

QUALITY – COST TRADE OFF (QCT) FOR CONTRACTOR SELECTION

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Abstract

The construction industries has witnessed the failure of many projects led to the contractor selection. The various reasons of project failure concern contractor selection is financial problems, poor performance lack of adequate quality consideration at worksite. All these incidents is depend upon the current system of awarding the contractor in which only price is competitiveness. To achieve the best value for money, the tender evaluation should consider not only price, but also compliance with Client's requirement. A quality cost trade off (QCT) based contractor selection model is structured to cover non –price attributes i.e. quality together with the bid price. The (QCT) model enables the user to designate the weighting of non price and price criteria depending on the need and wants of the client and or project. The results show that the model provides a guide for the client to reward experienced, capable and qualified contractors, and eliminate incompetent, inexperienced for the success and quality of work.

Keywords— Tendering; Competitive bidding strategy; Contractor selection;

1. INTRODUCTION

Traditionally the project is considered successful if delivered on time , within budget and quality. The concept of project success is directly depend upon the perception of participant i.e. the client, the architect and the contractor. From project to project participant have their own opinion of success. Contractor selection is very typical task because the contractor play a vital role for success of project. Executing the project as per client's requirement, evaluation of contractor and selection of best bidder requires a sophisticated knowledge and experience.

The traditional bidding method is based on the lowest tender price, in which the bidder have no idea about price of the competitive bidder, so he offers the lowest bid price to win the bid, compromising the quality. However, low price, product or services may not meet the quality requirement. Bid evaluation based on the lowest bid price is suitable in simple and small size projects, but it failure for complex and innovative work. Therefore contractor selection process based on quality consideration is required to improve the drawback of the traditional tendering method. This study aims to present a model for selecting the best bidder take into account the factor price and quality also.

2. ESSENTIAL OF QUALITY IN CONTRACTOR SELECTION

It is required to achieve objective in term of procurement outcome, quality criteria should be introduce into the evaluation of tender. Yet means of ensuring that only those tenders who are likely to deliver the required quality and compete for the award of a contract. Quality and cost directly proportional to the nature of work i.e. innovative

project, complex project and simple project. If nature of work becomes more and more complex the procurement outcome become complex i.e.; the product and services with higher quality will be quoted higher price. Figure -1 indicate the relationship between price, quality and nature of work.

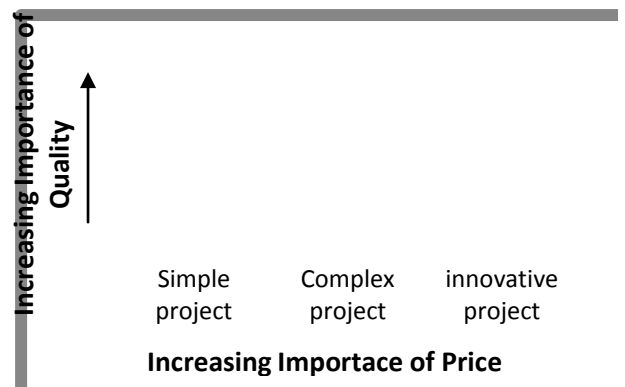


Fig. 1 Relationship between price, quality and nature of work

Quality criterion based on types of work possibly broken down into the sub-criteria to facilitate weightage to differed quality as per requirement of owner. According to CIDB, Pretoriya ,(1) and Turkish public procurement law (2) quality criteria and maximum score allocated to quality is considered and listed in Table -1. The total weight of price and quality are equal to 100 percent . the scope of work define the weighting score of each, this weighting according to project type is as follows.

- Between 20/80 and 40/60 for innovative project
- Between 15/85 and 35/65 for complex project

- Between 10/90 and 25/75 for simple project
- Between 05/95 and 10/90 for repetitive project

The maximum score for various evaluation criteria varies according to the nature of project, whether it is simple, complex or innovative and significance of the criteria for the project to be successful.

Table -1 Quality criteria and maximum score for bidder evaluation.

