EDITORIAL

Editorial

Evangelos Grigoroudis · Michael Doumpos

Multiple criteria decision aiding (MCDA) has evolved over the past decades as a significant field of operations research, dealing with decision problems involving multiple conflicting criteria. Both the theory and practice of MCDA have evolved significantly, focusing on issues such as: (1) the resolution of the conflicting nature of the criteria, (2) the modeling of the decision-makers' preferences, (3) the identification of compromise solutions and the analysis of their consequences, and (4) the development of decision aiding models and paradigms. Recent developments in the field include the advances in preference elicitation/disaggregation procedures for several forms of decision models, as well as the interaction with other disciplines such as evolutionary computation, rough sets, fuzzy sets theory, neural networks, etc.

Except for the advances in the theory of MCDA, interesting new application areas have also emerged, including applications in environmental management and energy planning, e-commerce and marketing, education, health care and other public services, finance and economics, etc. Such applications illustrate the potential of MCDA in practice and highlight new challenges and limitation that theory should address.

This special issue entitled "Multiple Criteria Decision Aiding in Management Problems" is focused on the managerial applications of MCDA. The special issue has been prepared on the occasion of the 5th Annual Meeting of the Greek Working Group on MCDA, held in Chania, Greece, during 27–28 September 2007. After a rigorous reviewing process, six papers were finally selected for publication in this issue.

E. Grigoroudis · M. Doumpos (✉)
Department of Production Engineering and Management, Technical University of Crete,
University Campus, 73100 Chania, Greece
e-mail: mdoumpos@dpem.tuc.gr

E. Grigoroudis
e-mail: vangelis@ergasya.tuc.gr

The special issue begins with two papers on applications of preference disaggregation methods. In the first paper, by Lakiotaki, Delias, Sakkalis, and Matsatsinis, the UTA* algorithm is used to infer partial utilities describing customer preferences for olive oil products. This preferential information is then used to obtain an improved clustering of the customers according to their preference profiles.

In the second paper, Kitsios, Grigoroudis, Doumpos, and Zopounidis study the success of New Service Development (NSD) strategies in the hotel industry. The authors use a sample of Greek hotels that implemented NSD projects and employ the UTADIS method to develop models that explain and predict the likelihood of success. A comparison with several other techniques illustrates the high performance of the multicriteria methodology.

The third paper, by Voulgaridou, Kirytopoulos, and Leopoulos, involves the sales forecasting problem for new products. The analysis is based on the Analytic Network Process (ANP), which takes into account both tangible and intangible criteria as well as the interdependencies between the criteria. The model is applied to the forecasting of the sales of a new book.

The remaining three papers are related to applications of multiobjective optimization. The paper by Xidonas, Askounis, and Psarras, presents an integrated multicriteria approach to the portfolio selection problem. The proposed methodology is a two-stage process, combining both discrete outranking methods for stock selection, as well as a multiobjective optimization model for the construction of efficient portfolios.

In the next paper, Loukeris, Donelly, Khuman, and Peng use metaheuristic techniques to consider not only the traditional mean-variance criteria in portfolio optimization, but also the higher moments of the investor's utility function. For this purpose three metaheuristics are compared: a genetic algorithm, the particle swarm optimization algorithm, and the differential evolution algorithm.

The special issue closes with the paper by Marinakis, Marinaki, Matsatsinis, and Zopounidis. The authors propose a new memetic algorithm for the clustering problem, which is based on the concepts of genetic algorithms, particle swarm optimization and the greedy randomized adaptive search procedure. The results of an extensive experimental analysis indicate that the proposed algorithm performs well compared to other metaheuristics.

Sincere thanks must be expressed to all the authors whose contributions have been essential in creating this special issue. We also owe a great debt to those who worked long and hard to review all the submitted papers and contributed to the achievement of this special issue's high standard.