

Guest Editorial Preface

Special Issue on Decision Support Systems: Innovative Approaches for Everyday Decisions

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In contemporary society, most individuals, and especially decision-makers and leaders, are confronted with complex decision problems on a daily basis. This special issue will try to search for and highlight ways for improving our behavior inside the society and business, through sustainable choices. In general, in order to tackle the problem of complex decision-making problems, decision-makers can rely on external sources of information to help them gain the necessary insight into the problem and collaborate more effectively to solve the problem.

Many and various information technologies and systems have been developed that can help decision-makers in their decision-making process that gather data and produce information to support them, like as instance Intelligence Systems, Big Data, or Knowledge Management Systems. These systems help decision-makers to understand the entire situation, its direct and indirect context and environment, help to evaluate any action/option in assessing the costs of the various decision-making alternatives, and can eventually enable people to improve their decision-making process as well as their final outcome.

Hence, this special issue includes innovative approaches and models to deliver decision making support, dialog management between the user and system, DMSS operations, and DMSS technology management. All the articles aim to relate DMSS technology to improvements in the process and outcomes of the decision-making process.

This special issue consists in a selection of contributions presented during the Euro Mini International Conference on Decision Support System Technologies (Em-ICDSST), held in Madeira, Portugal, May 2019. The five presented papers in this issue are extended from the first version presented at the ICDSST.

A first paper, entitled “Multi-Criteria Analysis and Consequential Lifecycle Assessment of Solid Waste Management: An Integrated Approach,” by Bernstad Saraiva, Clímaco, Valle, and Mahler, investigates the combination of consequential lifecycle assessment (CLCA) and multicriteria decision analysis (MCDA), using VIP-analysis, as a decision aid tool in a local context. Thus, in this paper, the authors developed a case study comparing various approaches for the management of Rio de Janeiro’s organic waste and they finally compared the results using two rankings regarding the selected criteria/impact categories.

The second contribution to this special issue proposes an innovative perspective for agricultural management and is entitled “Applications of DSSs in Irrigation and Production Planning in Agriculture.” In this paper, Papathanasiou, Bournaris, Tsaples, Digkoglou, and Manos present a Decision Support Systems (DSSs) focused on the agricultural sector, which can be used for planning

of agricultural production and better utilization of a region's available resources. The proposed DSS was successfully tested in a region in Greece with high agricultural interests and needs.

A third paper goes on a totally different type of data, illustrating the use of a Gamma Generalized Linear Model. In their contribution entitled "Representativeness of Taxi GPS-Enabled Travel Time Data for Developing Reliable Travellers' Information Provision Systems: Extracting Relations Among Skewed and Heteroscedastic Traffic Data Using Gamma Generalized Linear Model," Myrovall, Karakasidis, Morfoulaki, and Aifadopoulou deal with transportation and traffic monitoring problems. Through a case study based on Thessaloniki (Greece), the authors analyzed that there is a strong relationship between floating taxi data and overall traffic for the critical urban roads examined, which is further influenced by various significant factors.

A fourth paper, entitled "A Decision Support System for Resilience Assessment Based on Multi-Viewpoint Modeling and Functionality Analysis of Interconnected Systems," by Nastov, Kamissoko, and Chapurlat, presents a creative approach for assessing and improving the resilience of critical infrastructures that are important to societies, as the authors adapt the multi-viewpoint modeling principles promoted in Model-Based Systems Engineering domain combined with a resilience assessment approach.

The last paper to this special issue proposes an innovative perspective for agent based DSS and is entitled "A Text Mining Approach Agent-Based DSS for IT Infrastructure Maintenance." In this paper, Elandaloussi Sidahmed, Zarate Pascale, and Taghezout Noria present an IT infrastructure called (MAITD-2) in order to classify, analyze, and take problems to closure in a short time face to a multi-criteria decision-making problem.

Altogether, the selected papers demonstrate the variety and significance of issues to be dealt with in the field of decision making and innovative approaches in MCDM. We would like to thank all the authors for submitting their works to be considered for this special issue. We hope that you will enjoy and that you will find valuable information for your research and practice in this publication and it will open the door for many new pieces of research.

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Guest Editors

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