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The use of competitive intelligence for selection of municipality's contractors

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ABSTRACT

Nowadays, growth and development as well as more complex industrial projects in line with the progress of science and technology has led to the problem and contractor selection process as key factor in the success of industrial designs and researchers and industrialists as more specialized approach to adopt in relation to this issue, selection of competent and qualified contractor, a multi-criteria decision problem is the first step towards the implementation of a development project in terms of cost, time and quality, and competitive intelligence factor in the selection of contractors is the important development projects. In the present study attempts to influence of competitive intelligence in choosing the most qualified contractors to examine projects Municipal Development in South Khorasan province. In this regard, after an extensive study of the history of the issue, the proposed criteria and indicators were identified.Finally, it was found that factors of price, technology plays a big part in choosing a contractor for Municipal Development in South Khorasan province have played.

KEY WORDS: CONTRACTOR SELECTION, COMPETITIVE INTELLIGENCE, MUNICIPALITY OF SOUTH KHORASAN PROVINCE

INTRODUCTION

Choosing a contractor on construction projects is one of the crucial and strategic decisions that must be made regarding how to manage projects. It is necessary to select a contractor to contractor status of various aspects based on multiple criteria and factors detailed review. The absence or lack of information and accurate data, opaque and incomplete information leads to errors in the selection of contractors and ultimately will lead to irreparable losses. On the other hand, sometimes conflict due to a variety of qualitative and quantitative criteria decision making requires much more complex is the right choice. In recent years, due to incorrect selection

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of contractors in the construction industry saw a loss of financial resources in Iran (including related projects with municipalities). Selecting the right contractor, through certified contractors can be one of the solutions available to solve such problems (Marzouk, 2006 and Chules, 2013).

These decisions are usually complex and in this connection can be used to assess many qualitative and quantitative factors. Failure to do so would be to implement the project in terms of longer, lower quality and higher costs (due to depreciation expense and capital lodging or damage arising from the lack of complete and timely delivery of projects carried out(and thus destroy economic feasibility of projects (Thomas, 2001). Contractors and are important as an integral part of the project are in process. In fact, major supplier of equipment and services required for the project. In the context of different projects, there are potentially number of contractors, qualifications and abilities required to perform the treaty, but the problem here is that any contractor should be selected Indeed, process of selection of contractors for outsourced systems, multi-criteria problem that including both qualitative and quantitative criteria (Skitmore, 1999). Dixon is one of the first people who worked on the selection of contractors and more than 23 criteria that managers use them to determine the selection of contractors. Later, many researchers regarding the selection of contractors to research methods and techniques in this field were presented (Palaneeswaran et al., 2001).

The most important of these techniques include: TOPSIS Fuzzy, AHP, CBR, DEA, SMART, VIKOR, ANP, etc. One of the new procedures for selecting contractors as independent model and its results can be used as input for other models and techniques to be used is model of competitive intelligence (CI). In fact, CI models need to check the size and location of project schedule, financial constraints, philosophy, ownership, management team dynamics and overall strategy and, ultimately, the choice of 5 main contractor cost, schedule, operational services and engineering rank, experience and stability consider the contractor's financial stability. One of these steps is selection of contractors for execution of the project (Russell et al., 1988). Due to the diversity and multiplicity of potential contractors, qualifications and abilities required to perform the treaty and the project, it is important that any contractor should be selected. So inevitably, you must first assess contractors, ratings and afterwards, selected to implement the project can best be guaranteed. In other words, the main goal contractor selection process reduces project risk, maximize quality of work and maintain relationships between different units of project (Shrestha et al., 2004).

Therefore, it is necessary to evaluate the optimal models and frameworks of contractors. In general, there are two main methods of fee-based contractor selection process and competency based approach, of course, many employers in the selection of contractors and their primary concern was to cost it considers the most immediate evaluation index. Cost alone should not be a suitable criterion for assessing the contractor. On the other hand research that has been done in this regard that multivariate process should be used in the selection of contractors (Thomas, 2001). This is important in countries like Iran, whose economy is much more dependent on the state (Wong, 2004).

