

عنوان مقاله:

Soft Computing-based New Interval-valued Pythagorean Triangular Fuzzy Multi-criteria Group Assessment Method without Aggregation: Application to a Transport Projects Appraisal

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خلاصه مقاله:

In this paper, an interval-valued Pythagorean triangular fuzzy number (IVPTFN) as a useful tool to handle decision-making problems with vague quantities is defined. Then, their operational laws are developed. By introducing a novel method of making a decision on the concept of possibility theory, a multi-attribute group decision-making (MAGDM) problem is considered, in which the attribute values are expressed with the IVPTFN and the information on the decision makers' (DM) weights is completely unknown. Two novel forms of a multi-attributive border approximation area comparison (MABAC) technique are proposed to solve the problem. One of them is applied to compute the weights of the decision makers, and the other is used to rank the preference order of alternatives, that is based on the possibility expected value and standard deviation and has no aggregation of information. Finally, to illustrate the practicality and effectiveness of proposed method in real-world problems, the proposed method is applied in a real case study of an Iranian transport complex to sustainability assessment of its transport projects.

کلمات کلیدی:

Comparison Technique, Fuzzy number, Interval-valued Pythagorean Triangular, Multi-attributive Border Approximation Area, Multiple Attribute Group Decision Making, Sustainability, Transport Projects

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