

# Review of Contractor Prequalification Criteria and their Impact on Project Success Factors

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**Abstract:** Selection of contractor for construction project has a big influence on successful completion of project. The prequalification of contractors is accounted as a very important step in contractor selection as it involves selection of qualified contractor which is the prime factor in the field of construction management. There are various factors that must be taken into consideration while prequalification of contractors. This paper provides an overview of evaluation of five criteria's along with their sub criteria. Adapting of inappropriate criteria, inappropriate significance attributed to the criteria and application of inappropriate methodology for the contractor evaluation and selection task are the three prime causes of inadequate contractor prequalification. So the aim of this paper is to review the concept, principles of prequalification and the influence of various criteria's on project success factors. The outcomes of this paper will serve as the basics for further empirical studies on contractor prequalification criteria.

**Keywords:** Contractor evaluation, Inappropriate criteria, Prequalification, Project success factors.

## 1. Introduction

Successful completion of construction projects within the specified budget, schedule and stipulated timeline depends largely on correct prequalification requiring sound selection of contractors. Regardless of the wrong choice of contractors, many building projects suffer time and cost overruns. This problem is more apparent in the government contract where the contracts are awarded not to the receptive bidder to the lowest bidder as they fulfilled the requirement of prequalification requirements which is one of the important factors during the selection of contractors. There are many theoretical structures or models used in contractor's assessment, with some specific requirements for choosing a suitable contractor. Prequalification as per R. Rustom (2007) is a method of choosing contractors based on their credentials and enabling them to move on to the next stage of planning for and submitting tender. E. Sawalhi (2007) defined prequalification as a process of elimination in which invited contractors are screened for the purpose of shortlisting applicants which would then move on to tendering.

Looking at the above contributions, the paper describes prequalification as a method used in evaluating contractors to

meet the requirements set for bidding for a certain construction project prior to the issuance of plans, specifications and next stage proposals. This requires a broad variety of requirements for which, according to recessed economy, information given by contractors is often qualitative, subjective and imprecise. The standard prequalification process requires a screening protocol based on a set of parameters that are then further compared and weighted against each other. TOPSIS (Technique of Order Preference by Similarity to Ideal Solution) is implemented for final decision-making based on the determined weights for various multi-criteria techniques such as the Analytical Hierarchy Method. This paper explores how different parameters influence the timing, expense, and quality of the key project objectives.

## 2. Literature Review

Russell (1996) categorized contractors' prequalification criteria into three categories: preliminary screening criteria (including reference, reputation, past performance; contractor resources (financial, technological, current work program status); and other items (project-specific criteria) while Palaneeswaran and Kumaraswamy (2001) grouped contractors' pre-qualification criteria into three classes, namely: Responsibility:- timeliness, reliability, completeness, compliance with deadlines, consistency and relevant information, completely in the provision of information; Responsibility: Project location, compliance with law and local government regulations, standards and regulations, health and safety system; and Competence:- capital (financial, machinery, plant and equipment, human), expertise, constraints (current).

Based on these classification, D.W. Cheetham (1993) explained that the aim of prequalification is often not only to determine managerial competence of a contractor on the periphery but also to reduce bias, subjectivity, nepotism, and even fraud from the process in a recessed economy as these criteria differ from location to location. The paper includes factors influencing the choice of contractors such as experience/technical, trade records, safety records, and staff available and so on are often looked at in most prequalification systems with different perspectives. These factors are often

placed in a weighted-score system to evaluate and compare the contractor’s assets and liabilities. In public bidding, several Multi-Criteria Decision Making (MCDM) methods for contractor prequalification have been developed by various researchers (Russell, 1988; Russell and Skibniwski, 1988) to assist public clients in selecting a qualified contractor to avoid project delay, failure, misuse of fund and abandonment. Z. Hatush (1997) investigated prequalification criteria upon which the contractor screening was based on reducing subjectivity using analytical tool in Saudi Arabia. Olatunji (2006) studied process for selecting contractors for construction works in Nigeria. The study only revealed a strong relationship between contractor performance of construction projects and technical capability. The paper concludes importance only to technical capability while regarding others criteria as insignificant. Ernest Kissi and Emmanuel Adinyria (2019) investigated the impact of contractors prequalification on construction project delivery with empirical arguments and has given some recommendations regarding success in construction project delivery performance in terms of time and quality in the adoption of due process, not minding cost of the project.

