RICHER - A Method for Exploiting Incomplete Ordinal Preference Information in Value Trees

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Abstract:
In this paper, we present the RICHER method which allows the decision maker (DM) to give incomplete ordinal statements concerning (i) the relative importance of attributes and (ii) the performance of alternatives with regard to a given subset of attributes. For example, the DM may state that an alternative is among the three most preferred alternatives, or specify a subset of alternatives in which the most preferred alternative is not contained. Computational challenges due to the non-convexity of the feasible score set are resolved by developing an equivalent mixed integer linear programming formulation. An illustrative example is given to demonstrate that RICHER can be readily employed in conjunction with other preference programming methods.

Keywords:
Incomplete preference information, ordinal information, value tree analysis, decision analysis.