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PREQUALIFICATION METHOD STATEMENT IN CONSTRUCTION PROCUREMENT

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The current competitive environment within the construction sector is increasingly difficult and challenging, leading all the main players to increase their focus and efforts upon procurement strategies and policies. Therefore, procurement practice is important in order to effectively perform and close out the construction process and meet stakeholders' needs. Starting from a deep analysis of procurement processes framed within the project life cycle, the research proposed the prequalification phase as a selection strategy necessary to identify the contractor. In order to select the project delivery system most suitable to the customer and the project to be developed, an operating procedure has been proposed, allowing who deals with procurement better ruling the purchasing processes. In the proposed procedure, each activity is defined through a general overview, the execution process and its tools. The outputs of the study are also sample documents and model forms that can be easily utilized assisting the procurement phase. Thus, since the procurement process has assumed increasing importance in the strategic planning of the construction industry, the aim of the research is to provide a prequalification method necessary to select the most suitable contractor before the tender, in order to reduce any risks during the entire construction process.

Keywords: Building sector, Tender, Contractor, Supplier, Delivering, Project management.

1 INTRODUCTION

Procurement process has been defined as a strategy to satisfy clients' development and/or operational needs with respect to the provision of constructed facilities for a discrete life cycle (Lenard and Mohsini 1998). Thus procurement is the acquisition of the necessary project resources to realize a constructed facility and can be referred to a process of combining these necessary resources together (Rowlinson and McDermott 1999).

In a construction context which is increasingly competitive, excellence in the procurement process is essential in order to generate savings, reduce risks and optimize costs and times in any project, thus procurement process is an area of vital importance and interest to organizations responsible for delivering project outcomes (Alias *et al.* 2012).

Even though many studies have investigated different aspects of procurement, such as selection process, influence of procurement choice on the project performance and contractual mechanism of procurement alternatives (Rahmani and Maqsood 2017), there is a lack of studies focusing on supplier prequalification phase as significant part of the procurement process.

As underlined by de Araújo *et al.* (2017), managers should pay special attention to two phases of the project procurement process: (1) supplier selection and (2) supplier evaluation. Therefore, selecting the right supplier for a construction project, as well as evaluating this

supplier's performance while the contract is being implemented, plays an important role in ensuring a positive outcome.

As a matter of fact, what highly influences the procurement processes is what methods are used to select and evaluate suppliers. Also Lambropoulos (2007) highlights the importance of choosing an appropriate procurement method and asserts that a "best overall" award method does not exist, but the most appropriate method depends on the specific conditions for each particular project.

Since the offers analysis and negotiation process in a construction bid is often long and complicated, only a supplier preselection can make the bid process more efficient and reduce the risk of a short-list with unsuitable suppliers. Therefore, we present ongoing research on procurement process that proposes the prequalification phase as a selection strategy necessary to identify a bidder list of suitable contractors before the tender.

In the first part of the paper we report a synthesis of the analysis carried out on the standard procurement process used in the construction sector. In the second part we propose a prequalification operating procedure with its specific activities and deliverables.

2 PROCUREMENT PROCESS ANALYSIS

Procurement is for a company one of the biggest costs to manage, meaning that the products and services provided by the main subcontractors typically represent a high percentage on the total cost of the construction project, accounting for as much as 80% in some industries (Neuhaus *et al.* 2015). Thus, the relationship with suppliers is a crucial aspect of the construction business. Any error or delay caused by a subcontractor has a direct and serious impact on the efficiency and profitability of the work. This is why the contract system and the procurement management can lead to a very different result on a project's success.

2.1 Procurement Across the Project

Procurement process occurs in each phase of a project. The process is not composed by discrete components with well-defined interfaces, but these components overlap and interact throughout the project (Project Management Institute 2008). Starting from the PMBOK©Guide, for each of the six macro phases of the project, procurement key activities and key deliverables have been analyzed (see Table 1).

