

Challenges encountered by bid evaluators on the selection of contractors in the Nigerian oil and gas engineering, procurement and construction contract bidding

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Abstract:

The purpose of this study is to evaluate the various challenges encountered by bid evaluators in Engineering, Procurement and Construction (EPC) contract bid evaluation. The reason for the outcome of this study is as a result of improper bid management system in EPC contracts resulting to poor project performance by incompetent contractors which leads to rampant abandonment of EPC projects. A multi - case study design was used for this study, the case study was conducted on professionals such as Architects, Project Engineers and Quantity Surveyors working in selected Oil and Gas institutions in the Niger Delta Region of Nigeria. The total population that was targeted for this study is one hundred and thirteen(113) professionals (Quantity Surveyors, Architects, Procurement officers and Engineers) who have worked in Chevron, Mobil, Shell, WRPC, and PHRC on Oil and Gas EPC Projects and this was achieved via the census technique. A high return rate of 88.23% was recorded for Architects, while a return rate of 73.91%, 71.42% and 63.15% was recorded for Quantity Surveyors, Procurement officers and Engineers respectively. An overall return rate of approximately 72% was recorded across all four professionals. The limitation of this study indicates that the study is prone to impact limitation, whereby the selected field is conducive to incremental findings due to the fact that enough data was not generated and also lack of previous literature on the study. From the result of this study, it was found that, Inadequate amount of time provided to evaluate tenders at the entry level, and the number of people involved in the evaluation process at the entry level, are the two (2) biggest challenges faced by bid evaluators on EPC Projects. The implication of this study entails inadequate time allotted for bid evaluation to bid evaluators, in which stake holders needs to enable adequate time based on the complexity of the project.

Keywords:

Bid, bid evaluators, challenges, evaluation, contractors

1 Introduction

Bid Evaluators usually experience challenges in the selection of contractors during contract bidding, a few of the challenges encountered by bid evaluators ranges from inadequate amount of time provided to evaluate tenders at the entry level, Poor interpretation of evaluation criteria, absence of contractors' appraisals and rating evaluation team members' lack of expertise in tender evaluation and other factors not to

mention. This is channeled to Engineering, Procurement and Construction (EPC) contracts bidding processes, the major issue that hinders the success of a project not limited to EPC projects is bid evaluation and contractor's prequalification, this issue is also majorly experienced by numerous industries around the globe. The root cause of this issue varies depending on the culture or practice, environment, processes and organisation of the oil and gas industry the construction industry is not excluded, (Maqsoom *et al.*, 2019). One of the major implication of not selecting the right contractor is that bid evaluation team members tend to evaluate contractors based on the cheapest cost of contract value from the contractor which eventually results to various challenges such as poor material selection, inexperienced workforce, resulting to poor project completion and in most cases projects abandonment. Therefore, this situation makes it particularly significant to appropriately assess contractor's competences, (Oad *et al.*, 2021). Previous studies have also noted that contractor's culture and value have an adverse effect on their bidding procedures, this has resulted in bid evaluator's inability to access the aforementioned and can result in affecting the project's performance when the contractor is selected, (Great Britain and Government Commercial Function, 2021).

The aim of this study is to evaluate the challenges encountered by bid evaluators on EPC contracts bidding and proffer possible solutions to curb out these challenges, the objectives of the study are:

1. What are the various challenges encountered by bid evaluators during EPC contract bid evaluation?
2. How does these challenges affect the performance of a project?
3. What are the possible solutions proffered to curb out these challenges encountered by bid evaluators?

This study was carried on a few selected Oil and Gas organisation such as International Oil and Gas Companies IOCs (Shell, Chevron, Mobil), Governmental Oil and Gas corporations (Warri Refinery and Petrochemical Company, WRPC, Port Harcourt Petrochemical Company, PHRC) in some Niger Delta region states of Nigeria, namely Delta, Rivers and Bayelsa states. The research population for this study are Project Engineers, Quantity Surveyors, Procurement Officers who had participated in EPC bid evaluation or members of bid evaluation committee in these Oil and Gas organisations.

