# Lecture Notes in Economics and Mathematical Systems

Managing Editors: M. Beckmann and W. Krelle

335

A.G. Lockett G. Islei (Eds.)



## Improving Decision Making in Organisations

Proceedings of the Eighth International Conference on Multiple Criteria Decision Making Held at Manchester Business School, University of Manchester, UK, August 21st—26th, 1988



Fachbereich Mathematik
Technische Hochschule Darmstadt
Bibliothek

Inv.-Nr. B 22 505

Springer-Verlag

Berlin Heidelberg New York London Paris Tokyo Hong Kong

### TABLE OF CONTENTS

## PART I - Psychology

Acquisitions, Mergers and Habitual Domains Analysis D.K. Datta and P.L. Yu	1
An Experimental Study of the Effectiveness of Computer-Programmed Decision Support D. Timmermans, C. Vlek and L. Hendrickx	13
Decision Rationality and Habitual Domain Analysis P.L. Yu, S.D. Huang and D. Zhang	24
A Holistic Approach in Multicriteria Decision Aid M.A.C.C. Matos and V. Miranda	34
A Comparison of Multi-Attribute Utility Generation Methods A. Money, P. Naude and T. Wegner	46
Interactive Optimization: An Optimal Scaling and Step Sizing Approach for the Method of Abstract Forces R.J. Clinton and M.D. Troutt	58
A Multidimensional Scaling Model for Qualitative Pair Wise Comparisons W.A. Schreuder and E. van Dyk	68
Modelling Inaccurate Determination, Uncertainty, Imprecision Using Multiple Criteria D. Bouyssou	78
PART II - Organisation	
The Meeting Simulator for Stimulating Abduction Y. Sawaragi, T. Nakagawa, K. Hori and S. Inabayashi	88
The Use of Symbols in Multicriteria Decision Making D. Cray	100
Identification and Development of Alternatives: Introduction to the Recognition of Process Typologies M.F. Norese and A. Ostanello	112
On-Line Group Decision Support T. Gear and M. Read	124
The Effect of Decision Maker Characteristics on Group Decision Making L.S. Franz, G.R. Reeves and J.J. Gonzales	134

Gestalt System of Holistic Graphics: New Management Support View of MCDM	143
E. Kasanen, R. Östermark and M. Zeleny	
PART III - Applications	
The Use of Multicriteria Techniques to Rank Highway Investment Proposals	157
A.D. Pearman, P.J. Mackie, A.D. May and D. Simon	
Linear Goal Programming in Estimation of Classification Probability E.U. Choo, W.C. Wedley and K.F. Lam	166
Formal Tender Evaluation K.R. Backwell	179
Ranking, Monitoring and Control of Research Projects in the Pharmaceutical Industry	191
G. Islei, B. Cox and M.J.W. Stratford	
The Analysis of Liquid Milk Supply to Urban Agglomeration by Bicriterion Linear Transportation Model with the MPSX/370 Package W. Szymanowski and W. Ogryczak	203
Desirable Properties of Interactive Multi-Objective Programming Methods H.G. Daellenbach and J.T. Buchanan	212
Multicriteria Issues in Marketing: A Sales Resource Allocation Example and Potential Areas of Future Research L.R. Gardiner, A. Stam and E.A. Joachimsthaler	224
An Interactive Multi-Criteria Model for Audit Workload Planning J.C. Gardner, R.J. Huefner and V. Lotfi	234
NMIS: A National Model for Inspection Selection With Limited Resources R.K. Klimberg, C. ReVelle and J. Cohon	244
Multiple Criteria Decision Support Systems on Microcomputers - An Application in Production Planning B. Karpak	254
A Multiobjective Model for Locating Public Facilities on an Uncongested Transportation Network K.G. Zografos, H.S. Levinson, R. Cromley and A. Sissouras	264
A Multicriterion Optimization Model for Industrial Promotion: The Case of Korea M.T. Tabucanon and M.J. Shin	275
V.I.S.A VIM for MCDA V. Belton and S.P. Vickers	287

A Hybrid Model of Strategic Planning P. Naude and E. Scholtz	305
On Health Care Districts Planning by Multiobjective Analysis with the MPSX/370 Package W. Ogryczak and J. Malczewski	314
An Interactive Support System for Bond Trading H. Nakayama	325
PART IV - Methodology	
A Careful Look at Efficiency in Multiple Objective Linear Programming P.Korhonen and J. Wallenius	334
Alternative Scales in AHP B. Schoner and W.C. Wedley	345
Describing and Formalizing the Evaluation Process of Portuguese Navy Officers C.A. Bana e Costa and C.F. Dinis das Neves	355
Inconsistent Linear Constraints and Objectives in MOLP Problems D.I. Soloveitchik	370
Multi Factorial Financial Planning J. Spronk	380
The Use of Preference Information in Multiple Criteria Interactive Procedures D. Vanderpooten	390
Construction of a Multiattribute Risk Function and its Properties for Assessing Hazardous Events F. Seo	400
Nondominated Tradeoffs and Termination in Interactive Multiple Objective Linear Programming M. Halme and P. Korhonen	410
Partial Information and Sensitivity Analysis in Multi-objective Decision Making S. French and D.R. Insua	424
Algorithms for Multi-objective Nonlinear Programming Problems: An Overview S.C. Narula and H.R. Weistroffer	434
Dynamic Interactive Network Analysis System W. Ogryczak, K. Studzinski and K. Zorychta	444
A Safe Choice Procedure in Interactive Programming W. Michalowski and T. Szapiro	454

Personal Computer-Aided Interactive Decision Making for Multiobjective Linear Programming Problems With Fuzzy Co- efficients and its Applications M. Sakawa and H. Yano	462
Performance Characteristics of Three Interactive Solution Strategies for Bicriteria Integer Programming R. Ramesh, M.H. Karwan and S. Zionts	472
PART V - Related Areas	
Multiple Criteria Trajectory Decision Support Using Polyscreen Workstations: A Production Planning Illustration R.E. Steuer, L.R. Gardiner and J.J. Bernardo	486
Multiobjective Decision Support for Simulated Gaming A.P. Wierzbicki	498
Research on Decision-Aiding: How To Be A DSS K. Bowen	510
Expert Knowledge Acquisition System O.I. Larichev, A.I. Mechitov, E.M. Moshkovich and E.M. Furems	517
Problem Structuring Tools for Pre-MCDM Stage D.P. Solomatin	522
Definite A Support System for Decisions on a Finite Set of Alternatives M. van Herwijnen and R. Janssen	534
And/Or Graphs, Scenarios and Multiple Criteria: Prototyping in Decision Support G.E. Kersten and G.R. Mallory	544
A Framework for Building an Expert System for MCDM Models Selection M. T. Jelassi and V.M. Ozernoy	553
An Expert System for Assigning Investment Quality Ratings Using the AHP V. Srinivasan and P. Bolster	563
Preparing an Intelligent Interface for the Use of Multicriteria Outranking Methods G. Balestra and A. Tsoukias	575
ABSTRACTS	
Abstracts of papers presented at the conference but not included in the proceedings	585

### APPENDICES

1.	Conference Participants	596
2.	Organisation	605
3.	List of Sponsors	606