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An Overview of a Decision Support System for Solving Discrete MCDM Problems Under Certainty and Uncertainty Applications to Multi-Objective Production Planning

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Abstract

In this paper we overview RADIAL, a decision support system (DSS) for solving discrete multiple criteria decision making problem. RADIAL consists of five modules: a) date processing and statistics; b) screening methods, using various efficiency definitions and partial information; c) complete ranking methods, using simple and additive utility structures; d) interactive methods for finding the best alternative, including quasi-concave and unrestricted structure; and e) extensions to hierarchical multiple criteria problems, including decomposition, assessment, and aggregation for large number of criteria. Each category provides several procedures to accomplish the given task. Emphasis is placed on providing simple mechanisms within the DSS that the Decision Maker can understand and manipulate. We also discuss how RADIAL can accommodate problems under uncertainty. An overview of multiobjective formulations and solution approaches for production planning problems is given.

Keywords: Decision Support System (DSS), Ranking Methods, Utility Function, RADIAL.