

TOPSIS Method for Decision Making Problems Under Interval-valued Intuitionistic Fuzzy Environment with Completely Unknown Weight Information

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ABSTRACT

In this paper, an Interval-valued Intuitionistic Fuzzy TOPSIS method for multi-criteria group decision making (MCGDM) problem to rank the alternatives is proposed. This proposed method is based on distance measure and Interval-valued Intuitionistic Fuzzy (IVIF) Entropy. IVIF information is more effective in dealing with ambiguity and fuzziness in group decision problems, where data is generated by decision maker's evaluation and procedures are performed on MCGDM. This paper presents an entropy model to determine attributes weights for MCGDM problem with incomplete weight information of criteria under IVIFSs environment. In addition, an extended technique for order preference by similarity to ideal solution (TOPSIS) is suggested to ranking all the alternatives. The core intention of this paper is to analyse the robustness and reliable methodology for IVIF environment. Finally, a descriptive example is also given to demonstrate the complete methodology and practical feasibility of the proposed method.

Keywords: Multi criteria group decision making, TOPSIS, Interval-valued intuitionistic fuzzy set (IVIFS), IVIF Entropy.