In order to satisfy the aim and objectives of this study the research design used is a case study-based survey design, the method of data collection was the administration of well-structured questionnaire, the analysis of collected data was carried out using the following descriptive and inferential statistical methods as appropriate; Percentiles, Means, Standard deviation, Kruskal Wallis etc. The limitation of this study indicates that the study is prone to impact limitation, whereby the selected field is conducive to incremental findings due to the fact enough data was not generated and the study also lack previous literature based on the unique nature of the study, in explaining this fact the study is a case study-based design survey, whereby just a few selected population was used to carry the study, subsequently a larger population used will generate a higher data and different professional opinions may emanate thereby generating different responses based on their ethics, culture and values.

From the result of this study, it was found that, inadequate amount of time provided to evaluate tenders at the entry level, and the number of people involved in the evaluation process at the entry level, are the two (2) biggest challenges faced by bid evaluators on EPC Projects. This study will be beneficial to the oil and gas, construction industry's procurement system, as this will enhance the bidding processes in these industries by preventing projects failures, the Government will also benefit from this study via infrastructural development from these industries.

2 Challenges Encountered by Bid Evaluators

Several industries in developing countries are usually daunted by various challenges, such as the contractor's under performance due to lack of qualification and other prevailing factors. Evaluation of bid is the process in which submitted tenders are examined and assessed in order to reach at the selection of an ideal bidder. The process of bid evaluation is employed to allocate various methods for strategic assessment and evaluation to tender bids submitted by registered and pre-qualified contractors, (Oad *et al.*, 2021). (Great Britain and Government Commercial Function, 2021) stated that evaluation of bid is one of the most delicate area in the whole process of procurement if not appropriately managed may end up with selection of inappropriate bidder or contractor who might not be able to deliver the project perfectly according to the project's specifications and expected end result.

In stating a few of the challenges on effective bid evaluation in the Oil and Gas industry and the construction industry is related to the human resources required to make the bidding system functional. A comprehensive completion and use an appropriate contractor evaluation method requires adequate knowledge, skill and experience (Lukumay, 2013). Bid evaluation in the oil and gas industry is not effective due to the associated challenges that are faced in the process evaluation. Such challenges are:

2.1 Inadequate amount of time provided to evaluate tenders at the entry level

Hardie and Saha (2012) study stated that the major role of the procurement professional is to evaluate and select contractors based on these factors, availability, reliability and price in order to obtain the highest quality project services at the minimum possible cost. The study describes that the most common issues that bid evaluators face today is the length of time it takes to identify the right contractors. The bid evaluation committee members are not given sufficient time to go through the list of submitted tenders and also to decide whether or not his/her participation in the process will have conflict of interest, other factors that are supposed to be considered during the bid evaluation process are not considered based on insufficient time allocated. Insufficient budget allocated to bid evaluators has also resulted to delay in bid evaluation which results to inappropriate time management by evaluation committee to evaluate bids received.

2.2 Poor interpretation of evaluation criteria

Bidding and the bid evaluation process, involves invitation to bid and bid submission as well as the technical, contractual, and financial appraisal of the submitted bids, these processes are particularly vulnerable to a variety of schemes that result in fraud and

agreement in corruption, proper interpretation of bid evaluation criteria by team members should be adequately considered to curb out improper appraisal of submitted bids resulting in the aforementioned. (Ogedengbe, 2018), their study stated that evaluation team lacks expertise in tender evaluation, poor interpretation of evaluation criteria. (Lukumay, 2013), indicated that there are some weakness in the whole chain of evaluation which needs to be addressed, the study further stated that lack of proper follow up of the procedures and criteria could lead to the selection of incompetent contractor which results to difficulties to achieve value for money on a project. However, there is no general acceptance of more thorough recommended bid criteria, due to the massive variation in the types of procurements practiced by professionals and individuals of varying experience, across a vast variation of industries and organisations with dissimilar objectives, (Khoso, 2021), this has been one of the issues with poor selection criteria by bid evaluators on EPC projects, in stating this fact there is no unified system of procurement in the Oil and Gas industry.

2.3 Evaluation team members' lack of expertise in tender evaluation

The evaluation of bid in every organisation is required to be a joint technical and commercial exercise. Therefore, it is important for every organisation to establish a tender evaluation committee comprising technical, economic and financial experts to carry out the analysis but this is on the contrary to most Oil and Gas institutions. (Maqsoom *et al.*, 2019), stated that technical appraisal of a bid should be conducted by project engineer who have knowledge of technical aspects of the offer and the constructional methods proposed. Similarly, contractual, and financial appraisals should be conducted by contract engineers having appropriate relevant experience. Whichever way the appraisal is undertaken; the three aspects should be considered together as they are closely inter-related. The appraisal must therefore be a joint team operation, the evaluators should analyse the risk (i.e. uncertain event with negative impact on at least one project objective) the company is facing if they are awarding a contract.

