ABSTRACT

The prediction of a realistic duration of a construction project is a key factor to be considered before starting a new project. Such prediction may affect the project's success and this is a problem of interest to both clients and contractors.

In Egypt, identifying a realistic project duration is often overlooked by both the client and the contractor during the tendering stage due to the limited data available and the sharp deadlines applied by the owner. The consequences, however, can be troublesome if productivity, quality and safety are sacrificed in addition to the low staff morale and conflicts arise among the project's parties during the implementation phase.

Models for predicting construction project duration have been developed. As such, the objectives of this research were to identify the significant factors affecting the commercial project duration in Egypt and to develop a fuzzy model to enable decision makers predicting commercial project duration under normal conditions in a reliable and practical way based on the data and time available at the tendering stage.

This study examined the thirty six factors affecting the commercial project duration concluded from the literature review and the construction experts interviews. Sensitivity rating of duration-influencing factors was carried out using a questionnaire survey amongst all key players of Egyptian construction industry, analyzed using statistical and weighting process where twelve criteria were selected and grouped under six groups to simplify the proposed fuzzy model as follow: project's cost, client's characteristics (including client's type, client's financial soundness and client's tendency for changes), tender documents completeness and clarity, project's characteristics (including complexity of the project, total built up area, number of stories and number of basements), environmental conditions (including economical conditions and political conditions) and construction site suitability (including construction site conditions), one output variable: expected project duration, and 729 firing rules.

To test the developed model, two case studies were analyzed using the proposed model, the run of the model for the first project gave 90% accuracy level with 10% error, while the run of the model for the second project gave 85% accuracy level with 15% error which are acceptable levels.

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