

Multi-Criteria Decision Analysis via Ratio and Difference Judgement

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The point of departure in the present book is that the decision-makers involved in the evaluation of alternatives under conflicting criteria express their preferential judgement by estimating ratios of subjective values or differences of the corresponding logarithms, the so-called grades. Three MCDA methods are studied in detail; the Simple Multi-Attribute Rating Technique SMART, and the Additive and the Multiplicative AHP, both pairwise-comparison methods which do not suffer from the well-known shortcomings of the original Analytic Hierarchy Process. Context-related preference modeling on the basis of psychophysical research in visual perception and motor skills is extensively discussed in the introductory chapters. Thereafter many extensions of the ideas are presented via case studies in university administration, health care, environmental assessment, budget allocation, and energy planning at the national and the European level. The issues under consideration are: group decision-making with inhomogeneous power distributions, the search for a compromise solution, resource allocation and fair distribution, scenario analysis in long-term planning, conflict analysis via the pairwise comparison of concessions and multi-objective optimization. The final chapters are devoted to the fortunes of MCDA in the hands of its designers.

Audience: The book presents methods for decision support and their applications in the fields of university administration, health care, environmental assessment, budget allocation, and strategic energy planning and will be of value to practitioners, students and researchers in these and related fields.

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