Risk response action selection using case-based analysis and fuzzy optimization model

Yao Zhang
Department of Operations and Logistics Management
Northeastern University
Shenyang, China
yzhang@mail.neu.edu.cn

Abstract

Risk response action (RRA) selection plays an important role in project risk management (PRM). In this paper, a method based on case-based analysis and fuzzy optimization model is proposed in order to help project manager find out available historical RRAs, and determine the optimal set of the RRAs. The steps of the method include: a) representing the target cases and the historical cases; b) determining the fuzzy similarities between the historical cases and target cases; c) screening out the historical cases with the fuzzy similarities higher than the threshold; d) revising the alternative historical RRAs in accordance with the current project; e) determining the optimal set of RRAs with optimization model. The computation results of the method based on the analysis of a case highlight two managerial implications. First, to perform better risk response in future, organizations should always capture a long-term perspective, with an awareness of keeping documents of all handled historical cases. Second, since each RRA obtained from historical cases needs to be adapted in accordance with current situation, adaptation costs should also be taken into account when allocating budget for implementing the selected RRA set.

Keywords

project risk management (PRM); case-based; risk response action (RRA); optimization

Biography

Yao Zhang is a professor in the Department of Operations and Logistics Management at the Northeastern University, Shenyang, China. She received the B.E. degree in industrial foreign trade from Northeastern University (NEU), the M.S. degree in Management from NEU, and the Ph.D degree in Management Science and Engineering from NEU, respectively. She has published papers in the following international journals: Information Sciences, International Journal of Project Management, Computers and Operations Research, Computers and Industrial Engineering, Applied Mathematics and Computation, Soft Computing, etc. Her research interests include project risk management, service operations management, and logistics management.