

Some ideas from DEA useful for MCDA.

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Abstract: DEA (Data Envelopment Analysis) is without doubt one of the most used OR methods nowadays. Some authors have studied the relations between DEA and MCDA, as decision or evaluation methods, analysing how DEA can be a useful tool for MCDA or vice versa. In this paper we analyse an outranking sorting methodology, Electre Tri, and we propose to exploit a concept belonging to efficiency studies, and so to DEA, as an improvement to the results obtained from Electre Tri. What Electre Tri gives us as a result is a classification of alternatives in predetermined classes. That is, in the simplest situation of two classes of good and bad alternatives Electre assign some alternatives to the good group and the rest to the bad group. And that is the end of the analysis. But, it would be interesting to know what a bad alternative should do to pass from the bad group to the good one. What should be the improvement on the performances, and under which criteria, to let one alternative to rise to a better group?. This is a concept well known in DEA where for each non-efficient DMU (decision making unit) a slack is given, this slack is the necessary improvement under that input/output (criterion in MCDA) to make the DMU efficient. We present here a methodology to generate slacks in MCDA providing the necessary improvement under each criterion to make an alternative to rise to a better group in Electre Tri.

Key words: *Multicriteria decision aid, DEA, evaluation and decision processes.*