

**Global Journal of Advanced Engineering Technologies and Sciences****ASSESSMENT OF FACTORS AFFECTING SELECTION OF CIVIL CONTRACTOR****Abhilash A. Jagtap\*, Mukul. W. Wankhade**

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**Abstract**

Selection of a contractor is a key decision made by clients and the process of selection a contractor has become an important issue in construction projects. The need for achieving good contractor for the finished product in the construction projects is very important to meet the requirements of the clients. The factors affecting the selection of civil contractor for construction were identified based on literature review and interviews of government organization personnel. The data was collected by semi structured interviews and questionnaire survey of Government Organizations Amravati Region. This study is intended to identify the factors that affect the selection of civil contractor of construction projects and ranking them as per their degree of importance using Relative Importance Index Method (RII). The top five factors affecting the selection of civil contractor of construction projects are Finance, Experience, Health and Safety, Organization Capability and Quality. Meanwhile the Environment, Planning and Control, Resource these factors has been given the least importance amongst all the responding organizations.

**Keywords:** Contractor Selection, Relative Importance Index (RII), Finance, Environment.

**Introduction**

Construction industry plays an important role in the development of any country. Development of construction industry depends on the quality of construction projects. In order to ensure a successful completion of a project, a comprehensive and careful assessment of contractor data in a prequalification stage is required. Appointing an appropriate contractor to carry out the construction work therefore, becomes one of the most important tasks to ensure the success of a project. Despite the increasing use of alternative forms of project delivery systems in the last two decades, the performance of the construction industry has declined as many projects end up with sub-standard work, delays and cost over-runs.

The selection of construction contractors are very often conducted during tendering. Tendering definitely gives a client a choice in awarding contract a company which proposes the lowest price and short construction cycles, but usually they do not allow to precisely evaluating a tender. At the same time there are more and more procedures in which the decision criterion of choosing a tender is the price. In recent years, most clients made use of such a method. On the other hand, the research results show that the cheapest tendered often have problems with completing the project. Accepting the lowest price is the basic cause of the project completion problems because very often lowering the price means lowering the quality. It is true in some cases. The above conditions make that it is especially important to properly evaluate the contractor's capabilities.

**Methodology Adopted**

Methodology involves interaction with various personnel's involved in construction work. Based on the interaction and the literature review factors affecting the selection of contractors are identified Table 1. The life-cycle phase of building projects consists of pre-construction, construction and post construction phase. Questionnaire is mainly focused on the starting phase of project because the selection of contractor is mainly hampered the project in all phase. Appropriate questionnaire was designed based on the interaction with personnel's involved in construction and literature reviewed. The questionnaire was administered to the group of respondents namely representatives of Government Organizations only.

The survey was conducted at various sites so as to collect data required for assessment of factors affecting the selection of contractor. The population for the study comprises of representatives of government organization who have been involved in the management and execution of public projects where selection assurance practices are of paramount effect within the study area. The population was determined by selecting respondents at random. Further the collected data was analyzed so as to rank those factors as per their degree of importance. Figure 1 presents the methodology adopted for dissertation study.



**Figure:1 Adopted Methodology**

Relative Importance Index method (RII) was used to rank these factors as per their degree of importance. The data was collected on the basis of responses from Government Organization. By using RII method the major factors that affect the selection were ranked accordingly. Table 1 presents criteria and sub-criteria which are being ranked by the respondents.

**Table 1: Factors Affecting the Contractor Selection Criteria & Sub-Criteria**

Sr. No.	Criteria	Sub-Criteria
1	Experience	Type of past project completed
		Size of past project completed
		Numbers of projects completed
		Experience in local area
		Overall experience
2	Finance	Bid price
		Competence
		Financial Soundness

		Credit history
		Liquidity
		Profitability
3	Resource	Technical Manpower
		Plant & equipment
		Material management
		Labour Force
4	Management	Knowledge
		Capability
		Project management system
		Risk management
5	Health & Safety	Safety management
		Accidents in past projects
		Management safety accountability
		Health & safety records
		Safety performance
		Insurance policy
6	Reputation	Past failure
		Relation with Sub contractor
		Client satisfaction
		Relation with suppliers
		Claims
		Dispute history
		Length of time in business
		Non-excusable delays in the past project
7	Technical capacity	Qualification of staff
		Experience of staff
		Knowledge of staff
		Expertise in particular construction method
		Qualification of contractor
8	Quality	Quality management system
		Quality assurance
		Experience of quality control unit
		Ability of quality control unit
		Equipment in quality control unit
9	Past Performance	Quality level of projects completed
		Project completed on time
		Project completed in budget
		Records of disputes & conflicts
		Current work load
10	Environment	Waste disposed during construction
		Environmental plan during construction
		Materials used in construction
11	Planning & Control	Plant maintenance program
		Flexibility in critical paths
		Ability to match quality expectations
		Control plan
12	Organization capability	Experience in business
		Size of organization
		Image of organization
		Skilled man power

		Organizational structure
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**Relative Importance Index Technique**

The Relative Importance Index method is used to determine the relative importance of the various factors. The goal of such analyses is to partition explained variance among multiple predictors to better understand the role played by each predictor in a regression equation. The five-point scale ranged from 1 (Not important) to 5 (Extremely important) were adopted and transformed to relative importance indices. The RII was used to rank the different factors which affect the contractor selection criteria. These rankings made it possible to cross-compare the relative importance of the major factors and minor factors amongst each major factor as perceived by the government organization. Each individual factors RII perceived by all respondents should be used to assess the general and overall rankings in order to give an overall picture of the factors affecting the contractor selection criteria of construction industry.