Another issue associated with evaluation team lack of expertise in bid evaluation is some companies have subsidiaries and these subsidiary companies are not evaluated in most cases, According to (The World Bank, 2016) the evaluation of contractors does not consider the qualifications of other entities such as subsidiaries, affiliates, subcontractors (other than specialised subcontractors if indicated in the Prequalification/Initial Selection document), this has resulted in several inappropriate evaluation of contractors.

2.4 Evaluation of team members' lack of training in procurement

A few of the common challenges in the selection of contractors also involves poor selection of procurement committee members, inadequate training of team members in procurement, evaluation team lacks knowledge in procurement ethics, (Ogedengbe, 2018). Evaluation team are required to understand general procurement ethics and also the procurement act to enable them adequately carry out every evaluation processes seamlessly. The expertise of bid evaluation team members should be taken into consideration based on knowledge pertaining procurement ethics, in cases where evaluator's level of experience based on general procurement is not taken into consideration, this constitute a major challenge to the bid evaluation process, (Kusek and Rist, 2004).

Since risk is inevitable in any projects, risk assessments should be taking more serious in the Nigerian oil and gas industries rather than allowing any influences in the award of contracts.

2.5 Proffered solutions to adequate bid evaluation

Bid evaluation is used to designate the process for strategic assessment to tender bids submitted by pre-qualified contractors. The strategy designed for bid evaluation should reflect the client's objectives, (Insights, 2021). Criteria to be considered for adequate bid evaluation are:

Evaluating Quality Criteria:

1. Evaluate if the objectives are clear, proportionate and relative to the service required
2. Assess whether the criteria have been tested with the market or industry.
3. Evaluate if scoring approach will enable differentiation.

Balancing Prices and Quality Criteria:

1. Assess if the weighing criteria reflects the characteristics of the services.
2. Evaluate if the social value is to be evaluated differently from the quality criteria, if relevant.

Evaluating price Criteria:

1. Evaluate if the finance team has been consulted on the most appropriate cost evaluation.
2. Will whole life costing be considered during the evaluation?

2.5.1 Evaluating social values

One of the factors to consider during bid evaluation is social value, this factor is barely considered in EPC contract bidding process, evaluating social value entails an input of resources of all kinds, activities, that is what the contractor does, outputs such as direct result of these activities, outcomes, the sustainability in people, communities or areas affected and then expected impact which connotes the value it holds. According to (Insights, 2021), Social value should be clearly evaluated in all procurement sectors not excluding the Government, in evaluating the social value of these entities, the requirements should be related and proportional to the subject-matter of the contract, the study further explained that keeping record of social value in the award of contracts when it is done well will contribute to equal playing field for all types of industries including small industries, professional and public sector organisations and social initiatives.

(Hebb and Hachigian, 2017), outlined three roles of social value criteria benefits, the first is social value evaluation enables public contracting establishments to implement a proper financial responsibility this results in increasing the quest amongst these sectors to demonstrate accountability under economic constraints this has shaped their views for what counts as evidence, secondly, social value evaluation can serve the interests of small, medium enterprise, thirdly, social value evaluation can aid a wider purpose to set

innovative standards and contracting standards for a more competitive and diverse procurement market.

2.5.2 Creating proper bid evaluation models

An essential bid evaluation model has to be fair, defensible and repeatable, fair in the fact that it has to be transparent and easily accessible, then defensible it has to be coherently explained to stakeholders and bidders, bid evaluation models requires to be repeatable by being deployed by the procurement professional and be scalable to be useful for projects of different scope and collective levels of complexity,(Kelleher, 2015), adopted both the weighted Sum, price to quality scoring and Bespoke approach in the construction of a bid evaluation model, according to the study the weighted sum evaluates non-price factors (criteria) along with price, the price is specified a relative score typically represents each of the bid's price relationship to the lowest bid price, in the case where the lowest bid receives a perfect score all non-price criteria also receive a numerical score, the price and non-price scores are then multiplied by apportioned weights representing the criteria's importance to the selected decision. While in the price to quality scoring model, price is allotted a qualitative value, which is added to the other qualitative scores to emerge an over-all score that deliberates both price and non-price factors, the highest bid score wins. The bespoke approach uses less of a formal bid evaluation strategy, bids are evaluated based on a subjective approach such as contractor's past experience and so on.