S.no	Evaluation criteria	Explanation	Maximum score(out of 10) for		
			Innovative project	Complex project	Simple project
1	Methodology and work plan complete in time frame	Availability of an outline of quality assurance / quality control (QA/QC) programs, Availability of ISO 9000 certification (or equivalent) .	5	4	2
2	Organization and staffing	Availability of ISO 9000 certification (or equivalent) or intention to Register, Minimum period of trading under same company name (attained stability, reliability and accrued experience)	2	2.5	3
3	Experience of key staff	Degree of education, experiences, capabilities and competencies, skills including professional and technical expertise, and special Personnel qualifications of key construction personnel	2	2.5	3
4	Project specific performance	By notices about past clients' levels of satisfaction with the quality of previous works by the contractor (Architectural-aesthetics-structural aspects; electrical-mechanical systems; geotechnical and foundation aspects; maintenance, reparation and technical assistance etc) in the past years	1	1	2

3. CASE STUDY

The design build Innovative construction case is selected from the project of CWE at Gwalior for alteration of building estimated cost of Rs 50,78 lac. There are six

contractor offering tender for the construction work and submitting quality information as per client's requirement with addition of their own bid price as shown in Table -2

Table 2

Evaluation criteria	Maximum score(out of 10)	Contractor id / relative score					
		A	B	C	D	E	F
Methodology and work plan complete in time frame	5	3.5	4	3.5	4	3.5	2.5
Organization and staffing	2	1	1.2	1	1.4	1.4	1.2
Experience of key staff	2	0.8	0.8	0.8	1.6	1.2	1.2
Project specific performance	1	0.4	0.5	0.3	0.8	0.5	0.7
Total score	-	5.7	6.5	5.6	7.8	6.6	5.6
Total maximum score	-	10	10	10	10	10	10
Quality score percentage %	-	57	65	56	78	66	56

Table -3 Ranking of contractor

40/60	Contractor identification					
	A	B	C	D	E	F
Quality score %	57	65	56	78	66	56
Adjusted Quality score %	73.07	83.33	71.79	100	84.61	71.79
(a) Weighted Quality score (40%)	29.22	33.33	28.71	40	33.84	28.71
Bid price	55.25	54.9	54.8	53.9	52.1	49.06
Adjusted price score %	88.79	89.36	89.52	91.02	94.16	100
(b) Weighted price score (60%)	53.27	53.61	53.71	54.61	56.49	60
Total score (a + b)	82.49	86.94	82.42	94.61	90.33	88.71
Ranking	6	4	5	1	3	2

Table -4 Ranking of contractor

30/70	Contractor identification					
	A	B	C	D	E	F
Quality score %	57	65	56	78	66	56
Adjusted Quality score %	73.07	83.33	71.79	100	84.61	71.79
(a) Weighted Quality score (30%)	21.92	24.99	21.53	30	25.38	21.53
Bid price	55.25	54.9	54.8	53.9	52.1	49.06
Adjusted price score %	88.79	89.36	89.52	91.02	94.16	100
(b) Weighted price score (70%)	62.15	62.55	62.66	63.17	65.91	70
Total score (a + b)	84.07	87.54	84.19	93.71	91.29	91.53
Ranking	6	4	5	1	3	2

Table -5 Ranking of contractor

20/80	Contractor identification					
	A	B	C	D	E	F
Quality score %	57	65	56	78	66	56
Adjusted Quality score %	73.07	83.33	71.79	100	84.61	71.79
(a) Weighted Quality score (30%)	14.61	16.66	14.35	20	16.92	14.35
Bid price	55.25	54.9	54.8	53.9	52.1	49.06
Adjusted price score %	88.79	89.36	89.52	91.02	94.16	100
(b) Weighted price score (70%)	71.03	71.48	71.61	72.81	75.32	80
Total score (a + b)	85.64	88.41	85.51	92.81	92.24	94.35
Ranking	5	4	6	2	3	1

The result of Table 3, 4 and 5 are compiled and shown in Table 6. It indicate the change in ranking of contractor with change in the weightage of quality and price consideration

Table -6: Contractor Ranking

Weightage Quality/ price ratio	Contractor ranking					
	A	B	C	D	E	F
Bid Price- Price (100 %)	6	5	4	3	2	1
Quality (20 %) / Price (80 %)	5	4	6	2	3	1
Quality (30 %) / Price (70 %)	6	4	5	1	3	2
Quality (40 %) / Price (60 %)	6	4	5	1	3	2

4. CONCLUSION

As per table 6 which shows the result for the data of a particular project, contractor ranking changes with change in quality and price weightage. Contractor F is ranked no. 1 if there is no consideration of quality and also in case if 20% weightage is given to quality. However contractor D become no. 1 if the weightage of quality increase 30% and more. It is helpful in selection of contractor according to the weightage to be given to quality.

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