Because a detailed set of criteria and scores are selected and optimized with the addition of some economic corruption and contractors to prevent unfair contracts prevents waste and construction budgets as well as the duration of projects. Therefore, the aim of present study is that with help of CI model parameters, correct criteria and municipal construction projects have been identified factors in the selection of contractors and finally ranking pattern suitable for the evaluation and selection of optimal and ultimately be presented in such contractor.

METHODS

This research is applied - descriptive based on its goal.

POPULATION, SAMPLING METHOD

The study population included all experts and authorities are tender and transfer of development projects of which there are 23 municipalities in South Khorasan province that population is not due to limited sampling and all individuals are selected for the sample. When necessary, information will be collected through interviews.

PROCEDURE

Since the evaluation indices each system, depending on the intention is to provide and important tasks expected of it and the type of system and the factors influencing cost of treatment will be different therefore, to identify indicators of competitive intelligence contractors in construction projects following step will be removed. By collecting questionnaires, all indicators affecting the choice of contractor determined, ultimately, by collecting the opinions of experts qualified contractor will be selected on the basis of competitive intelligence theory. By referring to the background of a number of studies in this area are identified index and to ensure the effectiveness of the measures identified in the process of selecting a contractor questionnaire was prepared and distributed among experts. In this research in order to answer the research questions and one-sample t test was used to conclude it.

RESULTS

✧ **Variable of "comprehensive system of planning and control of the project**

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
q1	23	2.6522	.83168	.17342

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q1	3.761	22	.001	.65217	.2925	1.0118

The mean of the test (μ) was considered more than 2 to examine status of the studied variables so following hypothesis is tested:

H0: having comprehensive system of planning and control of projects compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is not in desirable status;

$$H0 = \mu \leq 2$$

H1: having comprehensive system of planning and control of projects compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is in desirable status;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller than, 0.05 so the null hypothesis is rejected and the means which studied population in terms of having comprehensive system of planning and control of projects compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is in desirable status.

✧ **Variable of "Observance of standards and technical specifications on previous projects"**

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
q2	23	2.9565	1.06508	.22208

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q2	4.307	22	.000	.95652	.4959	1.4171

The mean of the test (μ) was considered more than 2 to examine status of the studied variables so following hypothesis is tested:

H0: Observance of standards and technical specifications on previous projects compared to other contractors as one of competitive intelligence parameters in the selection of contractor is not in desirable status;

$$H0 = \mu \leq 2$$

H1: Observance of standards and technical specifications on previous projects compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is in desirable status;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller than, 0.05 so the null hypothesis is rejected and the means which studied population in terms of Observance of standards and technical specifications on previous projects compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is in desirable status.

✧ **Variable of "implementation of previous projects in terms of anticipated quality, cost and schedule"**

One-Sample Statistics					
	N	Mean	Std. Deviation	Std. Error Mean	
q3	23	2.7391	.91539	.19087	

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q3	3.872	22	.001	.73913	.3433	1.1350

The mean of the test (μ) was considered more than 2 to examine status of the studied variables so following hypothesis is tested:

H0: implementation of previous projects in terms of anticipated quality, cost and schedule compared to other contractors as one of competitive intelligence parameters in selection of contractor is not in desirable status;

$$H0 = \mu \leq 2$$

H1: implementation of previous projects in terms of anticipated quality, cost and schedule compared to other contractors as one of competitive intelligence parameters in selection of the contractor is in desirable status;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller than, 0.05 so the null hypothesis is rejected and the

means which studied population in terms of anticipated quality, cost and schedule as one of competitive intelligence parameters in the selection of the contractor is in desirable status.

✧ Variable "Creativity and Innovation in previous projects"

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
q4	23	3.0435	.82453	.17193

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q4	6.069	22	.000	1.04348	.6869	1.4000

The mean of the test (μ) was considered more than 2 to examine status of the studied variables so following hypothesis is tested:

H0: Creativity and Innovation in previous projects compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is not in desirable status;

$$H0 = \mu \leq 2$$

H1: Creativity and Innovation in previous projects compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is in desirable status;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller than, 0.05 so the null hypothesis is rejected and the means which studied population in terms of creativity and Innovation in previous projects as one of competitive intelligence parameters in the selection of the contractor is in desirable status.

