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Mohamed Zied Babai, Oualid Jouini

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IMA Journal of Management Mathematics, special issue Operations Management in Service Systems

The service sector is the largest sector of the economy in most industrialised nations, and is fast becoming the largest sector in developing nations as well. Driven by today's new business environment including advanced telecommunications, accelerated business globalisation, increased automation, and highly on-demand and competitive innovations, the complexity of the operations management of service systems is continuously increasing. Managers of service systems are wrestling to deliver both traditional conflicting objectives of low operating costs and high service quality.

Consequently, the problems of operations management in service systems have recently attracted a lot of attention. The most popular applications relate to Services for Supply Chains, Health Care Systems and Call Centres. Given the size and the complexity associated with their operations, service systems have emerged as a fertile ground for academic research. We were delighted therefore to be offered the opportunity to edit this special issue of the *IMA Journal of Management Mathematics* on operations management in service systems. We hope that through this special issue we have achieved our objective which is to advance the current state of knowledge in this area, adding in parallel significant value to relevant real-world practices. This special issue demonstrates that all the key areas addressed in Manufacturing Operations (such as demand forecasting, acquiring capacity, deploying resources, and managing delivery) are now also reflected in the Services Operations agenda. However, issues such as behavioural factors, the emerging need for an increased standardisation and automation of the operations, handling technological advances (such as the digitalisation of systems) and cultural issues (such as those resulting from the globalisation of systems, e.g. big call centres) that introduce many interesting research opportunities have not yet sufficiently explored and more remains to be done in this area to gain new interesting managerial insights.

The call for this Special Issue has attracted many submissions. All manuscripts underwent a rigorous review process which resulted in the six papers presented in this special issue. This process required the cooperation of both authors and reviewers and we thank all of them for their efforts and diligence; they all made our role as Special Issue Editors easy and enjoyable.

The first two papers deal with applications to healthcare systems. Call centres operations are investigated in the third paper and the last three papers deal with supply chain applications. The papers included in this special issue span from 'hard' OR methodological approaches to fully qualitative studies. The first paper by Griffiths, Knight and Komenda focuses on bed management in a Critical Care Unit (CCU). The authors propose a mathematical model that shows how improvements in bed management may be achieved by distinguishing between two categories of patients: the unplanned (emergency) and the planned (elective) patients. The novelty of this paper lies in its moving away from the steady state conditions by assuming time dependent ones which is the case for the activities in all hospital environments. Banditori,

Cappanera and Visintin develop in their paper a combined optimisation-simulation approach to the master surgical scheduling problem. The authors present a mixed integer programming model that produces a solution that indicates, for each day of the month and for each time slot of the day, the number of cases to treat and the surgery group these cases must belong to. The authors also describe a combined optimisation-simulation approach that allows fine-tuning of the optimisation model to trade off robustness and efficiency. The third paper by Saccani takes an integrated view on demand forecasting in call centres. An action research study in a multi-client call centre organisation is presented. The findings allow the suggestion of some design principles for the four dimensions involved in the forecasting process: method, organisation, people and technology. A forecasting framework is developed which is shown to account for substantial operational improvements. Bouzembrek, Allaoui, Goncalves and Baklouti develop in their paper a possibilistic linear programming (PLP) approach for supply chain network design with imprecise inputs: market demands, supplied quantities, transportation costs, opening costs, treatment and storage costs, which are modeled as fuzzy variables. A method for solving the PLP problem with fuzzy parameters is developed and its application to a European textile company is explored. The paper by Yu and Ramanathan investigates the links between business environment, employee competencies, operations strategy and performance for a sample of retail companies in China. The authors show that employee competencies fully mediate the effects of the business environment on operations strategy, and that the employee competencies-performance connection is mediated by operations strategy. Finally, Altay is concerned with the efficiency and effectiveness of resources allocation in a 'disaster' situation. He develops an integer programming model for the capability-based multi-resource multi-location allocation problem. The model is intended to take advantage of a nationwide resource inventory listing in order to allocate response personnel, facilities, supplies and equipment to impact jurisdictions.

We hope you will find the papers included in this special issue interesting and thought-provoking and that they will stimulate your research and inform your practice.

Mohamed Zied BABAI

BEM-Bordeaux Management School
680 cours de la Libération, 33405 Talence Cedex, France
tel: +33 5 56 84 63 51
email: mohamed-zied.babai@bem.edu

Oualid JOUINI

Ecole Centrale Paris
Grande Voie des Vignes, 92 290 Châtenay-Malabry, France
tel: +33 1 41 13 15 02
email: oualid.jouini@ecp.fr