MULTICRITERIA DECISION AID TECHNIQUES: SOME EXPERIMENTAL CONCLUSIONS

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Abstract

Decision aids are computer systems intended to assist users in analyzing tradeoffs in their decisions. Some of the methods implemented in decision aids have been tested over a series of past experiments conducted by the authors. This paper presents the authors' evaluation of the methods with respect to cognitive complexity. Decision aids must be easy to understand and use if they are to be implemented by nonspecialists. The need for improved sensitivity and recognition of cultural differences were cited as needed areas of development. The importance of methods to support learning was emphasized as an area in need of research activity.

Keywords: Decision aids, multiattribute analysis, selection decisions
1 Introduction

Many real-life decisions involve selection of one or more alternatives from a given set, and selection decisions are usually complicated by the existence of multiple, often conflicting objectives, criteria, or influencing factors [9],[11],[28],[29]. Over the past few decades, a number of interesting methods and systems to support selection decision making have been presented (see overviews [4],[25]). These tools have been developed throughout the world, incorporating different ideas. A popular European term for this class of decision support tool is decision aid.

As more and more decision aids appear in the market, the investigation of how users (not only specialists in decision analysis) are able to use these systems and interpret their results on a broad scale is necessary. In recent years in cooperation with our colleagues we carried out a series of experiments [13], [18], [19], [23], [24], [26], verifying the results in different settings, trying to understand the comparative effectiveness of their implementation, the role of decision models used, and finally to reveal possible cultural differences in using the systems. The overview of those results and related conclusions are discussed in this paper.

2 Decision Aid Methods

One of the most popular approach in multicriteria decision making is that of multiattribute utility theory, which is based on the concept of a decision maker preference function. A preference function is assumed of the form:

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value_i = \sum_{j=1}^{k} w_j score_{ij}
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