Responding to contractors selection problems in construction projects with prequa...

RESPONDING TO CONTRACTORS SELECTION PROBLEMS IN CONSTRUCTION PROJECTS WITH PREQUALIFICATION MODEL Abstract Selecting a contractor for a construction project has been shown to be directly related to the success or failure of the entire project and client's value for money. It was observed that the wrong choice of a contractor will certainly impact on the time, cost and quality of delivery of the project. This study assessed the prequalification criteria for evaluating contractors and their eventual section for the award of the contract.

A prequalification model on a scale of 100 was formulated from the study for contractor's evaluation on assessment of their quality score, eventual construction time and final cost of the project. Stakeholders in the sector agreed that a contractor with assessment mark of 61 – 70% be awarded the contract. Keyword: Prequalification criteria, quality control, eventual completion time, final cost of completion, technical capability, financial strength and health and safety policy. Introduction Hatush and Skitmore (1997) noted that one of the difficult decisions faced by clients in the construction industry is the selection of contractor.

This is owing to the fact that every construction project faces adversity and uncertainty associated with environmental issues, finance, technical know-how and statutory compliance. These problems are complicated with incompetent contractor which tends to increase the chances of the project been delayed, cost overrun, substandard work, disputes and bankruptcy. Babalola (2010) complimented that a wrong choice of contractor may not lead to an acrimonious client – contractor relationship, but also contribute to waste of resources.

It is required that a contractor should possess a sound knowledge of organizational control, reputable administrative skill and demonstrable knowledge of building and civil engineering construction. Drew and Skitmore (1993) averred that contractor selection is a critical aspect of the construction contract procurement process as different contractors have different levels of cost, quality, efficiency and technical know-how. The selection of a qualified contractor gives confidence to the employer that the selected contractor can achieve the project goals.

Babalola (2010) affirmed that appraising the diverse pressure limits associated with construction project success requires that selection of contractors is highly important. Ng and Skitmore (2001) were of the view that contractor's selection is a decision characterized by multiple and conflicting objectives since client wants to minimize the likely cost of the construction project, but also want contractors to maintain schedules as well as achieving acceptable quality standards. However, contractors may be selected on the basis of competition or negotiation.

The competitive process is conventionally regarded as the most efficient means of producing the proper and fit contractor. Fu et. al (2002) resonated the view that competitive bidding is still the most acceptable method of evaluating contractor's suitability since they are faced with high competitive pressure. On the other hand negotiation makes it possible to use a contractor's knowledge of construction method and cost to advantage and by mutual agreement to specify contract duration and/or conditions of payment to produce the most effective and advantageous bargain.

The tendering process according to Jagboro (2009) is aimed at selecting a suitable contractor and obtaining from there an appropriate time an offer or tender which is capable of forming basis for a workable agreement. Aje (2008) agreed with the above, that the tendering stage is the focal point of all the construction stages which depicts the stage at which construction project is handed over to a contractor for execution on the basis of his competence. In summary, the selection of a construction contractor require a careful assessment which is done on the basis of their prequalification evaluation. Definition of Term

Prequalification is a pre-tender process used to investigate and assess the capabilities of contractors to carry out a contract satisfactory should it be awarded to them. In other words, pre-qualification is a prerequisite for selection of contractors. The prequalification process according to different literatures including but not limited to Hunt et. al. , 1996; Merna and Smith, 1990; Holt et. al; 1994, Potter and Savindo; 1994 and Hatush and Skitmore 1997) involves a screening procedure based on a set of criteria. Experiment To identify and assess the criteria for contractors' selection through prequalification MATERIALS AND METHOD

Apparatus In this study, two sets of instruments were used to collect data (Archival and primary) in the form of questionnaires. The parameters that generated the data includes different contractor's prequalification criteria, initial contract sum, initial contract period, final contract period and final cost of construction. The collection of secondary data with the other part of the questionnaire was aimed at consultants providing some case study data on

completed projects. Sampling Frame The selection of respondents for this study was by random sampling technique.