✧ Variable "use of new technologies"

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
q5	23	3.1739	.83406	.17391

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q5	6.750	22	.000	1.17391	.8132	1.5346

The mean of the test (μ) was considered more than 2 to examine status of the studied variables so following hypothesis is tested:

H0: use of new technologies compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is not in desirable status;

$$H0 = \mu \leq 2$$

H1: use of new technologies compared to other contractors as one of competitive intelligence parameters in the selection of the contractor is in desirable status;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller than, 0.05 so the null hypothesis is rejected and the means which studied population in terms of use of new technologies as one of competitive intelligence parameters in the selection of the contractor is in desirable status.

✧ Variable of "level of education, discipline, and experience of executive staff and key elements"

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
q6	23	2.9130	.79275	.16530

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q6	5.524	22	.000	.91304	.5702	1.2559

The mean of the test (μ) was considered more than 2 to examine status of the studied variables so following hypothesis is tested:

H0: level of education, discipline, and experience of executive staff and key elements as one of competitive intelligence parameters in the selection of the contractor is not in desirable status;

$$H0 = \mu \leq 2$$

H1: level of education, discipline, and experience of executive staff and key elements as one of competitive intelligence parameters in the selection of the contractor is in desirable status;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller than, 0.05 so the null hypothesis is rejected and the means which studied population in terms of level of education, discipline, and experience of executive

staff and key elements as one of competitive intelligence parameters in the selection of the contractor is in desirable status.

✧ **Variable of "status and the ability to use the new equipment and machines"**

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
q7	23	3.3043	.63495	.13240

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q7	9.852	22	.000	1.30435	1.0298	1.5789

The mean of the test (μ) was considered more than 2 to examine status of the studied variables so following hypothesis is tested:

H0: status and the ability to use the new equipment and machines as one of competitive intelligence parameters in the selection of the contractor is not in desirable status;

$$H0 = \mu \leq 2$$

H1: status and the ability to use the new equipment and machines as one of competitive intelligence parameters in selection of contractor is in desirable status;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller than, 0.05 so the null hypothesis is rejected and the means which studied population in terms of status and the ability to use the new equipment and machines as one of competitive intelligence parameters in the selection of the contractor is in desirable status.

✧ **Variable "Continued training of employees"**

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
q8	23	2.4348	1.03687	.21620

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q8	2.011	22	.057	.43478	-.0136	.8832

The mean of the test (μ) was considered more than 2 to examine status of studied variables so following hypothesis is tested:

H0: Continued training of employees as one of competitive intelligence parameters in the selection of the contractor is not in desirable status;

$$H0 = \mu \leq 2$$

H1: Continued training of employees as one of competitive intelligence parameters in the selection of the contractor is in desirable status;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller than, 0.05 so the null hypothesis is rejected and the means which studied population in terms of Continued training of employees as one of competitive intelligence parameters in the selection of the contractor is in desirable status.

As seen in Table significance level is greater than 05. Therefore, the null hypothesis is not rejected and this means that the study population in terms of status and use of equipment and machinery to get better compared with other competitive intelligence contractors as one of the parameters in the selection of the contractor is not desirable statue.

✧ **Variable of suitable suggested price**

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
q9	15	3.8000	.41404	.10690

One-Sample Test						
	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
q9	16.837	14	.000	1.80000	1.5707	2.0293

The mean of the test (μ) was considered more than 2 to examine status of the studied variables so following hypothesis is tested:

H0: Suitable suggested price compared to other competitive intelligence contractors as one of the parameters in the selection of the contractor is not in good condition;

$$H0 = \mu \leq 2$$

H1: proposed price of better fit compared with other competitive intelligence contractors as one of the parameters in selection of contractor desirable;

$$H1 = \mu \geq 2$$

As seen in Table 05. The level of significance is smaller so null hypothesis is rejected and the means which fit studied better in terms of suggested price compared with other competitive intelligence contractors as one of the parameters in the selection of the contractor are in desirable status.

