

Stakeholders' Categorization of the Best Practices and Approaches for Financial Bids Evaluation for Sustainable Procurement in Public Organizations

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Abstract

Despite the potential benefits associated with the adoption of financial bid evaluation that includes sustainable green public procurement in government organizations, its adoption by procuring entities in Nigeria remains limited as methodologies suitable to the PEs are not well evaluated in the procurement frameworks. The study is to evaluate the best practices and approaches used in award criteria and the implications of those approaches on the organizations. A quantitative approach design method was adopted. Questionnaires were administered to 56 respondents using simple random sampling techniques in six geo-political zones of Nigeria. Data collected were analysed using descriptive and inferential statistics. The result shows that multi-criteria is the best practice and approach in financial bid evaluation with the highest mean rank of 4.29 (1st) among the nine criteria for both the Likert and comparisons between the organizations. Furthermore, the lowest price-based and A+B method were ranked second (2nd) with a mean score of 3.96 each. The study concludes that multi-criteria is the best practice and approach in financial bid evaluation despite the fact that the lowest price-based method was the default used. Organizations should consider the adoption of the multi-criteria method in their financial bid evaluation.

Keywords: Best Practices, Criteria, Financial Bids, Sustainable Procurement and Public Organization

Introduction

Every organization has a structure that serves as the foundation for its operation and existence. All business functions within an organization, such as marketing, sales, procurement, accounting, research and design, production, and human resources, have their own specific systems that regulate how they operate and contribute to the organization's success (Kotler et al., 2021; Heizer, *et.al.*, 2022). One of these functions is procurement, which has formulated policies to control procurement activities. An effective and sustainable procurement system can be a means of problem-solving and provide a win-win situation for all stakeholders. Sustainable procurement has become the core of performance measurement for both the public and private sectors (Brammer, and Walker, 2011).

According to Wai-leong (2014), the procurement system typically includes authorization of procurement, drafting tender documents, sending out tender documents, selection criteria for

contractors, obtaining approval from management and stakeholders, and signing the contract agreement. Sustainable green public procurement considers environmental criteria in all phases of procurement by selecting solutions with the least impact on the environment throughout the product's life cycle. Therefore, incorporating green public procurement criteria into bid evaluations will result in environmentally friendly goods and services that contribute to achieving sustainability goals.

Since Nigeria gained independence in 1960, the country has experienced a high degree of resource mismanagement, particularly in sustainable public procurement. There have been widespread abuses of rules and standards in the award and execution of public contracts in Nigeria, leading to over-invoicing, inflated contract costs, unproductive projects, white-elephant projects, and diversion of public funds through contract manipulation. Sustainable public procurement is a critical mechanism for the government to achieve its sustainable development goals, yet it has traditionally focused on upfront costs rather than long-term economic and sustainability impacts (Amann *et al.*, 2014).

Despite the potential benefits of adopting financial bid evaluation that includes sustainable green public procurement in government organizations, its adoption by procuring entities in Nigeria remains limited due to the lack of suitable methodologies or approaches outlined in procurement frameworks. The absence of best practices and approaches in financial bid evaluation decisions that may consider aspects of green procurement often leads to suboptimal choices, higher costs, and the failure to meet sustainability objectives (Grandia and Vonckan, 2019).

Additionally, current public procurement policies in Nigeria primarily focus on price-based issues as the recommended financial bid evaluation method, neglecting critical factors such as a contractor's overall capability, environmental impact, maintenance costs, and operational costs. This results in issues such as poor quality delivery, budget overruns, favoritism, corruption, and a high demand for selective tendering in many organizations. There is a need for comprehensive best practices and approaches in decision-making for contractor selection, focusing on project constraints, risks, and procurement methods (El-Sayegh, 2008).

Furthermore, there is limited focus on evaluating the financial bids of contractors using best practices and approaches to improve contractor selection for sustainable development projects in Nigeria. This highlights the need for in-depth research and practical evaluation of best practices and approaches by procuring entities in the financial bid evaluation process when awarding contracts (Akinola, *et al.*, 2013).

Thus, this study identifies the best practices and approaches for tender evaluation for sustainable green procurement criteria to enhance the quality of public project delivery in Nigeria, moving beyond price-based criteria. The study linked Public Procurement Act 2007 guidelines through method of award of contract to best practices and approaches for the award in organization in Nigeria. The study established the best practices and approaches method for evaluating financial bids of contractors in public organization in addition to generic traditional method of award which can assist Nigeria in achieving its sustainable development goals in infrastructures.