Igboanugo and Ogbeide (2014) developed contractor selection model in the Nigerian Oil and Gas evaluation of bids in the upstream sector by using the sequential elimination, goal programming and the existing weighted average method, these models were modified to develop models for evaluation purpose. The developed models were implemented via a hierarchical encoded software, the result found showed that the developed software would result in increased efficiency of bid evaluation as it was able to decrease the time required for bid evaluation significantly. If a proper universal contractor selection model is implemented in EPC contract bid evaluation process, there would be less issues in bid evaluation since there is an already implemented model to guide bid evaluators.

3 Research Methodology

3.1 Research design

This strategy is associated with the entire research processes and procedures which includes research questions, hypothesis, sampling, data collection, and data analysis, (Boru, 2018). The study adopts the multiple case survey design approach. This involves the selection of some International Oil Corporation (IOCs) and national oil and gas corporations to understudy their approaches to EPC contract bid management challenges by bid evaluators through questionnaire survey. The national oil and gas corporations selected for this study includes Warri Refinery and Petrochemical Corporation (WRPC) and Port Harcourt Refinery Corporation (PHRC). The IOCs selected for this study includes Chevron, Mobil & Shell.

3.2 Sampling

This is the procedure for drawing a subset of the population for a study (Singh, et al 2014). The target population for this study includes all officers involve in EPC projects in the selected corporations. These professionals include procurement officers, project engineers, architects and quantity surveyors. The study adopts census sampling to reach all possible respondents. The total number of respondents is Architects (17), Quantity Surveyors (23), Engineers (38) and Procurement Officers (35) which sums up to one hundred and thirteen (113) across the five selected oil and gas corporations.

3.3 Method of data collection

The data for this study were collected through the administration of a structured questionnaire. The questionnaires were based on seventeen criteria and each rated on a five-point Likert scale (1 to 5).

3.4 Data analysis

The study uses both descriptive and inferential statistics to analyse the data. The descriptive statistics includes frequency, percentage, mean and standard deviation. This includes the summary of analysis and presentation of a data set including measures of central tendency (mean, median & mode) and measure of variability (including range, quartile, dispersion, variance & standard deviation etc.) and frequency distribution, (Allen, 2017). The inferential statistics includes Kruskal Wallis H test.

4 Findings and Discussion

The questionnaire developed for this study comprised of 2 sections. The first section collects the information pertaining to the respondent's company, experience, job title, qualification. The second section comprised of 10 challenges that may be encountered by bid evaluators in EPC contract bid evaluation process, of the 10 challenges selected, A five-point Likert scale 5- Very high, 4- High, 3- Average, 2- Low, 1- Very Low was adopted to judge the severity of the challenges encountered by bid evaluators. A total one hundred and thirteen (113) questionnaires was sent out to professionals (Quantity Surveyors, Architects, Procurement officers and Engineers) who have worked in Chevron, Mobil, Shell, WRPC, and PHRC on Oil and Gas EPC Projects project in Port-Harcourt, Warri and Bayelsa, a high return rate of 88.23% was recorded for Architects, while a return rate of 73.91%, 71.42% and 63.15% was recorded for Quantity Surveyors, Procurement officers and Engineers respectively. An overall return rate of approximately 72% was recorded across all four professionals.

Table 1 shows the Challenges Encountered by bid evaluators, inadequate amount of time provided to evaluate tenders at the entry level is ranked 1st on the list with the mean score of 4.0988 which happens to be the highest, followed by the number of people involved in the evaluation process at the entry level and amount of time taken to be invited to collect tender documents, which is 2nd and 3rd respectively on the list with a mean score of 4.0370 and 4.0123. Poor interpretation of evaluation criteria is ranked 4th with a mean score of 3.7160.

