ABSTRACT

Development of a Multi-Criteria Contractor Selection Framework for Open Tendering- An Application of Cloud Hierarchical Analysis

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The construction industry is one that is dynamic, challenging, rewarding, and full of uncertainty and associated risks. Consequently, the process of contractor selection in a multi-criteria environment is riddled with inherent risks and uncertainties. To minimize the adversities, the contractor selection process must address the use of multi-criteria decision making methods and must take into account a wide range of uncertainties in order to achieve the successful delivery of the project under consideration.

Whilst varying tendering methods exist for contractor selection, inclusive of open, negotiated and selective tendering, this work presents the selection under the processes of open tendering. In the case of open tendering, the lowest tender is traditionally awarded the contract. However, there is an agreement from construction professionals that this method for contractor selection is not adequate and results in the choice of the wrong contractor being selected for the works.

Owing to the inherent uncertainties involved in contractor selection, in this case open tendering and the limitations of this method, the need for a multi-criteria contractor selection framework that treats with uncertainties arises. Accordingly, this paper therefore proposes the application the Cloud Hierarchical Analysis (CHA) to open tender selection to achieve these requirements.

A case of a bid evaluation exercise is presented to demonstrate the data requirements and the application of the method in selecting the most appropriate contractor for the project under uncertainty. It was observed that the rank order of the contractors from the bid exercise varied from that of the proposed method. The bid exercise selected a contractor that was both over budget and off schedule. The proposed method, CHA, is expected to yield better overall results for the contractor selection process.

Keywords: Karrisa Sarah Ramjarrie; Cloud Hierarchical Analysis; Uncertainty; Open Tendering