Best practices and approaches for financial bids evaluation criteria.

Public sector organizations, as well as the private sector, have long recognized the limitations of relying solely on cost-based criteria to select optimal bidders (contractors). Increasing project complexities demand more holistic evaluation processes that account for technical expertise, managerial capability, quality control, and financial stability. This shift to multi-criteria approaches addresses the dynamic and uncertain nature of the various sectors. Experts in procurement (Plebankiewicz and Kozik, 2016; Puri and Tiwari, 2015; San Cristobal, 2012; Fong and Choi, 2000;) have emphasized the importance of selecting an optimal contractor based on multi-attribute parameters, which serves as a critical component in any procurement process. An optimal selection can directly influence the success or failure of project timelines, cost management, risk mitigation, and quality outcomes. The reliance on traditional methods (lowest bid) of selection has proved insufficient in addressing multi-dimensional project demands.

Different evaluation criteria have been proposed by many studies (Plebankiewicz, 2024; Puri and Tiwari, 2015; San Cristobal, 2012; Fong and Choi, 2000;). Such criteria include multi-Criteria Decision Making (MCDM) tools such as the Analytic Hierarchy Process (AHP), Technique for Order of Preference by Similarity to the Solution (TOPSIS), and Fuzzy logic approaches that have emerged as solutions to incorporate financial, technical, managerial, and risk-based metrics into contractor selection decisions (Morovic, Peric and Hanak, 2021; Singh and Tiong, 2005; Fong and Choi, 2000).

The current study analyzed the various key findings and recommendations on the best practices in evaluation criteria used from recent literature, discussing their rationale, significance, and practical implications. The financial stability of a contractor is a foundational criterion across most studies, addressing the risk of contractor insolvency mid-project. The following metrics were consistently highlighted and discussed as the best practices and approaches for financial bid evaluation in Table 1

Table 1: Summaries of Criteria Proposed by Various Studies

S/N	Autho(s) & Years	Criterion	Matrices
1	Morovic, Peric & Hanak, 2021; Jabbarzadeh, 2018; Fong & Choi, 2000; Hatush & Skitmore, 1997; Mimovic & Krstic, 2016; Panuwatwanich & Uduwage, 2022.	Financial Stability	Liquidity ratios, credit ratings, cash flow trends
2	Jabbarzadeh, 2018; Fong & Choi, 2000; Puri & Tiwari, 2015; Mimovic & Krstic, 2016; Khan & Khan, 2015; Alhumaidi, 2015; Razi et., al. 2020; Paul 7 Mohan, 2016.	Technical and qualification Competence.	Relevant equipment capacity experience, resource
3	Hatush & Skitmore, 1997; Marzouk, 2008; Jabbarzadeh, 2018	Quality Performance	Defect rates, ISO standards compliance, customer satisfaction
4	Morovic, Peric & Hanak, 2021; Singh & Tiong, 2005; Fong & Choi, 2000; Khodadadi & Kumar, 2013; Pual & Mohan, 2016	Risk, Quality and Safety Management	.OHS incident rates, insurance penalties.
5	Puri & Tiwari, 2015; San Cristobal, 2012; Jasim, 2021.	Schedule Adherence	On-schedule completion rates, delay metrics
6	Morovic, Peric & Hanak, 2021	Sustainability	Carbon footprint, green building compliance.
7	Morovic, Peric & Hanak, 2021; Khan & Khan, 2015; Panuwatwanich & Uduwage, 2022; Hanak, Drozdova & Marovic, 2021;	Tender Price	Construction Costs, Technical documentation
8	Morovic, Peric & Hanak, 2021.	Whole life cycle Costing	Maintenance costs, operational and end-of-life costs.
9	Plebankiewicz, 2024	Expected duration	Completion period, programme of work, plan.

Materials and Method

For the current study, a quantitative methodology was applied to enhance understanding of the subject matter (Creswell and Plano-Clark, 2011). Quantitative research approach was chosen as deemed the most appropriate for achieving the aim of this study, with the purpose of evaluating the best practices and approaches relevant to Public Enterprises (PEs) in Nigeria. This method aligns with previous studies by Oyewobi and Jimoh (2022) and Yahaya, Sani and Shehu (2019) that examined the barriers to adoption of sustainable procurement in the Nigerian public construction sector and internal factors affecting labor productivity in medium-sized construction firms in Nigeria using the PLS-SEM approach.

