Editorial

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Biographical notes: Taicir Moalla Loukil received her State Doctorate from the Faculty of Economics and Management of Sfax, Tunisia in 2001. She worked as the Chief of the Development Studies Department at the Office des ports Aériens de Tunisie prior to joining University of Sfax. She is actually the President of the Tunisian Operations Research Society (TORS). Her research activities include decision aid, combinatorial optimisation, multicriteria optimisation, scheduling and logistics. She has authored and co-authored more than 50 scientific papers published in specialised journals and book chapters. She has also supervised 20 PhD theses and more than 30 Master theses.

Mohamed Ayman Boujelben received his PhD in Quantitative Methods from the Faculty of Economics and Management of Sfax, Tunisia in 2011. He is currently an Associate Professor from the Institute of High Commercial Studies of Sfax, Tunisia. He was also the President of the Tunisian Operations Research Society (TORS) for the period 2015–2017. His teaching activities cover business analytics, operational research, mathematical programming and decision theory. His research activities are mainly focused on multicriteria decision aid, clustering and belief functions theory.

Multiple criteria decision aid (MCDA) is a discipline that deals with decision problems involving simultaneously several criteria. Since the late sixties, this field has been an attractive research framework due the diversity of the problems and the emergence of new applications. As a result, an important number of theoretical contributions and applications have been proposed.

This special issue offers a selection of seven papers in this context. It was basically addressed to the works presented and discussed at the 2016 International Conference on Decision Aid Sciences and Applications (DASA '16) held in Hammamet (Tunisia) from 18th–20th of July. It was also open to the broad MCDA community. We would like to thank all the authors for choosing this issue to submit their papers. We also thank all the

referees for their rigorous review and their constructive comments to improve the quality of some works. This special issue proposes some theoretical results and interesting applications that reflect the utility of using the multicriteria approaches in real-world cases. The addressed topics cover especially integrated MCDA tools, the preference elicitation and concrete problems in different fields.

Oliva et al. address the problem of evaluating patient classification systems induced by the change of coding systems (from ICD-9 to ICD-10) in Spanish hospitals. The ELECTRE III approach is used in this context. A case study at the University Hospital of Fuenlabrada (Madrid, Spain) is also discussed in this paper.

Elleuch and Frikha present an integrated model based on several approaches for the facility location problem in a multicriteria context. In order to choose the best sites, the PROMETHEE method is combined with a linear programming model using the stretching and shrinking graphs approach. A real application case in Tunisian Aluminum Company is also given.

Drira et al. propose a multicriteria analysis to assess the pollution in the southern coastal of Sfax (Tunisia) based on a wide range of physico-chemical and biogeochemical parameters. This study is performed using a multicriteria clustering approach in order to obtain a partition of several stations according to different pollution levels. The results reveal the principal factors of the high level as well as the main source of the pollution in this coastal area.

Oppio and Bottero explore the combination of MCDA tools to address the need of the Italian Alpine Club to efficiently allocate economic resources in the context of the huts management. An integrated evaluation model based on a spatial multicriteria analysis and PROMETHEE is proposed in order to define the most suitable mountains 'huts to be renovated and valorised.

Frikha and Charfi address the preference elicitation problem of the criteria weights in the famous outranking method ELECTRE I. Based on a set of binary relations given by the decision maker, a preference disaggregation approach modelled by a linear program is given in order to infer the weights values. A numerical example is also provided in order to illustrate the proposed model.

Maalej et al. describe a linguistic reliable quality function deployment (RQFD) method for the healthcare sector. The proposed approach is based on the 2-tuple representation model. It offers the experts valuable information and more accurate risk analysis results. A real case study of a dialysis service is also given to illustrate this method and conclusions are drawn.

Banamar and De Smet propose an extension of PROMETHEE II to temporal evaluations. In addition to the contribution related to the setting of dynamic thresholds, a new approach to determine the time weighting vector is introduced. Simulation results are also presented to show the effectiveness of the model. Finally, an example is given to illustrate this approach.

Overall, this special issue reflects a vital link between theoretical and methodological developments with real applications. It also shows the potential offered by MCDA to bring solutions in practice. We recommend therefore this issue to the MCDA community. We hope that the researchers will find this collection of seven papers as useful from methodological and applicative perspectives.