DISCUSSION AND CONCLUSION

Several factors are involved in the selection of contractors in the meantime, according to research topic parameters related to competitive intelligence derived from the questionnaires about them in choosing contractor for Municipal Development in South Khorasan province is evaluated.

comprehensive system of planning and project control
How to standards and technical specifications on previous projects
Implementation of previous projects in terms of quality, cost and schedule anticipated
Creativity and innovation in the previous project
The use of new technologies
Education, discipline, and experience of executive staff and key elements
Machine-to-date status and usability
Continued training of employees
Suitable suggested price

The above factors, which are subset of competitive intelligence, significant relationship in choosing contractor for Municipal Development in South Khorasan province on the outcome contractors presented themselves in areas that are superior in terms of municipal experts; upgrade can obtain better results in municipal tenders.

Table ranking of competitive intelligence factors in choosing contractor for construction in municipality of South Khorasan province

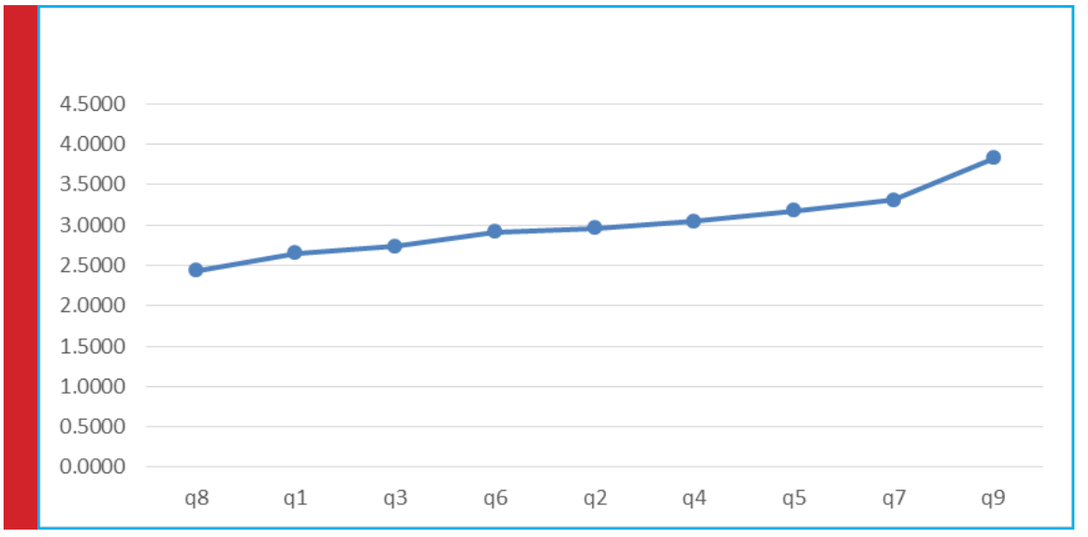
Based on the above factors, the proposed price, innovation and machines have an important role in the selection of construction contractors in South Khorasan Province while other factors are in the middle range and the continuous training of employees with the lowest degree of importance from the point of view of experts and professionals. So, using the results of the study are presented in the following suggestions in elderly:

It is suggested to increase the efficiency of algorithm research, software algorithms to be designed for mechanization in specific time periods, if there was a similar project could be implemented.

It is suggested in the specified time period, contractor selection criteria be revised in case we need new index was added or index improved old markers that have applied to be removed. According to the results of this study, the following is proposed for future research:

It is suggested that similar research data envelopment analysis (DEA), VIKOR (VIKOR), LINMAP, etc. are used for this work. This technique could be used in a fuzzy environment or logical.

Indicators of this research, according to research territory in accordance with the municipality of Birjand city in South Khorasan Province was established so it's recommended by examining other similar organizations and companies in this project is a comprehensive model that overtake all indicators of involved organizations.



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