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Abstract
Numerous articles have been published to deal with multiple-criteria decision-making (MCDM) problems since it is important to many fields. Hwang and Yoon proposed TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) method to solve MCDM problems. It is one of the most popular MCDM methods. In classical TOPSIS methods, decision-makers employ crisp values to evaluate criteria and alternatives. However, in practical situations, the available data used in decision-making problems are often imprecise and vague. By use of fuzzy set theory, one can incorporate qualitative information and vague information into the decision model. Therefore, several fuzzy TOPSIS methods are developed to handle decision problems. However, these approaches still have some shortcomings.

In this study, to overcome these shortcomings, we propose a TOPSIS based method under group decisions to deal with fuzzy MCDM problem. Triangular fuzzy numbers are utilized to represent both the importance weights of attributes and the ratings of alternatives under different attributes. The positive ideal solution and negative ideal solution are determined according to fuzzy maximum procedure and fuzzy minimum procedure. The separation distance of each alternative to positive and negative ideal solution can also be yielded through fuzzy similarity measure. According to the calculated relative closeness coefficients, the ranking order of all alternative candidates can be decided. Also, A numerical example of selection of enterprise resource planning (ERP) system is also included to demonstrate the proposed method.
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