عنوان مقاله:

Risk management in urban tunnels using methods of game theory and multi-criteria decision-making

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خلاصه مقاله:

In general, underground spaces are associated with high risks because of their high uncertainty in geotechnical environments. Since most accidents and incidents in these structures are often associated with uncertainty, the development of risk analysis and management methods and prevention of accidents are essential. A deeper recognition of the factors affecting the implementation process can pave the way for this purpose. Risk rating of projects is a key part of the risk assessment stage in the risk management process of each project. Various multi-criteria decision-making methods, as quantitative approaches, are used to allow them to be used in the risk rating issue of each project. In this work, a new model is provided for risk management of Mashhad Urban Railway Line 3 using the game theory and multi-criteria decision-making methods. Based on the answers of the specialists and experts to the prepared questionnaires, various risk groups identified using the TOPSIS and AHP multi-criteria decision-making methods are ranked. Accordingly, the group of economic risks, as the most important risk and social risk group, is ranked as the least significant in both methods. In the following, the appropriate response to the main risks of the ratings is proposed based on the modeling of the game theory, and ranked in terms of importance. Also the worst risk scenario in the project is identified, and the appropriate responses for this state are also expressed in order of importance. The results obtained indicate that the risk of financing problems is the most significant risk, and other risks are ranked in terms of importance in the next ranks. Additionally, the use of new financing methods at times of credit scarcity and project financial problems is also considered as the most important response to the risk in .this project

کلمات کلیدی:

Risk, Multi-Criteria Decision Macking, Game Theory, AHP, TOPSIS