

FUZZY TOPSIS AND FUZZY VIKOR METHODS USING THE TRIANGULAR FUZZY HESITANT SETS

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ABSTRACT

The decision maker needs to choose the most suitable alternative from the available alternatives. This study mainly focuses on two multiple criteria decision making (MCDM) methods TOPSIS and VIKOR Method in the context of recently developed hesitant fuzzy theory. Both the methods are based on an aggregating function that represents closeness to the ideal solution. A solution obtained by fuzzy TOPSIS method has the shortest distance from the ideal one and farthest from the negative ideal solution. Fuzzy VIKOR method helps to determine a compromise solution that gives a maximum group utility for the majority and minimum for opponents. Hesitant Fuzzy Sets (HFSs) are very helpful in decision making situations when a decision maker might consider different degrees of membership. In this paper in order to solve MCDM problems the fuzzy TOPSIS and Fuzzy VIKOR methods are developed using Triangular Fuzzy Hesitant Fuzzy Sets. A procedure using both the methods is presented. Finally a numerical example illustrates the applicability of the proposed methods and the results are also compared.

KEYWORDS: Fuzzy VIKOR, Fuzzy TOPSIS, Multiple Criteria Decision Making, Triangular Fuzzy Hesitant Fuzzy Sets