

ISSUES IN THE CONSTRUCTION PROCUREMENT PROCESS

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The ability of a completed construction to meet the value systems of its stakeholders depends on the activities and procedure throughout the entire supply chain. Before deciding on a construction development, procurement planning should be comprehensive. We argue that a major problem leading to poor performance of projects is inadequate understanding or engagement with the procurement planning process. This emphasizes the clear need to research procurement planning by assessing its purposes. Through survey questionnaires, 13 purposes for undertaking procurement planning are identified for construction players to evaluate the extent to which procurement planning is undertaken. The results indicate that the immediate reasons for the procurement process include determining the expectations of the clientele, provide a means for the stakeholders' to interact, and selecting the appropriate procurement method to suit the client's value system. According to the results of survey, none of the purposes displayed poor results. 95% of the respondents measured that procurement planning are used for construction development. The findings of this paper highlight the importance of systematic procurement planning for improving construction performance.

Keywords: Planning, Client value system, Business case, Feasibility study, Viability study.

1 INTRODUCTION

Construction projects are a huge investment. As such, careful decisions are required to optimize the value of the invested money. There are persistent criticisms on the poor global performance of the construction industry. The reports by Egan (1998), Latham (1994), "Never Waste a Good Crisis" (2009), and Construction 2025 (2013) have had a considerable impact on the performance of the construction industry in Europe as well as in other parts of the world. The key implications of the reports is that there is a need for the industry to develop the talent of the workforce, apply advanced technology, deliver sustainable construction, drive economic growth, and invest in its leadership potential. Thus, the construction industry should reduce both the capital and operation cost of construction by 33% and 50% in the overall delivery time and further reduction of 50% in the greenhouse gas emission, reduce defects and accidents on site, increase productivity, turnover, and profits, and enhance the clients' value systems. Much of what is cited by various reports on the performance of the industry is closely related to the procurement processes undertaken for construction works.

Thus, it is important that the procurement is given considerable thought before major decisions are taken. Construction procurement planning as a process involves systemic decision on what to construct, when to construct, where to construct, how much, where to source funding, and for whom to construct. Given its importance to the success of a construction project, there is a need to analyse the reasons for procurement planning. Failure to do so will lead to poor construction delivery as decision-making will not be based on sound judgments. Procurement planning guides the development of the construction. The purpose of this study is twofold. The first is to describe the activities and processes involved in procurement planning. The second addresses the measurement of the purposes of procurement planning in attempt to improve the performance of construction works. The research design used for this study is survey questionnaire.

2 CONSTRUCTION INDUSTRY AND PROCUREMENT PROCESS

The construction industry is fundamental to the growth of a country irrespective of the country's economic status. This is explained by the industry's micro-economic contribution to the Gross Domestic Product, Gross National Product, and Gross Fixed Capital Formation. If the construction industry of a nation is inefficient, the country cannot witness any meaningful development. The construction industry comprises various activities such as new construction, maintenance, refurbishment, rehabilitation, conversion, extension, and renovation. The construction industry generally contributes between 3% and 10% to the Gross Domestic Product of most countries. For instance, the Nigerian construction industry provides almost 70% of the fixed capital formation. In 2012, the construction industry contributed N2, 188,718.59 million, 3.05% to the Nigerian GDP and employed 6,913,536 (NBS 2015). This figure could fluctuate due to the peculiar nature of the construction industry. It would increase if the labour force from the allied industries that produce, process, and transport construction materials, components and services were added. The Nigerian construction industry is largely British with some incursion from Europe and America. Its construction industry is facing a number of problems including costs and time overruns, high levels of fraud, poor quality, and continuous disappointment of the clients and other stakeholders, all of which are related to procurement processes.