2.2 Procurement Process and Its Operating Procedure

The procurement process in construction has been summarized in the following six stages: (1) Supplier requirements identification, (2) Bidder qualification, (3) Invitation to make an offer, (4) Bid evaluation, (5) Negotiation and (6) Contract awarding. Inside the Bidder Qualification a Procurement Operating Procedure is necessary and it has been divided into four process groups and their activities and deliverables: (1) Procurement initiating and strategic planning processes, (2) Prequalification, (3) Supplier selection and contract awarding and (4) Monitoring and closing.

The Prequalification process does not take place after the strategy planning, but it is conducted simultaneously at the initiating processes after the identification of the project requirements. Table 2 represents key activities and key deliverables identified for the Prequalification process.

During the process potential bidders are requested to submit information on their companies in order for the client to select the companies that will participate to the tender. It consists of the verification of certain formal requirements, such as adequate proof of technical capability (also

through on-going site inspections), prior experience, financial and human resources, equipment and other physical facilities, managerial capacity and reliability necessary to carry out the project.

Table 1. Procurement key activities and key deliverables in each single project phase.

KEY ACTIVITIES	KEY DELIVERABLES
Procurement at the Feasibility and Conceptual Phase	
Market Investigation	Make or Buy decisions
Obtain key supplier input	Supplier Prequalification
Conduct Make or Buy analysis	Preliminary Cost Estimate
Procurement at the Preliminary Engineering Phase	
Finalize purchase orders and contract terms and conditions	Procurement Management Plan
Prepare documentation to procure critical and long lead equipment/ materials	Budget Cost Estimate
	Tender opening for long lead equipment/ materials
Procurement at the Detailed Design Phase	
Prepare purchase order documentation	Tender opening for equipment, materials and construction services
Procure long lead equipment/ Materials	
Procurement at the Construction and Start-Up Phase	
Procure equipment, materials and construction services	Procurement /contract documents
Procurement at the Closeout Phase	
Close purchase orders and contract accounts	Close out report

Table 2. Prequalification process key activities and key deliverables.

KEY ACTIVITIES	KEY DELIVERABLES
Define chartered prequalification team, roles and responsibility	Responsibility assignment matrix (RAM)
Conduct market investigation	Prequalification Plan
Define prequalification strategic planning	Categories of work and purchasing item
Define prequalification criteria	Define prequalification process timing by steps
Set up prequalification documents	Prequalification score grid
Solicit interest from potential bidders	Prequalified bidder short list
Applicants evaluation	Prequalification final report
Close prequalification	

Based on the prequalification results, a bidder list is drawn up of the companies eligible to compete. This is an opportunity to ensure that in the final bid evaluation, the contracting authority is able to compare "apples to apples" rather than "apples to oranges" (Diop 2017).

Starting from Prequalification process key activities and key deliverables identified, below we describe the prequalification operating procedure proposed.

3 PREQUALIFICATION PROCESS

The prequalification objective is to enter into an agreement with a contractor who possesses the necessary technical skills, resources and financial backing to give the client the best possible chance of the project being completed within the required time, cost and quality standards.

Thus, the prequalification procedure allows to select potential contractors and suppliers so that, during the bid analysis, the client consultant could evaluate offers focusing on the economic and technical issues, avoiding the second time analysis of those subjects already validated. Besides, prequalification reduces time dedicated to the offers analysis, saving time necessary for the negotiation phase.

3.1 Prequalification Operating Procedure

The prequalification operating procedure proposed is characterized by various activities, in Figure 1 are shown the links between them. Each activity has been identified by a Roman numeral and the most significant are described in the following paragraphs. The left column contains major factors that constitute the input of some activities; in the middle, tool & techniques are the documents that can be used performing the prequalification. The right-hand column lists the main documents or documentable outcomes of the activities.

3.1.1 *Prequalification strategic planning*

Prequalification requires a strategic planning phase to develop the appropriate selection strategy and respect the times dictated by the tendering process and also the project schedule. The first assessment to do would be to understand if the qualification is performed because the client is looking for potential bidders with reference to a particular project, or whether it is a general qualification carried out regardless of the type of items to be purchased but that allows the company to create its own database of qualified contractors. Anyhow for each category of work, in which it was decided to divide the project, or each item to purchase, the procurement manager must decide the prequalification approach and develop a work plan. Thus, the study has developed a model form "Prequalification strategy" and another "Prequalification plan".

