Multiple attribute group decision making based on 2-dimension linguistic intuitionistic fuzzy aggregation operators

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Abstract

The 2-dimension linguistic variables (2-DLVs) add a subjective evaluation on the reliability of the evaluation results provided by decision makers, so 2-DLVs are very useful tools for describing uncertain or fuzzy information. This work extends the idea of 2-DLVs by introducing 2-dimension linguistic intuitionistic fuzzy variables (2-DLIFVs) in which 1 class and 2 class information describe in the form of linguistic intuitionistic fuzzy numbers. The paper defines some operational laws, score, and accuracy functions for 2-DLIFVs. Further, we develop some arithmetic and geometric aggregation operators for aggregating 2-DLIF information and prove a number of valuable properties associated with them. Using the proposed aggregation operators, an approach for multiple attribute group decision making with 2-DLIF information is formulated. Finally, an illustrated example is given to verify and prove the validity of the developed method. The computed results are also compared with the existing results.

Keywords

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KeyWords Plus: MULTICRITERIA; SETS; INFORMATION; ENTROPY; DIVERGENCE; CONSENSUS

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