The term procurement is not peculiar to the construction industry. It is used in all economic enterprises. Here, construction procurement is defined as the entire process in the delivery of the built facilities; from the point the client decides to build/construct to when the facility is in operation. The process could be for new works, maintenance, refurbishment, conversion, or extension. It comprises various stages such as planning, preparation of contract documents (i.e. drawings, specifications) preparation of quotation and tender documentation, selection of contractors, and material suppliers, establishing method of financing, and other related functions. Arguably the most strategic function in the processes is the initial stage in the procurement planning. Procurement planning involves establishing and streamlining of a construction's business case, formulate objectives, form a procurement plan, identify stakeholders, and formulate project standards, policies, and strategies (modified after Olanrewaju and Abdul-aziz 2015). Once, the procurement planning is developed, it is used to review the entire supply chain and provide links between the upstream and downstream sides. A unique product of the procurement planning is the procurement plan. From the foregoing, the significant

aspects of the problems facing the industry are traceable to the procurement process, specifically to procurement planning.

3 OUTLINE OF RESEARCH DESIGN

The primary data was based online survey [<https://docs.google.com/spreadsheets/d/1Cqer6ictAdWReGStoBbEBid0VmVg3O08FNFF36Yxf0Y/edit#gid=1963553787>]. The survey questionnaire was administered in between March 1 and 7, 2015. The survey was conducted by the co-author by sending the survey to professional colleagues, clients, and vendors. Respondents were asked based on their current experience, to tick the purpose for undertaken procurement planning on a five continuum scale where 5 denotes 'extremely often', and 1 denotes 'not often at all'. The purposes for undertaking the procurement planning were determined by mode and Average Relative Index (ARI) (Equation 1). The index is based on the cumulative weighting of the initial frequency score of each of the roles.

$$ARI = \frac{\sum_{i=0}^5 a_i x_i}{5 \sum_{i=0}^5 x_i}, (0 \leq ARI \leq 1) \quad (1)$$

Where a_i is the index of a group; constant expressing the weight given to the group; x_i is the frequency of response; $i = 1, 2, 3, 4, 5$, x_1, x_2, x_3, x_4, x_5 are the frequencies of the response corresponding to $a_1 = 1, a_2 = 2, a_3 = 3, a_4 = 4, a_5 = 5$ respectively. For interpretation, the lowest possible score is 0 (zero) while highest possible score is 1 (one). Simply put, the closer the score is to one, the higher the extent at which the service is offered.

4 FINDINGS AND DISCUSSION

Findings are discussed briefly in the following sections due to space constraints.

4.1 Respondents' Profile

Altogether, 62 usable questionnaires were received and analysed. Though the response rate is small, but previously Li *et al.* reported a study in which 500 questionnaires were administered, but only 61 (or 12%) were returned (Li *et al.* 2005). The profiles of the respondents indicated that most (47%) of the respondents were quantity surveyors (Table 1). This could be explained by the research design. With the exception of a few respondents who did not indicate academic qualifications, all the remaining 96% are degree holders. More than 80% of the respondents have more than five years work experience in the construction industry (Table 2). Some 60% of the surveyed respondents completed more than 10 projects in the last ten years and approximately 20% completed more than 30 projects each in the last ten years (Table 3). Some 70% held strategic positions in their organisations. Forty (65%) respondents were from the consultancy organisations, and some 15% were from the contracting organisation (15%). The remaining respondents were government staff, developers, and suppliers of materials. Thus, it is understood that whatever they say were as a result of the knowledge, practice and experience. The interpretation of the information above is that the respondents have

the required qualifications to provide valid and accurate information on the nature, scope, and activities in the Nigerian built environment.

Table 1. Respondents' academic background.

Professional	Quantity surveying	Engineering	Architecture	Estate management	Town planning	Others
Frequency	29 (46.8%)	16(25.8%)	9(14.5%)	4(6.5%)	1(1.6%)	3(4.8%)

Table 2. Respondents' working experience in years.