As Fellow and Liu (2008) suggest, desk research, experimental, and survey methods are primary methods utilized in conducting quantitative studies. This study utilized a questionnaire survey to collect quantitative data through a cross-sectional survey. The questionnaire was reviewed by colleagues for clarity, meaning, and interpretation. The main objectives of the evaluation were to ensure clarity of the items and their relevance to the study. After this stage, the final questionnaire was self-administered to the target respondents through a Google Form and WhatsApp application to contacts in the procurement cadre group.

A simple random sampling method was used in this study to ensure a high response rate and a diverse group of procurement specialists. These professionals, including procurement officers, members of the tenders board, evaluation committee members, and investigators, were provided with well-structured questionnaires to complete independently. A total of 56 questionnaires were distributed via WhatsApp, with 45 completed and returned accurately, representing an 80.35% response rate. The returned questionnaires were assessed to determine their suitability for the upcoming analyses presented in the next section.

Results and Discussion

Respondents' Demographic Data

Demographic profiles of sampled respondents are presented in Table 2, of 45 respondents after data screening. The gender distribution indicates that approximately 91.1% of the respondents were males and 8.9% were females. The result also shows that about 15.6% of the respondents had a degree between a national diploma and a post-graduate diploma, while 84.4% had a B.Sc degree and higher qualification. Additionally, more than 48.9% of the respondents held roles as Procurement Officers, 22.2% reported being Head of Procurement in their organization, 15.6% are members of the evaluation committee, 2.2% were investigators, and 4.4% reported being either contractors/suppliers or tenders board members.

Table 2 indicated that 46.7% of the respondents came from tertiary institutions, while 35.5% were from various ministries, departments, and agencies (MDAs), 17.8% were from non-governmental organizations and other related bodies conducting procurement activities. Similarly, the results showed that paramilitary organizations had 0%, indicating they either do not participate much in procurement or were not included in the sample for that particular year. Similarly, 37.8% of the respondents were from the North-West, 24.4% from the North Central, 13.3% from the North-East, 15.6% from the South-West, and 8.9% from the South-East of Nigeria. This indicates that the majority of respondents came from the Northern part of the country, accounting for about 75.5%, while the Southern part represented only 24.5% of the total population

Table 2: Respondents' Demographic Data Analysis

Attributes	Frequency (N=45)	Percentage (100%)
GENDER		
1 Male	41	91.1
2 Female	4	8.9
EDUCATIONAL QUALIFICATION		
1 National Diploma	1	2.2
2 Higher National Diploma	3	6.7
3 Post Graduate Diploma	3	6.7
4 Bachelor's degree	19	42.2
5 Master's Degree	17	37.8
6. Doctor of Philosophy	2	4.4
GEO-POLITICAL ZONE		
1 North-East	6	13.3
2 North-West	17	37.8
3 North-Central	11	24.4
4. South-East	4	8.9
5. South-West	7	15.6
6. South-South	0	0
WORKING EXPERIENCE IN PROCUREMENT		
1 Under 5years	10	22.2
2 Between 5 – 10 years	22	48.9
3 Between 11 – 15 years	6	13.3
4. Between 16-20 years	5	11.1
4 Above 20 years	2	4.4
ROLE IN PROCUREMENT		
1 Head of Procurement Unit/Dept	10	22.2
2 Procurement Officer	22	48.9
3 Member of Evaluation Comttee	7	15.6
4 Investigator/Prosecutor	1	2.2
5 Contractor/Supplier	2	4.4
6 Tenders Board Member	2	4.4
7 Others	1	2.2
ORGANIZATION TYPE		
1 Ministry, Department and Agencies	16	35.5
2 Para Military	0	0
3 Tertiary Institutions	21	46.7
4 Non-governmental Organization	3	6.7
5. Others	5	11.1

Familiarity with the Financial Bid Evaluation Processes

Table 3 presents the level of familiarity with the financial bid evaluation process among respondents. The gathered data was utilized to analyse the results for the main research questions and ensure that respondents possess a comprehensive understanding of the topic. The participation of procurement officers in financial bids was evaluated based on their frequency of involvement (always, sometimes, and never). The findings indicate that 80% of respondents are highly familiar with the financial bid evaluation process within their organization, 13.3% have a basic understanding, and only 6.6% lack clarity on the process. This lack of understanding may stem from limited involvement, as evidenced by the fact that only 31.1% are fully engaged, while 68.9% are partially involved in the process within their organization.

