Abstract

Ranking competing alternatives in terms of their overall performance with respect to some criteria in fuzzy environment is possible by the use of fuzzy TOPSIS methodology using interval-valued fuzzy-sets concepts. This author presents an effective fuzzy multi-criteria method based upon the fuzzy model and the concepts of positive ideal and negative ideal solution points for prioritizing alternatives using inputs from a team of decision makers. The fuzzy sets concepts are used to evaluate the performance of alternatives and the importance of criteria. Fuzzy TOPSIS based on the interval-valued fuzzy-sets is fully described and a case study on RFID comprised of four main criteria and five alternatives is constructed and solved by the proposed extended TOPSIS method. The TOPSIS methodology used in this article is able to grasp the ambiguity exists in the utilized information and the fuzziness appears in the human judgments and preferences. TOPSIS technique can easily produce satisfactory results, and hence stimulates creativity and the invention for developing new methods and alternative approaches. This article is a very useful source of information for Fuzzy TOPSIS based on the interval-valued fuzzy sets and extends the area of application of RFID technology in general. Due to the fact that a better management of a system is related to the full understanding of the technologies implemented and the system under consideration, sufficient background on the methodologies are provided and a case study is developed and solved by the proposed method.

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Fuzzy Topsis  Fuzzy Sets  Interval-valued Fuzzy Sets  System Selection  Group Decision Making