Working experience	< 5	5-10	10-15	15-20	20 and above
Frequency	11(17.7%)	23(37%)	14(22.6%)	8 (13%)	6(10%)

Table 3. Number of project completed by respondents' organization which he/she was involved in the last 10 years.

Working experience	< 10	10-20	20-30	30-40	40 and above
Frequency	22 (36%)	17(27%)	9(15%)	7(13%)	5(8%)

Table 4. Respondents' current position.

Position	Managing director	Contract manager	Project managers	Principal partner	Partner	Others
Frequency	(11%)	3(5%)	18(29%)	6(10%)	8(13%)	20(32%)

4.2 Analysis of the Purposes of Undertaken Procurement Planning

The average reliability for the construct is 0.874. Individually, the scores range from 0.886 to 0.877. The average validity is 0.681 and ranges from 0.458 to 0.812. Hence, the results are representative. Table 5 shows the distributions for undertaking procurement planning. With the average mean of 4.87 and standard deviation of 0.67, considering the relationship between mean and standard deviation ($\times\pm 1SD$; $\times\pm 2SD$; $\times\pm 3SD$), implies that about 70% of the respondents measured that procurement planning is undertaken for the purposes listed in Table 5 while 95% also considered the constructs useful or very useful.

33% of the respondents considered procurement planning to be extremely useful, 38% considered it to very useful and 19% measured it as only 'useful'. Some 10% considered it useful. The cumulative index for all the 14 purposes is 0.82 or 82%. Individually the index ranges from 0.71 (for 'decide project's location') to 0.86 (for 'establishing the time for the procurement process and contract awards to commence'). In other words, the performance of construction works and the industry impinge on the procurement issues.

Table 5. Distribution of the purpose of conducting procurement planning for construction works.

Purpose	Extremely useful	Very useful	Useful	Somewhat useful	Not useful	Not at all useful	Index
Decide what project is required	22	25	9	3	3	0	0.828
Decide when a project is required	16	22	17	4	3	0	0.785
Decide project's location	12	15	19	9	7	0	0.710
Decide method of funding	20	23	10	4	5	0	0.798
Allow planner to evaluate if project's expectations are realistic	22	25	12	3	0	0	0.844
Develop stakeholder's requirements	10	28	17	4	1	2	0.763
Develop project's objectives	20	23	14	2	3	0	0.815
Determine method of procurement	23	25	12	2	0	0	0.852
Establish the time for the procurement process and contract awards to commence	23	29	8	2	0	0	0.863
Develop technical specifications	20	23	13	3	3	0	0.812
Develop procurement plan	23	25	9	2	2	1	0.833
Make decision of selection of contractors and other consultants	23	23	11	2	2	1	0.828
Define duties, responsibilities and rights of the clients/contractors and	26	20	7	6	2	1	0.825
Make decision on ordering and purchasing of leading materials and components	25	24	9	3	1	0	0.852

As expected, this confirms the strategic importance of the procurement process. All decisions taken by clients, contractors, and statutory bodies have procurement implications that can affect the overall delivery on the constructed facilities. A strategic output of the procurement planning is the procurement plan. This is the framework used to evaluate the implications of procurement decisions on the final construction. For instance, it determines and guides the development of the schedule, it allows different works to be packaged together, establishes the requirements for resources, and serves as a control mechanism toward the work completion. It can be developed for a particular requirement, a specific project, or for a number of requirements for one or many entities

in the public or private sectors. Put all these functions into the context of construction development, it is very likely that the performance of the industry will improve as envisaged by various government and private reports on the industry.

5 SUMMARY AND GENERAL CONCLUSION

Managing a construction from the concept stage through to the operation stage and demolition stages is complex and sophisticated. However, the industry is underperforming. Hence, this study aims to justify the needs for procurement planning on construction development in an effort to improve its performance. What is found here is that the procurement planning is strategic in construction delivery that offers the stakeholders value systems. Therefore, there is a strategic need for systemic procurement planning for construction.

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