The population of the study was marked out by the roles and responsibilities of all construction work stakeholders in contractor's selection. The Niger Delta region of Nigeria was purposefully selected because of the numerous construction work going on in the region after the amnesty declaration for militants as one of the rehabilitation strategies. The questionnaire was administered to consulting Architectural, Quantity Surveying, Electrical and Mechanical Engineering, Civil Engineering firms, contracting firms, government ministries and parastatals in the Niger Delta region. Analytical Technique Employed

The main aim of this study is to assess the factors of contractor's pre-qualification criteria for eventual selection towards construction project delivery in Niger-Delta region of Nigeria vides modeling. A prequalification criterion has effect on completion cost, value and duration of construction projects. Data collected through questionnaire was collected and analysed to evaluate how contractor's prequalification selection affects cost, duration and quality of construction projects in the region by the use of; -Measures of central tendency with ranking -Pearson correlation matrix -Analysis of variance (ANOVA) RESULTS AND DISCUSSION

Data Presentation and Analysis This section presents an in-depth appraisal and analysis of the results obtained from the field survey experimentation. In the presentation, various simplified tables and figures where generated from the questionnaire coded form. The field survey captured fifty-six (56)

projects where contractors were selected from their prequalification evaluations with $1 to N158, the total value of projects executed for evaluation is presented below; Table 1. 0: Project value Value ($)FrequencyPercentage Less than $126, 582. 28 132911. 39 – 316455. 70 322784. 81 – 632911. 39 639240. 51 – 1582278. 50

Over 1582278. 507 6 12 4 2712. 5 10. 7 21. 40 7. 1 48. 20 Total56100. 00 Table 2. 0: Types of project Type FrequencyPercentage Civil engineering construction Building construction Industrial engineering Heavy process engineering19 23 7 733. 90 41. 07 12. 50 12. 50 Total56100. 00 Table 3. 0: Contacted firms (Reference frame) FrequencyPercentage Consulting firm Contracting firm Consortium Organized client Government ministries30 15 4 2 454. 50 29. 30 7. 10 3. 60 7. 10 Total55100. 00 From the table above, the consulting firms had the highest point of 54. 5%, showing that they have jobs that they prequalified contractors for.

Table 4. 0: Factors responsible for the prequalification of contractors (Evaluation Frame) FactorsMeanRank Ensuring value for clients money Achieving the quality/ergonomics of the projects Ensuring the selection of the most suitable contractor Safety and health policy during and after construction Meeting client's needs Meeting client's objective Maintaining standard contractual procedure Meeting cost target of the project Transparency and accountability to public Ability to meet target time of proposed project Tendency of limiting the number of potential bidders Ensuring reduced cost of tendering4. 77 4. 46 . 32 4. 32 4. 31 4. 30 4. 23 4. 09 4. 05 4. 00 3. 57 3. 381 2 3 4 5 6 7 8 9 10 11 12 From the ranking above it showed that the most important factor to be considered for a contractor's

prequalification is the contractors ability to demonstrate that he can make client have value for his money. This is generally followed by other factors according to their rank. Table 5. 0: Prequalification criteria Listed in outline form are criteria extracts from the questionnaire which was evaluated by measure of central tendency to show the most important criteria for contractor's prequalification success. CriteriaMeanRank

Technical capability Financial strength Quality assurance policy Contractor's reputation and image Managerial capability General outlook of the company Health and safety policy4. 66 4. 54 4. 38 4. 30 4. 27 4. 09 4. 041 2 3 4 5 6 7 From the table above, clearly it shows that the prequalification success criteria of contractors is largely tied to his company's or firms technical capabilities. This is closely followed by ranking with other criteria as shown in table 5. 0. Sadly our contractors pay little or no attention to health and safety measures of their organization at the expense of profit maximization.

