/10.3390/buildings11010017

Khatun, N. (2021). Applications of normality test in statistical analysis. *Open Journal of Statistics*, *11*(1), 113–122. https://doi.org/10.4236/ojs.2021.111006

Loosemore, M., Zhang, S., Alkilani, S., & Wang, Z. (2023). Social procurement in the Chinese construction industry: Relevance, drivers and barriers to implementation. *Buildings*, *13*(9), Article 2383. https://doi.org/10.3390/buildings13092383

Naoum, S. G., & Egbu, C. (2016). Modern selection criteria for procurement methods in construction: A state-of-the-art literature review and a survey. *International Journal of Managing Projects in Business*, *9*(2), 309–336. https://doi.org/10.1108/IJMPB-09-2015-0094

Niriella, A., & Gamage, I. (2022). Relationship between procurement systems and payment methods in assuring financial safety in Sri Lankan building projects. *The SLIIT International Conference on Engineering and Technology 2022* (pp. 127-137). https://doi.org/10.54389/IZCF4906

Ogunsanya, O. A., Aigbavboa, C. O., & Thwala, D. W. (2023). Sustainable procurement model for publicly funded construction projects in developing nations–A structural equation modelling approach. *International Journal of Construction Management*, *23*(3), 449–461. https://doi.org/10.1080/15623599.2021.1889087

Opoku, A., Deng, J., Elmualim, A., Ekung, S., Hussien, A. A., & Abdalla, S. B. (2022). Sustainable procurement in construction and the realisation of the sustainable development goal (SDG) 12. *Journal of Cleaner Production, 376*, 134294. https://doi.org/10.1016/j.jclepro.2022.134294

Osei-Asibey, D. (2021). Direct labour as a procurement route for infrastructure delivery within Metropolitan, Municipal and District Assemblies (MMDAs) in Ghana. *Advances in Social Sciences Research Journal*, *8*(5), 293–312. https://doi.org/10.14738/assrj.85.10201

Osuizugbo, I. C., & Adenuga, O. A. (2024). Decisive factors for decision-making to achieving sustainable procurement in construction projects. *International Journal of Building Pathology and Adaptation*, *42*(6), 1185–1202. https://doi.org/10.1108/IJBPA-04-2022-0065

Osuizugbo, I. C., Omer, M. M., Rahman, R. A., & Oshodi, O. S. (2024). A systematic search and review of early contractor involvement in construction project development. *Built Environment Project and Asset Management*, *14*(6), 835–857. https://doi.org/10.1108/BEPAM-01-2024-0012

Petroutsatou, K., Ladopoulos, I., & Nalmpantis, D. (2023). Hierarchizing the criteria of construction equipment procurement decision using the AHP method. *IEEE Transactions on Engineering Management*, *70*(9), 3271–3282. https://doi.org/10.1109/TEM.2021.3080117

Polavarapu, S., & Rao, V. N. (2023). Sale of second-hand and remanufactured components of construction equipment: An empirical study of user perception in Andhra Pradesh. *Marginal: Journal of Social, Management and Human Resources*, *2*(4). https://ojs.transpublika.com/index.php/MARGINAL/

Rahmani, F., Khalfan, M., & Maqsood, T. (2022). A conceptual model for selecting early contractor involvement (ECI) for a project. *Buildings*, *12*(6), 786. https://doi.org/10.3390/buildings12060786

Ruparathna, R., & Hewage, K. (2013). Review of contemporary construction procurement practices. *Journal of Management in Engineering*, *31*(3). https://doi.org/10.1061/(asce)me.1943-5479.0000279

Scherz, M., Kreiner, H., Alaux, N., & Passer, A. (2023). Transition of the procurement process to Paris-compatible buildings: Consideration of environmental life cycle costing in tendering and awarding. *International Journal of Life Cycle Assessment*, *28*(7), 843–861. https://doi.org/10.1007/s11367-023-02153-1

Tosa-Williamsa, D. E., & Nsikan, J. (2024). Vendor selection criteria and construction project performance in Rivers Nigeria. *Diamond Bridge Economics and Business Journal*, *4*(1), 1–34. https://doi.org/10.60089/dbebj.2024.4.1.4

Waris, M., Panigrahi, S., Mengal, A., Soomro, M. I., Mirjat, N. H., Ullah, M., Azlan, Z. S., & Khan, A. (2019). An application of analytic hierarchy process (AHP) for sustainable procurement of construction equipment: Multicriteria-based decision framework for Malaysia. *Mathematical Problems in Engineering*, *2019,* 1–20. https://doi.org/10.1155/2019/6391431

Yaska, M., & Nuhu, B. M. (2024). Assessment of measures of central tendency and dispersion using Likert-type scale. *African Journal of Advances in Science and Technology Research*, *16*(1), 33–45. https://doi.org/10.62154/ajastr.2024.016.010379

Zhong, Q. P., Tang, H., Chen, C., & Igor, M. (2023). A comprehensive appraisal of the factors impacting construction project delivery method selection: A systematic analysis. *Journal of Asian Architecture and Building Engineering*, *22*(2), 802–820. https://doi.org/10.1080/13467581.2022.2060983

Zuraidi, N., Rani, N. I. A., Hadi, A. A. A., & Ghafourian, K. (2025). Safety of workers when dealing with machinery in construction project. *Jurnal Kejuruteraan*, *37*(2), 869–881. https://doi.org/10.17576/jkukm-2025-37(2)-25