The RII was computed as follow:

$$RII = \frac{\sum W}{A * N}$$

Where,

RII - Relative Importance Index,

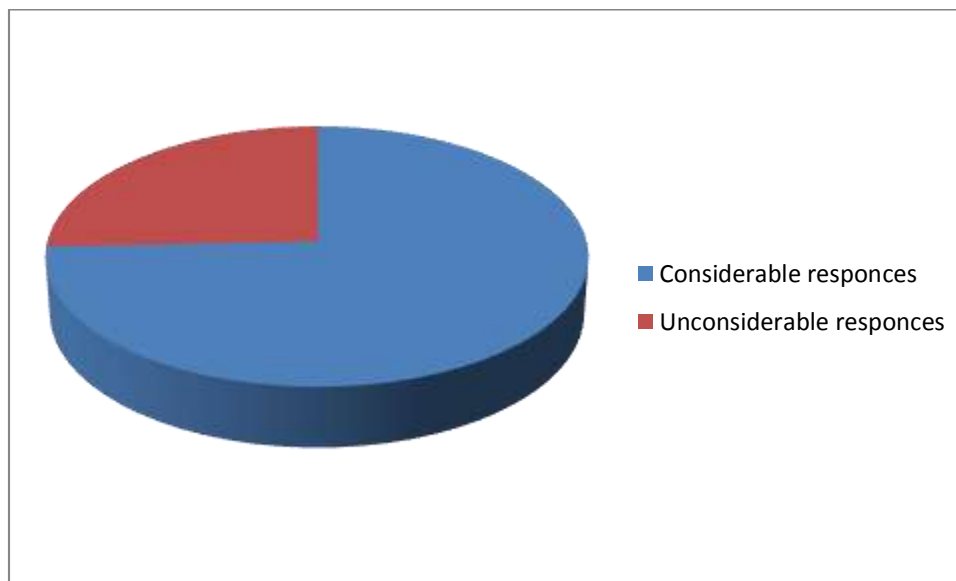
W = weighting given to each factor by the respondents (ranging from 1 to 5)

A = highest weight (i.e. 5)

N = total number of respondents

**Result**

This study involves a questionnaire survey approach from which statistical data was collected to answer questions in respect of the main subject of study. Questionnaire is the main tool used. Figure 2 represents the percentage of responses received from representatives of Government Organizations. The questionnaire survey was carried out by meeting various respondents which resulted in total sample size of 75. Out of 75 questionnaires distributed, 58 were completed, returned and considered i.e. response rate of 77.33 % were from Government Organization.



*Figure:2 Percentages of Respondents*

The computed RIIs and their respective ranks as perceived by respondents are summarized in Table 2. It illustrates ranking of factors affecting contractor selection criteria of construction projects. It can be inferred from this Table 2 that most important factor according to the perception are Finance, Experience, Health and safety, Organization capability, Quality. According to respondents, it seems that Finance factor is the most important performance factor

as it has the first rank among all factors with relative index (RII) equal to 0.921. Experience factor has been ranked in second position by the respondents with RII equal to 0.897. Both Health & Safety and organization capability Issue has been ranked in third & fourth place with RII equal to 0.890. Quality has been ranked in fifth place with RII equal to 0.886. Technical capacity has been ranked by contractors in sixth place with RII equal to 0.869.

Management has been ranked in seventh place with RII equal to 0.859. Reputation, Planning & control, Resource, Past performance has been ranked eighth, ninth, tenth & eleventh with RII equal to 0.834, 0.828, 0.824 and 0.752 respectively. Environment the worldwide important issue has been ranked last (i.e. twelfth) with RII equal to 0.721.

**Table 2: RII and Ranking of Factors that Affect Contractor Selection**

Factor	RII	Rank
Experience	0.897	2
Finance	0.921	1
Resource	0.824	10
Management	0.859	7
Health and Safety	0.890	3
Reputation	0.834	8
Technical capacity	0.869	6
Quality	0.886	5
Past Performance	0.752	11
Environment	0.721	12
Planning & Control	0.828	9
Organization capability	0.89	4

## Conclusion

The competitive edge in the construction industry depends on the selecting quality contractor for construction process. There are several factors that may affect the selection of the construction process. However, in construction project the process is complex and specific factors may contribute more or less than others to the level of the selecting contractor comes first. This study will create the contractor selection awareness to all level construction companies & government organization. From this paper we get the major & minor issues which affects the selection and that create a chance to find out the remedial measure which helps to increase the customer satisfaction and government reputation.

After analyzing the survey results it was observed that from Government Organization Finance, Experience, Health and Safety, Organization Capability and Quality are of more importance. However Environment, Planning and Control, Resource factors has been given the least importance amongst all the responding organizations.

Meanwhile, the factors ranked last in this paper by the respondents they are required of given more importance for betterment of construction projects.

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