O. MOSELHI, A. SALAH. **Fuzzy sets-based contingency estimating and management.** *Gerontechnology 2012;11(2):188;* doi:10.4017/gt.2012.11.02.082.00 **Purpose** Contingency estimating and management are critical management functions necessary for successful delivery of construction projects. Considering its importance, academics and industry professionals proposed a wide range of methods for risk quantification and accordingly for contingency estimating[1]. Considerably less work was directed to contingency management including risk mitigate during a project. Generally, there are two types of risks; (i) known risks which can be identified, evaluated, planned and budgeted for and (ii) unknown risks which may occur. These risks require a cost and time contingency, even if they were not planned for, in order to mitigate their impact in an orderly manner. In this respect, the importance of contingency management is critical in view of increasing project complexity and difficulty of estimating and/or allocating sufficient contingencies to mitigate risks encountered during project execution. This paper focuses on the contingency management from two perspectives; estimation and depletion of contingency over project durations. **Method** A new method is developed using fuzzy sets theory[2] along with a set of measures and indices to model the uncertainty inherent in this process. This method includes a possibility measure, an agreement index, a fussiness measure, an ambiguity measure and a quality fuzzy number index. These measures and indices provide not only the possibility of having adequate contingency but also address issues of precision and vagueness associated with the uncertainty involved. The paper also presents a comparison between the commonly used Monte Carlo Simulation method and the proposed direct fuzzy-sets-based method. As to depletion, the paper presents a management procedure focusing on depletion of the contingency in a generic computational platform. The developed procedure makes use of policies and procedures[3] followed by leading construction organizations and owners of major constructed facilities. The developed method and its computational platform were coded using VB.NET-programming. **Results & Discussion** A numerical example is analysed to demonstrate the use of the developed method and to illustrate its capabilities beyond those of the traditional Monte Carlo Simulation.

References

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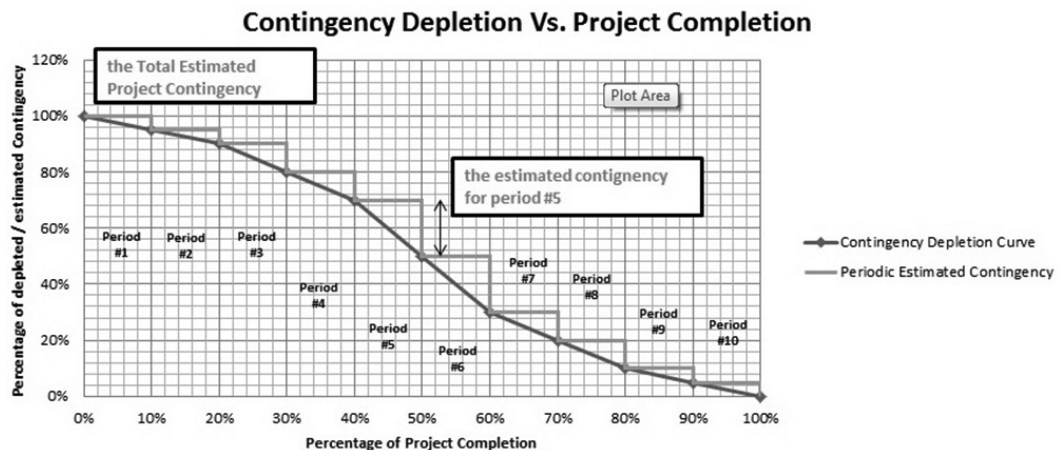
Figure 1. Graph of the depletion/management of the contingency over the project duration