The fund’s credentials (i.e. financial ability, prior experience, business strategies, skills, efficiency and experience, etc.) and project characteristics (e.g. working time, cost, value, length, complexity, venue, size of the project, form of contract and difference in the price of the contractor and the next lowest price of the contractor, etc.) are financed by the contractor. The contractual qualification Building projects 'time delays and cost increases are closely linked to contractors' qualifications criteria (financial, professional, experiences, etc.). Quality production of contractors is considered key to customer satisfaction in building projects. The decision to choose a building contractor is influenced by many priorities. A comprehensive review of the project characteristics and the particular requirements of the customer, i.e. its ambition and risks, is needed to choose the best direction for procurement and tendering.

### 3. Principles of Prequalification

The primary aim of the pre-qualification program is to identify those contractors who are capable of performing the job less expensively. Nonetheless, only eligible contractors are invited to the tender and there should be no discrimination in the accepted list between local and foreign contractors in the selection process. The nominee contractor should have expertise in performing to the quality and the wishes of the owners. In addition, pre-qualification of the contractor is undertaken to ensure that the contractor's characteristics and capabilities conform to the project's desires and are used to create a set of requirements on which the contractor's competence is evaluated and assessed Thus, Pre-qualification is a vital feature of the lifecycle of the building project and has a heavy presence in risk management issues. To achieve useful outcomes from the prequalification process, it is important to

know how various requirements for the selection of contractors will influence the key objectives of the project in terms of time, expense, and efficiency.

### 4. Criteria’s for Pre-qualification

To ensure the quality of contractors, the assessment can be performed in advance using a prequalification process. Facing the owner's attention over his ability to manage the operations business aspects during prequalification, the contractor may concentrate on the details of the construction project until it has gone through prequalification and is shortlisted. Prequalification in the simplest sense is a pre-appointment process that allows the most eligible applicants to be chosen from among those who announce willingness to participate in the tender. Pre-qualification process includes various types of requirements for determining the overall suitability of contractors, such as: general, technological, managerial and financial qualifications, financial viability, managerial and operational skill, professional competence and comparative construction experience Value of practice, business size and safety record.

#### A. Financial Soundness

Since the vast majority of contractor firms that work on maintenance contracts are chosen solely on the basis of their lowest tender price the first pricing criterion are deemed to be relevant.

Secondly, review of credit rating parameters is a critical step in evaluating the applicant contractor's financial position,

Table 1  
Main Criteria and Sub-criteria for Contractors Prequalification

Financial soundness	Tender Price Positive Credit Rating Banking arrangements and bonding Cash Flow
Technical ability	Experience Plant and equipment Personnel Quality assurance
Management capability	Performance and consistency of the past Organization and project management Professional workers experience Knowledge management
Health and safety	Safety Experience modification rating OSHA Incident rate
Reputation	Past failures Length of time in business Owner/contractor relationship Other relationships

financial well-being and trust. Credit assessment describes the financial strengths and limitations of the client and their willingness to comply with the project and fulfill their obligations to financial partners of the project and contractors.

Furthermore, Bank agreements were studied as a measure of a contractor's financial soundness, which was seen as an important criterion for a project's time and expense, and as a major factor in the selection of good contractors.

For the prequalification of contractors, cash flow

requirements are expected because they play a significant role in managing the firm, as most contractor payment is paid in cash. Their willingness to fulfill their contractual commitments is in considerable part expressed in it.

#### B. Technical ability

Practical experience in the field is a significant consideration and should be given priority when evaluating a contractor.

