World Academy of Science, Engineering and Technology
International Journal of Civil and Architectural Engineering
Vol:9, No:01, 2015

A Fuzzy Structural Equation Model for Development of a Safety Performance Index Assessment Tool in Construction Sites

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Abstract : In this research, a framework is to be proposed to model the safety performance in construction sites. Determinants of safety performance are to be defined through extensive literature review and a multidimensional safety performance model is to be developed. In this context, a questionnaire is to be administered to construction companies with sites. The collected data through questionnaires including linguistic terms are then to be defuzzified to get concrete numbers by using fuzzy set theory which provides strong and significant instruments for the measurement of ambiguities and provides the opportunity to meaningfully represent concepts expressed in the natural language. The validity of the proposed safety performance model, relationships between determinants of safety performance are to be analyzed using the structural equation modeling (SEM) which is a highly strong multi variable analysis technique that makes possible the evaluation of latent structures. After validation of the model, a safety performance index assessment tool is to be proposed by the help of software. The proposed safety performance assessment tool will be based on the empirically validated theoretical model.

Keywords : Fuzzy set theory, safety performance assessment, safety index, structural equation modeling (SEM), construction sites
Conference Title : ICCAE 2015 : International Conference on Civil Society and Architectural Engineering
Conference Location : Jeddah, Saudi Arabia
Conference Dates : January 26-27, 2015