Table 3: Respondents' Knowledge and Familiarity on Financial Bid Evaluation

Attributes	Frequency (N=45)	Percentage (100%)
Involvement in Financial Bids Evaluation		
1 Yes, always	14	31.1
2 Yes, sometimes	31	68.9
3 No, Never	0	0
Familiarity With the Process of Bid Evaluation		
1 Very Familiar	36	80
2 Somehow familiar	6	13.3

Objective: To evaluate the best practices and approaches relevant to PEs in Nigeria

Table 4 shows the best practices and approaches among the various bid financial methods are multi-criteria/parameter bid, competitive lowest bid price, A+B bid, combined matrices bids, life cycle bids, negotiated bid, competitive average bid, cost plus percentage bid, and equivalent tender price in the study. Were multi-criteria, competitive and A+B bid method ranked 1st, 2nd and 3rd, while, combine, life cycle costing, negotiated, competitive average, cost plus and equivalent tender methods were ranked 4th, 5th, 6th, 7th, 8th and 9th from the Table 4

Table 4: Best Practices and Approaches for Financial Bid Evaluation Criteria for PEs in Nigeria

S/N	Best Practices and Approaches	Mean	Std. Deviation	Rank
1	Multi-Criteria/Parameter Bid	4.29	1.079	1
2	Competitive Lowest Bid Price	3.96	1.107	2
3	A+B Bid	3.96	1.086	3
4	Combine Matrices Bids	3.93	1.095	4
5	Life Cycle Costing Bid	3.78	1.106	5
6	Negotiated_ Bid	3.51	1.180	6
7	Competitive Average Bid Price	3.44	1.179	7
8	Cost Plus Percentage Bid	3.24	1.131	8
9	Equivalent Tender Price	3.04	1.186	9
Overall mean and standard deviation		3.68	1.13	

Meanwhile, the study further analyzed the best practices and approaches for evaluating financial bids relevant to procuring entities. Mean ranking analyses were used to identify the type of financial bid criteria applicable to different organizations, such as ministries, departments, agencies, paramilitary, tertiary institutions, non-governmental organizations, and others, as shown in Table 5. The results revealed that multi-criteria/parameter, competitive lowest bid, and A+B criteria are the most effective

practices for procuring entities in Nigeria. Conversely, equivalent tender price, cost-plus percentage, and competitive average bid criteria are less commonly utilized by government organizations.

Furthermore, the findings indicated that life cycle costing is a best practice in certain departments within these organizations, as it received the highest ranking in the evaluation table. However, when considering all types of organizations, life cycle costing was ranked fourth overall. The results also highlighted that the multi-criteria method for financial evaluation is the most relevant across various organizations, consistently ranking either first or second in the evaluation table.

The study explores best practices and approaches from literature in various regions, continents, and studies. Practices such as competitive lowest bidding, competitive average bid, multi-criteria, equivalent tender price, cost plus percentage, combined matrices, negotiated tender, and A+B Bid were identified (Plebankiewicz, 2024; Jasim, 2021; Khan and Khan, 2015;). These identified best practices, used by many organizations, were used to develop a questionnaire to assess their acceptability in Nigerian public organizations.

After collecting data from various respondents across Nigeria, the study found that the most relevant best practices among Procuring Entities (PEs) in Nigeria are multi-criteria (ranked 1st), competitive lowest bid (ranked 2nd), and A+B Bid (ranked 3rd) based on criteria for financial bid evaluation and overall average (mean = 3.68, SD = 1.13). Furthermore, evaluation of each criterion among different organizations also confirms the use of multi-criteria as the most dominant criterion relevant to all organizations, with a mean item score of 4.29, as shown in Table 4.5 in the study. These findings align with previous studies (Tembo *et al.*, 2023; Cardarelli *et al.*, 2022; San Cristobal, 2012;).

Additionally, the results from Table 5 indicate that ministries, departments, and agencies strongly support the use of the multi-criteria method for financial bid evaluation compared to other organizations that are more inclined towards the default method of evaluation (Lowest bid price) as noted by Ajaelu *et al.*, (2021). As a result, sustainability and quality products are not being achieved as intended.