3.1.2 *Prequalification criteria and documents*

To conduct an evaluation of possible candidates, prequalification criteria have been fixed and first divided and organized in the following groups: general criteria, financial criteria, technical capabilities, past performance and contract-specific criteria. Prequalification criteria have to be set up at the same time as the prequalification documents are prepared and the criteria should not be changed during the prequalification evaluation process.

The prequalification documentation depends on the type of contract that has been selected, the complexity of the item to purchase and the project complexity. They are prepared by the Procurement Department with assistance for the legal, administrative and technical issues. Prequalification documents include: prequalification letter, instructions to applicants, technical documents, prequalification document list and prequalification submission form.

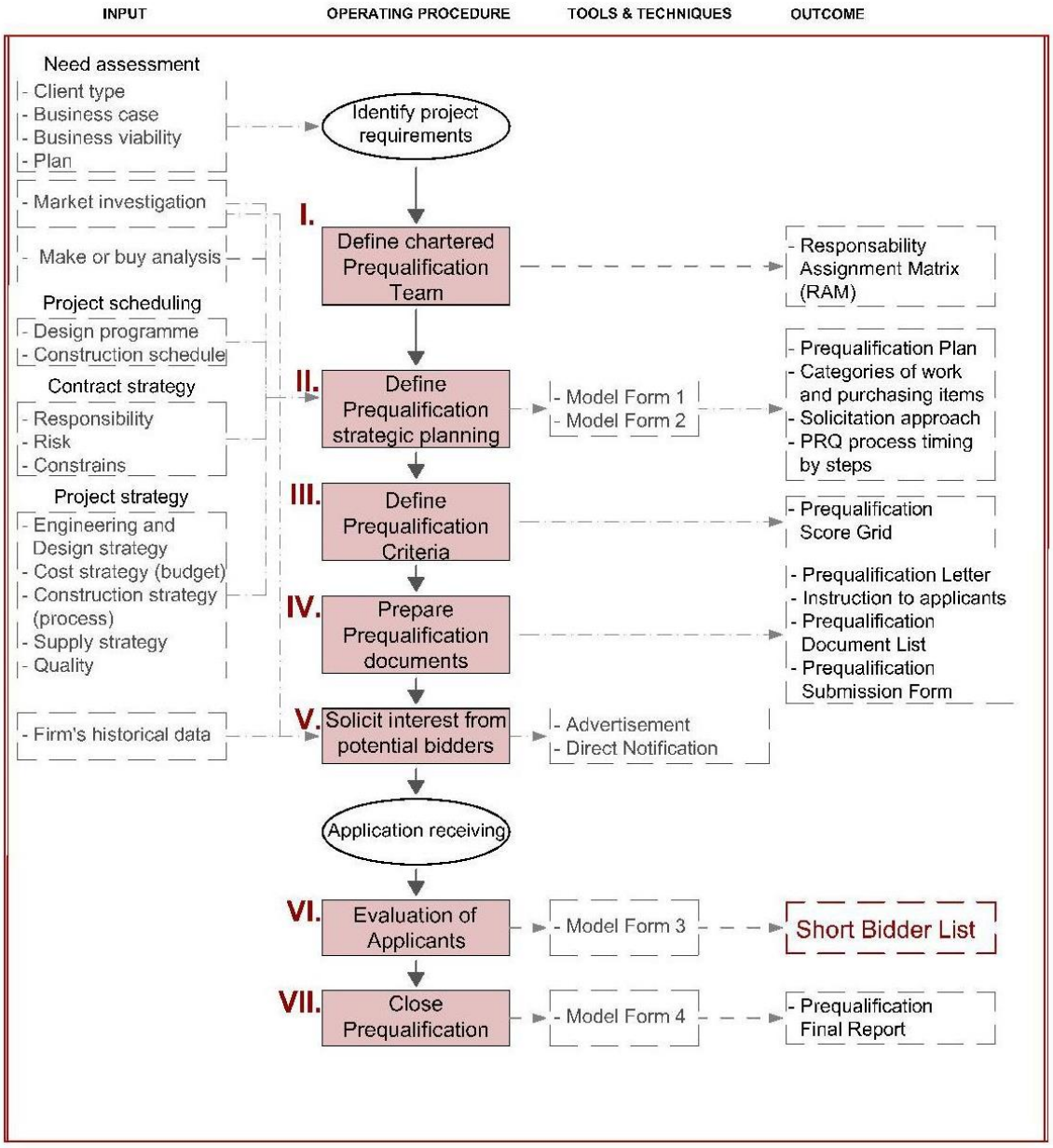

Figure 1. Prequalification process.

3.1.3 *Evaluation of applicants*

The evaluation procedure has been divided in two stages according to the complexity of the qualification requirements. The first step is a Preliminary Examination to assess the formality of the documents required, the completeness of application and the eligibility of the application, for each bidder, utilizing the pass-or-fail method. In the second place, a qualitative evaluation is employed to examine whether submitted documents comply with the qualification requirements by following the criteria set up. The result of the prequalification procedure is the selection of

prequalified applicants and the recommendation to the client. If the client approves the bidder list becomes part of the Procurement Plan.

4 CONCLUSION

The goal of the procurement phase is to secure bidders of each bid package who are qualified, competitive, interested in the work, and capable of doing the work within the time, cost and quality requirements. The principles and procedures outlined are applicable to the procurement of goods, services and works. In particular, the study proposes the prequalification phase as a selection strategy necessary to identify