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Rationality of Induced Ordered Weighted Operators Based on the Reliability of the Source of Information in Group Decision-making

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Abstract: The aggregation of preference relations in group decision-making (GDM) problems can be carried out based on either the reliability of the preference values to be aggregated, as is the case with ordered weighted averaging operators, or on the reliability of the source of information that provided the preferences, as is the case with weighted mean operators.

In this paper, we address the problem of aggregation based on the reliability of the source of information, with a double aim: a) To provide a general framework for induced ordered weighted operators based upon the source of information, and b) to provide a study of their rationality. We study the conditions which need to be verified by an aggregation operator in order to maintain the rationality assumptions on the individual preferences in the aggregation phase of the selection process of alternatives. In particular, we show that any aggregation operator based on the reliability of the source of information does verify these conditions.

Keywords: aggregation operators; induced aggregation; group decision-making; preference relations; rationality; consistency;

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