Table 6. 0: Correlation matrix showing the relationship between prequalification score and success factor variables. Pearson Correlation s c ? t s s 1. 0000. 1480. 0590. 448 c 0. 1481. 0000. 7520. 150 ? t0. 0590. 7521. 0000. 083 s 0. 4480. 1500. 0831. 000 s = Prequalification score? t = Eventual completion time c = Final cost of construction s = quality control score Table 6. 0. 1 Sig. (1-tailed) s c ? t s s 0. 0000. 2360. 3870. 011 c 0. 2360. 0000. 0000. 232 ? t0. 3870. 0000. 0000. 344 s 0. 0110. 2320. 3440. 000 Table 6. 0. 2 N s c ? t s s56565656 c 56565656 ? t 56565656 s56565656 Table 7. : Regression analysis of the inter-relationship between prequalification score and success factor variables. Model Summary ModelRR – SquareAdjusted R SquareStd. Error of the estimate 10. 4590. 2110. 10314.

389 ANOVA Treatment on Model ISum of squareDfMean squareFSig. Regression1217. 3073405. 7691. 9600. 150? Residual4555. 15522207. 052 Total5772. 46225 ? = Independent variables: Quality score, eventual completion time final construction cost = Dependent variable: Total prequalification score. Evaluation of Coefficients Model 1Unstandardized coefficientStandardized coefficientstSig. 95% confidence interval for Std Error constant c ? t s 35. 260 0. 013 -0. 035 0. 58521. 249 0. 026 0. 112 0. 259 0. 149 -0. 089 0. 4331. 659 0. 515 -0. 310 2. 2580. 111 0. 611 0. 760 0. 034-8. 808 79. 327 -0. 041 0. 067 -0. 267 0. 197 0. 048 1. 122 ? = Dependent variable: Total prequalification score R2 = 0. 211 The tables above shows the various analysis, by correlation, regression and ANOVA treatment on the interrelationship between contractor's prequalification success criteria and the variables which the success depends on. A model for predication will now be made to evaluate contractor's selection based on attainment of the various prequalification riteria. Model Specification A simple regression and correlation matrix model was formulated for this study. The model is specified below: ? t) + ? t. Where are parameters to be estimated and ? t = error term that is identically and independently distributed with mean zero and variance zero. Prequalification Model The model is given as follows ? t + 0. 585 Testing hypothesis about the coefficients at 5% significance level. 1. Constant H0: Constant = 0 H1: Constant ? 0 Outcome: Since the significant value of 0. 111 is greater than 0. 05 we conclude that the constant is not significantly different from zero (0). . H0: = 0 H1: ? 0 Outcome: Since the significant value of 0. 611 is greater than 0. 05 we conclude that is not significantly different from 0. 3. H0: = 0 H1: ? 0 Outcome: Since the probability value of 0. 760 is greater than 0. 05 we

conclude that is not significantly different from 0. 4. H0: = 0 H1: ? 0

Outcome: Since the probability value of 0. l034 is less than 0. 05, we

conclude that is significantly different from 0. SUMMARY Conclusion and

Recommendation In this study 83 questionnaires were distributed with 56

responses.

Because of the very nature of distribution systems the vector field of the

population will tend behave to some know statistical distribution formulation

and evaluated as such. Findings showed that, the basis of contractor's

selection is dependent on the evaluation of their: -Prequalification score -

Final cost of completion -Eventual completion time -Quality control score

These parameters were evaluated on the basis of the contractor's technical

capability, financial strength, quality assurance policy, contractor's

reputation and image, managerial capability, health and safety policy and

the generally outlook of the company.

The study came up with a linear mathematical model for the evaluation of

contractor's prequalification score in percentage for his eventual selection

which 25% of the population constituting 14 respondent of 56 samples

agreed that cut-off mark for contractor's selection should be 61 – 70% value

of the model on the preponderance of the contractor's presentations on the

above variables. Further, contractors tend to down play their quality, health

and safety policies at the expense of profit maximization.

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retrieving of questionnaires that was used as data collection instrument for the study. Also, various professionals in the field of consultancy, contracting and government departments are also acknowledged for responding to the questionnaires. REFERENCES Aje, I. O. (2008). The Impact of Contractors Prequalification and Criteria of Award on Construction Project performance in Lagos and Abuja, Nigeria. A Ph. D Thesis of Federal University of Technology, Akure, Nigeria.

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