a bidder list of suitable contractors before the tender, in order to save time during the offers analysis. The research work is going on focusing on the analysis and identification of the prequalification criteria based on categories of work or items to purchase. Furthermore, in order to validate the operative procedure proposed, a significant application is necessary in procurement process, identifying similar tender case studies.

References

Alias, R. H., Noor, N. M. M., Selamat, A., Saman, M. Y. M., and Abdullah, M. L., Decision Making Model for Electronic Tender Evaluation (ETE) Using Fuzzy AHP with Extent Analysis Method, *International Journal of Digital Content Technology and its Applications*, 6 (22), 79-89, 2012.

de Araújo, M. C. B., Alencar, L. H., and de Miranda Mota, C. M., Project Procurement Management: A Structured Literature Review, *International Journal of Project Management*, Elsevier, 35, 353-377, January, 2017.

Diop, M., United Nations Development Programme. Implementation-Tendering&Procurement. 2017. Retrieved from http://pppue.undp.2margraf.com/en/16_2.htm on September 16, 2018.

Lambropoulos, S., The Use of Time and Cost Utility for Construction Contract Award Under European Union Legislation, *Building and Environment*, Elsevier, 42(1), 452-463, January, 2007.

Lenard, D., and Mohsini, R., *Recommendations from the Organisational Workshop*, CIB W-92 Procurement – The Way Forward. The University of Montreal, Davidson C. H. and T. A. Meguid, CIB, 1: 79-81, May 18-22, 1998.

Neuhaus, K., Umbeck, T., Schmitz, A., and Gerhard, R., Why Procurement Matters, January 22, 2015. Retrieved from http://www.bain.com/publications/articles/why-procurement-matters-video.aspx on September 16, 2018.

Project Management Institute, *A Guide to the Project Management Body of Knowledge (PMBOK© Guide)*. Fourth ed. Pennsylvania: Project Management Institute, Inc., 2008.

Rahmani, F., and Maqsood, T., An Overview of Construction Procurement Methods in Australia, *Engineering, Construction and Architectural Management*, Emerald Publishing Limited, 24(4), 593-609, 2017.

Rowlinson, S., and McDermott, P., *Procurement System: A Guide to Best Practice*, Spon Press, London, 1999.