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Decision Support Method DEX: Concepts and Applications

Managers are often faced with difficult decision problems, in which several decision alternatives have to be carefully and systematically assessed with respect to a multitude of possibly conflicting criteria. Such problems can be effectively approached by multi criteria decision modelling (MCDM) methods. Among these, there is an important class of qualitative MCDM methods, which are characterized by the use of symbolic, verbal, qualitative variables and decision rules. In this talk, I will present one such qualitative MCDM method, called DEX (Decision EXpert), which was developed at the Jožef Stefan Institute in Ljubljana, Slovenia. DEX attempts to combine the traditional numerical MCDM with fuzzy sets and rule-based expert systems. DEX is a fairly mature, hierarchical, qualitative, rule-based MCDM method, supported by the software called DEXi and used in hundreds of real-world decision-making studies. In the presentation, I will first position DEX in the context of MCDM methods. Then, I will introduce the main components of the method: hierarchical structure of attributes, qualitative scales, decision rules, and methods for the evaluation and analysis of decision alternatives. I will also demonstrate the key skills for using the DEXi software effectively. The presentation will be illustrated by two use-cases: a simple decision problem of job selection and a complex real-world application in strategic planning of electric energy production.