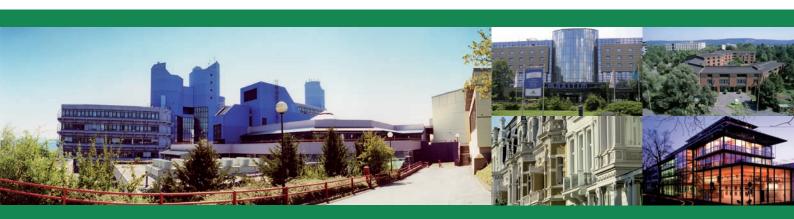# 23rd

EUROPEAN CONFERENCE ON OPERATIONAL RESEARCH

Bonn, July 5 - 8, 2009

BOOK OF ABSTRACTS

UNIVERSITÄT SIEGEN

Ministerium für Innovation, Wissenschaft, Forschung und Technologie des Landes Nordrhein-Westfalen

EURO

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GOR

INFORM

We study a practical distribution problem encountered in a food company in Denmark. The problem is to determine routes for a fleet of heterogeneous vehicles and assign the routes to a number of drivers over a week such that the customers are supplied within their time windows. Furthermore, the drivers can not work for more than 37 hours per week. Special driving rules must be respected, e.g., a 45-minute break must be ensured after 4.5 hours driving. The objective is to minimize the total traveling distance. A variable neighborhood search is developed. Preliminary results will be presented.

2 - On the use of run time distributions to characterize stochastic local search algorithms

Celso Ribeiro, Department of Computer Science, Universidade Federal Fluminense, Rua Bogari 70, 22471-340, Rio de Janeiro, RJ, Brazil, celso@inf.puc-rio.br, *Isabel Rosseti, Reinaldo Vallejos*

We explore run time distributions and describe a new tool to compare two algorithms based on stochastic local search. For the case where the running times of both algorithms fit exponential distributions, we derive a closed form index that gives the probability that one of them finds a solution at least as good as a given target value in a smaller computation time than the other. This result is extended to the case of general run time distributions and a numerical iterative procedure is described for the computation of the above probability value.

■ TE-20

Tuesday 14:30-15:50
Mann

DEA Applications I

Stream: DEA and Performance Measurement
Invited session
Chair: *Ali Emrouznejad*, Aston Business School, Aston University, B4 7ET, Birmingham, United Kingdom, a.emrouznejad@aston.ac.uk

1 - Dea in evaluating managerial practices

Juha Eskelinen, Helsinki School of Economics, Uimarannantie 23 C, 00780, Helsinki, Finland, juha.eskelinen@student.hse.fi

A DEA model was employed to rank branches of a retail bank by their efficiency. A significant positive relationship was found between the efficiency rankings and team leader evaluations made by the branch staff.
The findings are aligned with the theory of High Performing Work Systems according to which a bundle of good managerial practices is a driver of workplace performance.
The study provides a bridge between techniques of Operations Research and contemporary HR Management. DEA can shape the HRM research and practices on the workplace level.

2 - Performance comparison between retailing stores using a malmquist-type index

Clara Vaz, Escola Superior de Tecnologia e de Gestão, Instituto Politécnico de Bragança, Campus de Santa Apolónia, Apartado 134, 5301 - 857, Bragança, Portugal, clvaz@ipb.pt, *Ana Camanho*

This study develops a framework that combines different methods to provide insights regarding the performance of retailing stores. Firstly, the framework enables to specify appropriate targets for stores using DEA. This involves comparing stores within homogeneous groups. Secondly, the framework compares the overall performance of these groups. This requires the combined use of Malmquist type index and statistical tests. This index is decomposed into components for comparing the efficiency spread between groups and the productivity differences between the best-practice frontiers of the groups.

3 - Performance evaluation of universities from the students' perspective

Regina Schlindwein, Institut für BWL (510A), University of Hohenheim, Schloss Osthof Nord, 70599, Stuttgart, Germany, r.schlindwein@uni-hohenheim.de

One of the most popular evaluations of universities in Germany is the CHE-Ranking conducted annually since 1998 by the Centrum für Hochschulentwicklung. This ranking builds three ranking groups for different criteria. Based on the CHE data, especially the surveys among students, we evaluate teaching performance from the students' perspective through a data envelopment analysis (DEA). We use a DEA bootstrap approach to consider stochastic influences in the data. Moreover we are able to identify stochastic dominance relations between university departments.

4 - Efficiency analysis of islamic banks: a case of gulf cooperation council (gcc)

Abdel Latef Anouze, Aston Buisness, Aston University, 5 Colchester Street, CV1 5NY, Coventry, United Kingdom, aamajed2001@hotmail.com, *Ali Emrouznejad*

This paper aims to analyze the efficiency and productivity change of 70 commercial banks: Gulf Cooperation Council (GCC) cases over period 2000-2007. To deal with negative data, the semi-oriented radial model, the modified slack based model and the range directional model were employed. Statistical tests are used for cross country comparison and for comparison between Islamic and Conventional banks. Our findings are that Islamic Banks are more efficient than Conventional Banks in GCC. Cross-countries analysis shows that the countries with less concentration banks are more efficient.

■ TE-21

Tuesday 14:30-15:50
Hauptmann

AHP I

Stream: Analytic Hierarchy Processes, Analytic Network Processes
Invited session
Chair: *İlker Topcu*, Istanbul Technical University, Turkey, ilker.topcu@itu.edu.tr

1 - A multi-criteria decision model framework for military force comparison

Ahmet Kandakoglu, Department of Industrial Engineering, Istanbul Technical University, Macka, 34367, Istanbul, Turkey, kandakoglu@itu.edu.tr, *Y. Ilker Topcu*

This paper proposes a multi-criteria decision model framework based on the integrated utilization of SWOT analysis and Analytic Hierarchy Process (AHP) to compare the military forces. In this framework, while SWOT analysis structures the decision hierarchy for the evaluation, AHP measures the relative importance of evaluation criteria in this decision hierarchy. Then, the comparison of opponent forces is determined to increase the situation awareness in the battlefield. An illustrative case study is presented to demonstrate the applicability of the proposed framework.