It should not be the key goal of the owner to choose even the lowest price tender. Equipment of the contractor plays an important part in the selection of contractors. The entrepreneur who owns his own equipment, for example, would be better than a contractor who leases his equipment. This is why it is necessary for the assessment of contractors to be aware of quantity, type, circumstance, age and condition of equipment.

Quality assurance includes all the processes and functions that are required to ensure sufficient trust in a product or service to fulfill the quality requirements. The contractor should be able to reliably track the performance and the use of all materials and procedures, to achieve the desired goals and to implement them properly.

#### C. Management capability

Previous performance and efficiency plays a critical role in evaluating the success of previous projects undertaken by a contractor that further influences the success of the potential project. The contractor who has completed more work would therefore have learned from previous mistakes and therefore reduce delays in subsequent projects. Therefore, a list of completed projects should be given by the contractors under consideration.

It is important to take into account the experience of professional staff under the contractor because it has a major impact on the quality of the work. Contractor management expertise covers communication skills, risk management skills, technical skills, negotiating strategies and team management skills, etc.

#### D. Health and safety

Contractors' safety criteria during prequalification include safety management program implemented at previous work sites, techniques adopted for risk evaluation, etc.

The Experience Modification Rating is considered a safety test for eligibility. In addition, it should be 1.0 or less to bid on a project because it is used to measure the quality of the protection system for contractors.

OSHA accident rate is the previous information of workers operating under contractor control.

It also requires reporting fatality within 8 hours, notifying OSHA employees of injuries or incidents that occurred.

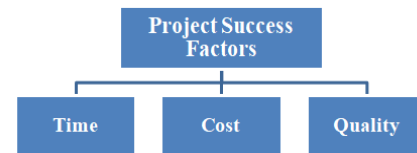
#### E. Reputation

Lack of awareness, not enough funds to last due to delays in payment, poorly qualified workers are some of the factors that cause construction projects to fail.

Contractor credibility is one of the key factors considered in the process of prequalification. The relationships between the owner and the contractor have a great effect on the credibility of the contractor, which involves influencing factors such as loyalty and contact between parties, trustworthiness and contractual flexibility etc. Here are some of the considerations that are taken into consideration during contractors' prequalification process.

### 5. Project Success Factors (PSFs)

All procurers have goals or concerns which can be defined in similar terms. We all lead in varying degrees to the prevailing success factors of time, expense and efficiency of the project.



#### A. Project Success Factors (PSFs)

PSFs are categorised into following three categories;

##### 1) Time

The time to complete the project is planned to make use of the building by a date decided by future plans for the company. Customers vary in their ability to hire only certain contractors that are capable of reaching target dates. Most contracts contain an incentive provision to enable the contractor to accelerate the construction phase and to reduce delays. In short, to complete the work in scheduled time, the contractor will follow speed in his work.

##### 2) Cost

Cost has traditionally been the key concern for consumers. Many want value for money, although this is sometimes taken to mean the smallest possible amount of spending. The concept is based on the conventional competitive tendering system. One consequence of this is that costs, determined by the contractor's bid price, are often used as the sole criteria for the selection of contractors. However, a vast number of projects end up costing more than the price of the initial tender.

##### 3) Quality

Design quality is characterized as 'the totality of features a product or service needs in order to satisfy a particular need.' It is assumed that the implementation of new methods of procurement in recent years has led to a decrease in quality and that quality is regarded in the selection of contractors as a key criterion.

To order to ensure the performance of the project, contractors will have an appropriate level of personnel, a clear record of execution of the budget, and a financial management and quality assurance capability. To gain customer loyalty, companies need to consider what their clients need, and how to satisfy those needs. Quality assurance includes all the processes and functions that are required to ensure sufficient trust in a

product or service to fulfill the quality requirements.