Table 1: Challenges encountered by bid evaluators (mean score)

Challenges Encountered by Bid Evaluator	Mean	Std. deviation	Rank
Inadequate amount of time provided to evaluate tenders at the entry level.	4.0988	0.83074	1
The number of people involved in the evaluation process at the entry level.	4.0370	0.85797	2
Poor interpretation of evaluation criteria.	4.0123	1.04276	3
Absence of suppliers' appraisals and rating	3.3457	0.89667	5
Evaluation team members' lack of expertise in tender evaluation.	3.0370	0.90062	6
The use of 100percent compliance award criteria	2.7284	1.36026	7
Poor selection criteria for procurement committee members.	2.6543	0.9105	8
Evaluation of team members' lack of training in Procurement	2.4815	0.96321	9
Evaluation of team members' lack of knowledge of procurement ethics.	2.3457	1.08582	10

In buttressing the results emanated from the literature of the study, (Smith, 2009), describes that common issues bid evaluators face today is the length of time it takes to identify the right contractors. The bid evaluation committee member is not given sufficient time to go through the list of the tenders decide whether or not his/her participation in the process will have conflict of interest and other factors that are supposed to be considered during the bid evaluation process. Stakeholders should enable time management allocation to bid evaluators to effectively carry out bid evaluation. This will enable the bid evaluation team to effectively carry out evaluation on bidders and come up with the best possible results, this will not only enhance the bidding processes but will curb out any form of mistake that will eventually affect the viability of any project awarded.

According to Naiyeju et al (2018), a few of the most popular challenges in contractor selection include Weak procurement committee member selection, insufficient procurement training for team members, evaluation team lack of procurement ethics awareness, evaluation team lack of experience in tender evaluation, poor understanding of evaluation requirements, and time spent evaluating bids.

Table 2 below presents the result of the Kruskal-Wallis H test on the dataset;

a: Kruskal Wallis Test

b: Grouping variable: Respondents' Profession

“Challenges encountered by bid evaluators”. The aim is to identify if there are varying perspective to the challenges encountered by bid evaluators on Oil and gas EPC projects as perceived by the professionals involved in the coordination of Oil and Gas EPC projects. Kruskal Wallis H test was used to determine the differences between the selected variables, which is the challenges encountered by bid evaluators as determined by the selected professionals in the study. The grouping variable as seen above is the

“Respondents ‘profession”. The table also presents the Chi-square value, the degree of freedom and the Significance values for the challenges encountered by bid evaluators on EPC projects. However, the one that is most important in the decision-rule is undoubtedly, the significance level. From the table above, the values emboldened, which are less than .05 mean that opinions vary on those particular data type (challenges encountered by bid evaluators, in this case). In this regard, only inadequate amount of time provided to evaluate tenders at the entry level (0.012) have very varying opinions across board.

Table 2: Challenges encountered by bid evaluators (Kruskal Wallis)

S/N	Challenges Encountered by Bid Evaluator	Chi- Square	Df	Asymp. Sig.
1	Inadequate amount of time provided to evaluate tenders at the entry level.	2.324	3	0.508
2	Amount of time taken to be invited to collect tender documents.	10.882	3	0.012
3	The number of people involved in the evaluation process at the entry level.	2.821	3	0.420
4	Poor selection criteria for procurement committee members.	0.886	3	0.829
5	Evaluation of team members’ lack of training in Procurement	7.416	3	0.060
6	Evaluation of team members’ lack of knowledge of procurement ethics.	5.234	3	0.155
7	Evaluation team members’ lack of expertise in tender evaluation.	1.378	3	0.711
8	Poor interpretation of evaluation criteria.	5.97	3	0.113
9	The use of 100percent compliance award criteria.	5.748	3	0.125
10	Absence of suppliers’ appraisals and rating	0.313	3	0.957

5 Conclusion and Further Research

The study, entails the challenges encountered by bid evaluators in EPC contract bidding process, from this study one of the major challenges encountered by bid evaluators is inadequate amount of time provided to evaluate tenders at entry level, this has resulted in improper selection of non-competent contractors who will eventually carry out the project in an amateur way. The proffered solution as indicated in the study involves, setting up a proper bid management system by evaluating criteria in a strategic manner, evaluating social values which has not been properly implemented in most bid evaluation processes and also creating a proper unified bid evaluation models, this will be beneficial to all bid evaluators and all stakeholders involved, thereby creating an accurate bid evaluation system which will prevent prevailing issues in projects. The findings were achieved using mean score and Kruskal Wallis. An in-depth Study should be carried out on internal factors affecting EPC contractors bidding for EPC contracts. One of the major reasons why this study should be carried is to enhance the whole EPC bid management system, thereby fully curbing out these challenges faced by bid evaluators, since one of the major issues encountered by bid evaluators emanates from contractors bidding for EPC contracts.

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