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A PROMETHEE-BASED APPROACH FOR CONFLICT ANALYSIS IN EVIDENCE THEORY INTEGRATING THREE CONFLICT MEASURES

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ABSTRACT

This article seeks to expand how conflict is classified in Evidence Theory, which is also known as Dempster-Shafer Theory (DST). Therefore, alternatives for classifying conflict under DST are discussed and a new approach is proposed based on the PROMETHEE method. To illustrate the use of the approach proposed, a numerical example from the literature on this topic is considered. The results obtained by comparing this proposal and the approach suggested in the literature indicate consistency in the classification, and enable a multicriteria analysis of conflict in DST to be broadened such that this now contemplates decision-makers (DMs) who are more aligned with the structure of the PROMETHEE method. This method includes several intra-criteria preference functions and considers different thresholds within the scale. In addition to a new approach for classifying conflict under DST, this article proposes an adaptation to the disaggregation model based on linear programming in the literature, from which the parameters of the model can be generated using examples of conflict defined by the DM. The approach proposed uses this aggregated information from the DM and disaggregates it in order to define the parameters of the model, and results in a multicriteria analysis of conflict in Evidence Theory.

Keywords: Evidence Theory. Classification of conflict. Multicriteria classification. MCDM. PROMETHEE.

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