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Selection Criteria For Evaluating Contractors Of Cultural Heritage Objects

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Abstract

Cultural heritage buildings are very important footprints of our history. Cultural heritage's performance requires more of responsibility and experience, careful attention, knowledge of building materials and structure, teamwork and qualified employee. The inappropriate contractor's selection could induce claims, disputes, failures, litigation, low-quality work, and increased costs for project management and performance. This study proposes a quantitative criteria selection for heritage's contractor selection. This paper provides criteria for selecting contractors, reviews current situation of contractor selection in Lithuania, and determines the evaluation criteria of the contractor selection for heritage buildings. This study applies the expert evaluation and agreement of their estimates and the analytic hierarchy process (AHP). Making an expertise – based decision, it is necessary to determine the concordance degree of expert evaluation. The concordance coefficient can be calculated only if the considered criteria are ranked. The AHP method was applied to quantitative evaluation of the criteria significance (weight). The AHP method determines the agreement of estimates provided by each expert separately.

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Keywords: cultural heritage; contractor; evaluation; expert estimates; AHP

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1. Introduction

Cultural Heritage constructions represent important traces of our history, characterizing with their high intrinsic economic, artistic, architectural values, and becoming symbols of human communities. Therefore maintenance and preservation of cultural heritage objects such as churches, temples, palaces, castles, and archeological sites is necessary because they are an important part of cultural wealth of a nation. Nevertheless, cultural heritage's performance requires more of responsibility, experience and qualified employees. Accordingly to complex performance of cultural heritage building, selecting a contractor for heritage's preservation is not an easy task. The inappropriate contractor's selection could induce claims, disputes, failures, litigation, low-quality work, and increased costs for project management and performance. The adequate selection of suitable contractor is directly related to construction project success.

In Lithuania the dominant procurement process of selecting heritage's contractor is the competitive "low – bid" procurement process. However, the lowest bidder is not always the most economic choice in the heritage projects as the client runs the risk of poor quality and knowledge of that contractor during the project life. Therefore the evaluation on lowest price basis is one of the major causes of project delivery problems.

Various criteria selection allows evaluating and estimating the values of contractors. A single criterion cannot give a full expression of goals proposed by clients. Therefore criteria selection is a complex task which allows to evaluating contractor with respect to economic and technological aspects, quality standards, past performances and other tangible and intangible characteristics.

This study proposes such a decision model for heritage's contractor selection. This paper provides methods for selecting contractors, reviews a current situation of contractor selection in Lithuania, and determines the evaluation criteria of the contractor selection for heritage building and applies the expert evaluation and agreement of their estimates and the analytic hierarchy process (AHP). Conclusion and further suggestions for research are then presented.

2. Literature review

2.1. Methods for selecting contractors

Contractors play a significant role in construction projects and selection of the most appropriate contractor for the project is a critical decision for clients [1]. Therefore, selection of a contractor is a very important stage in implementing of an investment project [2]. Many techniques can be used to form a selection strategy: Multi criteria for optimizing decision, Prequalification to discover contractor‘s responsibility, Bidding process for competition, Third party guarantee to enhance the selection and Fuzzy techniques for ambiguities and incomplete information [3]. In recent years, the application of multi-criteria quantitative evaluation methods to solving problems has grown considerably [4]. There are many works, in which researchers study contractors selection problems based on using Analytic Hierarchy Process (AHP) [5,6,7], Analytic Network Process (ANP) [8], MOORA [9], COPRAS [10] and grey interval numbers [11], Fuzzy Set Theory [12,13], PROMETHEE [14,15], graph theory and matrix methods [16].

When researchers and practitioners have realized that lowest – price is not the promising approach to attain the overall lowest project cost upon project completion, multi – criteria selection becomes more popular [17]. Contractors' choice was analyzed by many researchers using multiple criteria evaluation and decision making approaches. Most researches of contractor's selection have used AHP model. [18] used AHP methods to find out the attitudes of public sector construction clients towards the significance of tender price in final contractor selection. [6] used the AHP to identify critical safety attributes to be included in selecting contractors at the bidding stage to assure loss prevention and better safety orientation during turnaround maintenance's implementation. [5] proposed AHP model for evaluating contractor's prequalification. This model can serve as a good reference for project owners in the process of selecting contractors. Several researches for contractor's selection have analyzed others methods. [8] offered to apply ANP to improve the prioritization of contractor selection criteria. [10] applying multiple criteria method COPRAS analyzed a contractors selection for the replacement of low-e windows. [11] for contractors' selection are applied COPRAS (with pessimistic values and another case with optimistic values) and COPRAS – G methods. [9] using MOORA method offered the selection of the largest maintenance contractors of dwellings. Moreover [15] used PROMETHEE model,