Editorial

**Ulrike Reisach¹ · Dorien DeTombe² ·
Gerhard-Wilhelm Weber³**

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The 20th Triennial Conference of the International Federation of Operational Research Societies (IFORS XX), in Barcelona, Spain, July 13–18, 2014, was the right platform to generate a special Issue of the Central European Journal of Operations Research (CEJOR) initiated which invited submissions of papers on International Aspects of OR. The topic followed the stream International Aspects of OR History and Education within the Main Area “OR Education, History, Ethics, and Behavioural OR” and was strongly supported by the EURO WG on Methodology of Societal Complexity and the EURO WG on OR for Development.

The special issue focusses on theoretical and applied contributions in fields such as Energy, Environment and Climate, Methodology of Societal Complexity, OR for Developing Countries, and Behavioral OR.

Optimization and finance

On the topic of Optimization there is an article of Kamil J. Mizgier (Switzerland) titled “*Multiobjective Optimization of Credit Capital Allocation in Financial Institutions*” in which he describes that the evolution of international regulation leads to new capital

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✉ Gerhard-Wilhelm Weber
gweber@metu.edu.tr

Ulrike Reisach
ulrike.reisach@hs-neu-ulm.de

Dorien DeTombe
detombe@nosmo.nl

¹ Information Management Faculty, Neu-Ulm University of Applied Sciences Centre of Excellence in Corporate Communications, Wileystraße 1, 89231 Neu-Ulm, Bavaria, Germany

² Methodology of Societal Complexity, Chair Euro Working Group, Amsterdam, The Netherlands

³ Institute of Applied Mathematics, Middle East Technical University ODTÜ, 06800 Ankara, Turkey

requirements imposed on globally active companies. Financial services firms allocate capital to business lines in order to withstand the materializing credit losses and to measure performance of various business lines. The study introduces a methodology for optimal credit capital allocation based on operations research approach on the efficient allocation of capital to business lines characterized by credit risk losses. Different allocation methods are used, which provide a rationale behind using OR approach. Multi-objective optimization models are formulated to capital allocation problem MOMCAP and apply this to a real-world case of two financial conglomerates.

Logistics and game theory on electricity

In her paper “Supply function equilibria for uniform price auction in oligopolistic markets”, Alexander Vasin, Marina Dolmatova (Russian Federation) and Gerhard-Wilhelm Weber (Turkey) use game-theoretic models related to the supply function auction for electricity markets. They determine the set of supply function equilibria (SFE) for a symmetric oligopoly with linear demand, fixed marginal cost and capacity constraint. The authors study the best response dynamics and show that in general it does not converge to any SFE. They define sufficient conditions for the convergence and conclude on the optimal parameters of the auction.

Logistics on export

The contribution by Pinar Acar (Turkey), called “*The effects of Top Management Team composition on SME Export performance: an upper Echelons Perspective*”, aims at identifying the factors associated with SME export performance. The association between top management team demographic composition and SME export performance is examined in an emerging market context and drawing from upper echelons perspective. Focusing on such commonly examined upper echelons attributes as age, education level, and tenure, her research assessed whether top management team composition distinguished between SMEs in terms of their export levels. Results on a sample of 128 Turkish companies obtained by a hierarchical regression analysis indicate that SMEs with lower mean industry tenure and higher age separation diversity have higher levels of export performance.

Healthcare efficiency

In the article “*The Relationship between the Efficiency of Orthopedic Wards and the Socio-Economic Status of their Patients*” by Zilla Sinuany-Stern, Simona Cohen-Adosh and Lea Friedman (Israel), the effect of the socio-economic status of patients on the efficiency of orthopedic wards in acute hospitals in Israel hospitals are studied from the viewpoint of the regulator—Israel Ministry of Health. First Data Envelopment Analysis (DEA) is used with two inputs, and outputs, where one output is undesirable—number of deaths—which also reflects the quality of the health services. Then various nonparametric tests are utilized to test the relationship between the socio-economic status of patients and the efficiency. Two versions of DEA were used: the output oriented version variable returns to scale, and the non-oriented version Additive.

Utility theory and fairness

The paper on “*Utility-based two-stage models with fairness concern*” by Yong Zha, Jun Wang, Nannan Liang and Chuiri Zhou” (China) studies the impact of social comparison and fairness concerns on the efficiency of a two-stage process. The decision maker of each stage cares about not only the absolute score of his efficiency, but also the relative status when comparing with the other. By incorporating utility theory and the concept of fairness, an efficiency-based Neumann–Morgenstern cardinal utility is defined to compose of basic utility from its self-efficiency and additional utility from the fairness concern of the other’s efficiency. Based on equitable outcome comparison and by investigating the non-cooperating relationship between two stages, they show that the stage dominating the process has the incentive to optimize his efficiency without ignoring that of the other, which is contrary to the conventional situation. They further investigate the cooperation between two stages and find that the efficiencies of the stages vary with the coefficients of unfairness perceptions.

Behavioral effects on multi-criteria incremental analysis

In their article of “*Incremental Analysis for generalized TODIM*” by Yuan-Sheng Lee and Hsu-Shih Shih (Taiwan), the authors aim to generalize TODIM (an acronym for Interactive and Multiple Attribute Decision Making) to eliminate two types of scaling effects by incremental analysis, IA. The proposed procedure firstly divides the criteria into two categories, benefits and costs, each of which is manipulated separately so as to facilitate IA. For each category, the pairwise dominance of one alternative is accumulated and normalized to represent the global dominance of each alternative. The global dominance measurements of alternatives in both categories are then combined according to benefit-cost ratio in order to rank alternatives. Sensitivity analyses on the parameters of the gains-losses value function and the cutoff benefit-cost ratios demonstrate the robustness of the model. An example of the selection of fuel buses is illustrated, and shows that the model is feasible and effective for MCDM problems under risk.

As the Guest Editors, we hope that the selected topics display the a selection of the international research coping with complex problem solving in a holistic way which is characteristic for modern Systems Research and Cybernetics. We are very thankful to the *Central European Journal of Operations Research (CEJOR)* and the publishing house of *Springer* for having given us the opportunity and honour of hosting this special issue as a scientific project. Particular gratitude is extended to the Editor in Chief of CEJOR, *Prof. Dr. Ulrike Leopold-Wildburger*, for her interest, confidence and support spent on our Special Issue from the very first moment of the project, and to *Mr. Dilip Rajasekar*, for his continuous service and helpful attitude during the previous ca. 18 months. We thank all the authors for their efforts and willingness to share their insights with the world and hope that their research will foster cooperation and progress on a worldwide scale.

The Guest Editors

Ulrike Reisach, Dorien DeTombe and Gerhard-Wilhelm Weber

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