### *B. Impact of prequalification criteria on project success factors*

The impact of prequalification criterias on the three PSFs is referred from previous case studies and literature works as below;

- *Financial capabilities*

In the basis of some research analyzes, the financial capabilities of contractors are not considered to be the most important pre-qualification requirement in the report, as contractors are granted advance mobilization in the projects carried out and clients typically ensure that funds are sufficient for any project prior to the award. Contractors with adequate financial resources prefer to complete significant work before applying for payment, because it allows for consistent job execution, and thus no time overruns are encountered. Often, if the funds are not sufficient, contractors cannot buy high quality equipment, skilled labour, and materials of good quality. Both of these factors contribute to the consistency of construction job issues.

- *Technical considerations*

Contractor professional capabilities decide the quality and production pace of building projects. Generally, a contractor with high technological skills is an example of how well the contractor can perform the job at hand. Studies have shown that the experience of the contractor indicates how well similar projects have been managed in the past. It is very important for the contractor to demonstrate their involvement in other earlier projects, particularly if they are similar to the project that will be carried out. A contractor's expertise ranks first in tender assessment. It is a common statement as multiple studies have shown that a contractor's cumulative experience has a substantial impact on project performance. Contractors with similar previous project experience raising the risk of building delays as they can adapt and overcome unexpected project challenges during project development. This thus reduces the risk of repeating mistakes made in related previous ventures. We say that the general knowledge of the contractor is a critical category in the pre-qualification of the contractor and that clients and consultants should attach a great deal of value to it.

- *Management considerations*

Management includes mechanisms such as preparation, management, teamwork, command, and control. Planning and monitoring is a significant contributor to the performance of a project. A contractor needs to show that he can schedule, coordinate and manage a project. Clients also need to determine a contractor's ability to handle the whole project during the prequalification stage. Good management skills have an effect on relationships with the customer, manufacturer and other contractors who may be working on a specific project as subcontractors. Consideration of management is often below the technological and financial considerations.

- *Health, safety and environmental considerations*

Past reports indicate that accident and injury expenses are around 8.5 per cent of the contract price. On-site incidents can also prolong building proceedings which may result in a toll on the nature of the work being carried out. Insufficient or lack of workplace health and safety impacts the time required to complete a building project. The incorporation of environmental factors can be due to the building industry's tremendous understanding of sustainability that includes social, economic and environmental aspects. Sustainability climate division focuses on environmental risks and degradation. Consequently, over-concentration on human needs would lead to extreme outcomes such as global warming, Green Land degradation, ozone layer loss, and so on. Hence, enormous knowledge must be generated in terms of sustainability and environmental performance; it must be treated as a critical category of prequalification requirements for contractors.

- *Reputation considerations*

Considerations of reputation involve all the past success and attitude displayed by a contractor in previous projects. For future ventures this is a strong source of judgment. The owner-contractor relationship as well as other relationship may have a detrimental effect on the project affecting successful project completion. However, the assessment of a contractor's reputation is very difficult and mostly subjective. This is why reputation has poor importance and performance rankings.

## 6. Conclusion

Expertise of decision maker plays an important role in construction industry as contractor prequalification mainly relies on it. Contractor prequalification being a complex, multi-criteria decision-making process, needs selection of qualified contractors for execution of construction works within stipulated budget and time. The review study showed a total of five main contractor prequalification criteria category, namely, technical considerations, management considerations, financial considerations, reputation considerations and health, safety and environmental considerations. The analysis gives an insight into how the capacities of the contractor in terms of the above parameters impact time, cost and efficiency differently. Many researchers' past empirical studies suggest that technological skills such as a contractor's overall expertise and a contractor's financial soundness have a significant effect on project performance.

This research will allow owners to review their current pre-qualification processes and will provide them with recommendations for improvements to the tender assessment process. The key benefits of this analysis are the documentation of the concepts and perceived impact of various prequalification requirements on project objectives, which will be further helpful in the adoption of effective contractor selection technique. The result of this study broadens practitioners and researchers' awareness of the different conditions for the prequalification of contractors.

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