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Ranking of Contractor by AHP Method

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Abstract: *The construction branch is one of the important branches for achieving the country's economy. So it is obligatory to find out a competent contractor among all, for successfully complete work. Construction bidding is the process of offering a proposal to undertake a construction project. And it is one of the methods for the selection of contractors. bidding strategies vary from contractor to contractor and each contractor has a different view of the factors affecting their bid decisions. This study aims to find an effective strategy for the selection of competent contractors and bid evaluation. There are many factors that influence the bidding strategy. These factors influence depend on the situation when the research is done.*

Keywords: AHP method, contractor, construction industry.

I. INTRODUCTION

Due to globalization, the world is becoming very competitive. A lot of contractors from every part of the world compete for getting the work. The competition takes place among different competitors to grab the job. The main goal of selecting the best or right contractor project is important for the successful completion of work and minimizing the health risk. Preferably, selection should be made from a list of eligible candidates who have indicated that they can satisfy the needs of clients. in the selection process of a competent contractor, many factors are taken into consideration. Luckily, a contractor who works best and satisfies the needs of clients regarding the quality of work, material, and punctuality of the work is also likely to have a better chances of winning.

II. NEED OF THE RESEARCH

Due to advancements in the construction industry,it attracts the entire business world. It is the dream of any new contracting organization to enter the world of construction. However, success and survival in the competitive market for a long time are difficult. Contractors from every part of the world compete to get the work. The main aim of a contract is to get a job at the cheapest rate, best quality and least time. But today what happens is contractors go for the least cost for getting the work it may disturb the quality of the work. hence, there is a need to have a perfect balance between the likelihood of getting the job and the likelihood of profiting.to balance all these conditions competent contractor is a need in today's life.

III. AHP METHOD FOR SELECTION OF BEST CONTRACTOR

Saaty developed an Analytical Hierarchy Process (AHP) which is basically a decision-aiding method. this method can be used to calculate the weight of criteria. Pairwise comparison is created with the help of scale of relative importance. It is the best method among all used for multi-criteria decision making as it calculates weights and final ranking for alternatives.

IV. NUMERICAL SCALE FOR PAIR WISE COMPARISON GIVEN BY (SAATY T. 2012)

Numeric scale	verbal Judgement of preferences
9	Extremely preferred
8	Very Strongly to Extremely
7	Very Strongly Preferred
6	Strongly to Very Strongly
5	Strongly Preferred
4	Moderately to Strongly
3	Moderately Preferred
2	Equally to Moderately
1	Equally Preferred

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V. PAIR WISE COMPARISON MATRIX FOR CRITERIA'S

	Financial capacity	Past work performance	Contractor's Experience	Equipment resources	Current Work Load	Safety Programs	Average
Financial Capacity	1	2	4	0.33	5	2	2.38
Past work Performance	0.5	1	8	0.25	2	3	2.45
Contractor's experience	0.25	0.12	1	0.25	5	1	1.27
Equipment Resources	3	4	4	1	0.14	0.5	2.106
Current Work Load	0.2	0.5	0.2	7	1	0.33	1.53
Safety Programs	0.5	0.33	1	2	3	1	1.305
Sum	5.45	7.95	18.2	10.83	16.14	7.83	

VI. CONSISTENCY RATIO CALCULATION

	Financial Capability	Past Performance	Experience	Equipment Resources	Current Work Load	Safety Programs	Sum	Average
Financial Capability	0.183	0.251	0.219	0.030	0.309	0.255	0.99	0.734
Past Performance	0.019	0.125	0.439	0.023	0.123	0.383	1.12	0.185
Experience	0.045	0.015	0.054	0.023	0.309	0.127	0.57	0.467
Equipment Resources	0.55	0.503	0.219	0.092	0.008	0.063	1.43	0.239
Current Work Load	0.03	0.062	0.010	0.646	0.061	0.042	1.22	0.204
Safety Programs	0.09	0.041	0.054	0.184	0.185	0.127	0.68	0.113

VII. RESULT

The priority vectors for all alternatives like Contractor P, Contractor Q, Contractor R, Contractor S, Contractor T, etc. are calculated to rank them accordingly to decide the best contractor among all. The final ranking is given in descending order from the highest priority vector to the lowest one.

VIII. CONCLUSION

1. For eliminating all types of risks such as health risks, financial risks, etc., a competent contractor plays an important role. Therefore, the selection of the best contractor is a need.
2. AHP process has been chosen for decision-making mainly in contractor selection because of its flexibility and efficiency.

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