Table 5: Organizational Type (PEs) Relevant Approaches/Best Practices of Financial Bid Criteria in Nigeria (N=45)

S/N	FC	OT	M	SD	OTRFC	OTM	OTSD	OTR
1	Competitive Lowest Bid Price	Ministry	4.00	0.00	2			
		Department	4.00	.000	2			
		Agency	4.08	1.256	1			
		Tertiary Institution	3.95	1.161	3	3.96	1.107	2
		Non -Governmental	4.00	1.000	2			
		Others	3.60	1.140	4			
2	Competitive Average Bid Price	Ministry	3.00	0.000	5			
		Department	3.50	.707	2			
		Agency	3.46	1.450	3	3.44	1.179	6
		Tertiary Institution	3.43	1.165	4			
		Non -Governmental	4.33	.577	1			
		Others	3.00	1.000	5			
3	Multi- criteria/Parameter Bids	Ministry	5.00	.	1			
		Department	5.00	.000	1			
		Agency	4.46	.660	2	4.29	1.079	
		Tertiary Institution	4.29	1.146	3			1
		Non -Governmental	4.00	1.732	4			
		Others	3.60	1.517	5			
4	Negotiated Bid	Ministry	4.00	.	2			
		Department	4.50	.707	1			
		Agency	4.00	.913	2	3.51	1.180	
		Tertiary Institution	3.10	1.221	4			5
		Non -Governmental	4.00	1.000	2			
		Others	3.20	1.483	3			
5	Equivalent Tender Price	Ministry	4.00	.	2			
		Department	4.50	.707	1			
		Agency	4.00	.913	2	3.04	1.186	
		Tertiary Institution	3.10	1.221	4			8
		Non -Governmental	4.00	1.000	2			
		Others	3.20	1.483	3			
6	Cost Plus Percentage Bid	Ministry	3.00	.	4			
		Department	5.00	.000	1			
		Agency	3.69	.751	2			
		Tertiary Institution	3.00	1.095	4	3.24	1.131	7
		Non -Governmental	3.67	1.155	3			
		Others	2.20	1.304	5			
7	A+B Bid	Ministry	3.00	.	4			
		Department	4.00	1.414	3			
		Agency	4.23	.599	1	3.96	1.086	
		Tertiary Institution	4.10	1.179	2			2
		Non -Governmental	4.00	1.000	3			
		Others	2.80	1.304	5			
8	Life Cycle Costing Bid	Ministry	4.00	.	2			
		Department	5.00	.000	1			
		Agency	3.92	1.115	3	3.78	1.106	
		Tertiary Institution	3.90	1.044	4			4
		Non -Governmental	3.00	1.000	5			
		Others	2.80	1.095	6			
9	Combine Matrices Bids	Ministry	3.00	.	5			
		Department	4.50	.707	1			
		Agency	4.23	.832	2	3.93	1.095	
		Tertiary Institution	4.00	1.183	3			3
		Non -Governmental	2.67	1.155	6			
		Others	3.60	1.140	4			

Note: FC= Financial Criteria, OT= Organizational Type, M=Mean, SD= Standard Deviation, OTRFC= Organizational Types Rank for financial Criteria, OTM= Organizational Type Mean, OTSD= Organizational Type Standard Deviation and OTR= Organizational Type Rank

Conclusion

This study evaluates the financial bid evaluation criteria for the award of contracts for sustainable public procurement in Nigeria. The following conclusions were drawn from the results of this research.

The study concludes that a, multi-criteria bid method was considered the best practice and approach for procuring entities in Nigeria, as most organizations in the country are commonly use this method. This approach takes into account various factors beyond just cost, such as sustainability aspects and quality, during award of contracts. While other types of criteria are available, their readiness for application by public organizations is less than 20% compared to the multi-criteria method, which is considered the best practice by organizations in the study area.

Similarly, the best practice for financial bid evaluation is to adopt a multi-criteria method rather than solely considering price as the basis for an award. Evaluating bids based on multiple factors improves the procurement process, reduces uncertainty regarding completion costs, time, and project quality, resulting in more sustainable projects.

Therefore, the study recommended that public organizations consider adopting the multi-criteria method in their financial bid evaluations to enhance their procurement processes. This approach will help to minimize challenges of inefficiencies, abnormal bids, claims, and variations, as the selection criteria are not solely based on cost but on multiple factors that justify the financial bid of the winner. The findings of this study suggest possible directions for future research to evaluate the best practices and approaches of private and individual bodies in their procurement and contractor selection processes in Nigeria. The study also acknowledges limitations, such as the scope of data collection and the focus on public organizations as the primary source of information

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