عنوان مقاله:

Identifying the factors affecting road accidents and providing multi-criteria hybrid decision-making methods for ranking hazardous points

نویسندگان:

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خلاصه مقاله:

Traffic accidents and their consequences are among the major issues that need to be seriously addressed in today's world. In this study, the prioritization of hazardous points on the roads is discussed, using multi-criteria decision-making (MCDM) techniques considering different natural and environmental criteria affecting road accidents. The Neyshabour-Sabzevar and vice versa road axes in Khorasan province, Iran, are considered as a case study for the implementation of the proposed method. Initially, ۲۰ criteria were identified in ۴ different categories to prioritize the hazardous points using the literature review and the experts' opinion. In this paper, the MDL (Modified Digital Logic) and AHP (Analytical Hierarchy Process) methods are used to determine the criteria's weights. By combining these techniques, four hybrid methods MDL-TOPSIS (Technique for order preference by similarity to an ideal solution), MDL-VIKOR (Vlse Kriterijumska Optimizacija I Kompromisno Resenje), AHP-TOPSIS, and AHP-VIKOR are obtained to prioritize the mentioned points, each producing different results. Two models were used to obtain the final ranking. In the first model, the results of these four methods are integrated using the COPELAND method. In the second model, the entropy method (Emerging Network To Reduce Orwellian Potency Yield) is used to modify the weight of the criteria. The innovation of the paper is presenting a new hybrid MCDM method that is used to prioritize hazardous points. Results showed that using the entropy method for modifying the weight of the criteria causes the methods to produce the same results. Moreover, results show that the number of deadly injured casualty of an accident is the most important criterion. Additionally, Zafaranieh residential area gained the highest priority.

کلمات کلیدی:

Hazardous Points, MCDM, ENTROPY Method, Copeland method, Hybrid ranking method