

Jie Lu, Lakhmi C. Jain, and Guangquan Zhang (Eds.)

Handbook on Decision Making

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Handbook on Decision Making

Vol 2: Risk Management in Decision Making



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Dedication

*We are saddened by the death of Dr Patricia Cerrito,
whose immense contribution to the field of
decision making is acknowledged.
This book is dedicated to her.*

Preface

This book provides a systematic overview of developments in the field of risk management in decision making and outlines state-of-the-art research in fundamental approaches, methodologies, software systems, and applications in this area. It demonstrates how adaptations of intelligent methodologies and technologies benefit the study of risk management in decision making. The book promotes new research development through collaboration with research groups and researchers throughout eleven countries/regions in the world.

Risk management in decision making is more difficult in today's complex and rapidly changing decision environment than ever before. In recent years, both decision optimization under risk, and risk management in decision making have had unimaginable improvements. Decision support systems, risk analysis systems and emergency response systems are playing significantly more important roles in organizations in every discipline, including health, business, engineering, education and finance. At the same time, organizational decision makers and risk response officers are experiencing increasing requirements for advanced knowledge, previously successful experiences, and intelligent technical conditions to enable and support better risk analysis and decision making. As a result, the applications of intelligent methodologies and technologies are improving the functions and performance of these systems. This book, as the title suggests, aims to offer a thorough introduction and systematic overview of various aspects of the field, including both theorems and applications.

The book is organized in three parts, with 21 chapters: (1) Decision making under risk; (2) Risk management in business decision making; (3) Risk assessment and response systems. It provides a comprehensive research record of the theories, methodologies and technologies of risk management in decision making by outlining the application of various intelligence technologies such as fuzzy logic and similarities, agents, and bi-level optimization. It also includes various application-oriented chapters from water-related risk management, real estate investment prediction, road safety management, and supply chain risk management from the practical point of view.

Academic and applied researchers working on risk management, decision making, and management information systems areas will find the book to be a valuable reference resource. The methods, models and systems proposed in this book can be used by a large number of organizations in related applications. Business managers will also directly benefit from the information outlined in this book. Also, final year

undergraduate, Masters and PhD students in computer science, information systems, industry engineering, business management, and many other related areas will find that the book is an excellent reference text for their studies.

We wish to thank all the contributors and referees for their excellent work and assistance in producing this publication.

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Contents

Part I: Decision Making under Risk

Chapter 1: Risk Management in Decision Making

Jie Lu, Lakhmi C. Jain, Guangquan Zhang

1 Risk Management and Decision Making.....	3
2 Chapter Outlines.....	5
3 Summary	6
References and Further Readings	7

Chapter 2: Computational Intelligence Techniques for Risk Management in Decision Making

İhsan Kaya, Cengiz Kahraman, Selçuk Çebi

1 Introduction	9
2 Risk Management in Decision Making	11
3 Computational Intelligence Techniques in Risk Management	12
3.1 The Fuzzy Set Theory.....	13
3.2 Neural Networks.....	15
3.3 Evolutionary Computation.....	16
3.3.1 Genetic Algorithms.....	17
3.3.2 Genetic Programming.....	18
3.3.3 Classifier Systems.....	18
3.3.4 Ant Colony Optimization	19
3.3.5 Particle Swarm Optimization.....	20
3.3.6 Hybrid Systems.....	21
4 Literature Survey	21
5 Conclusions	29
References	31

Chapter 3: Using Belief Degree Distributed Fuzzy Cognitive Maps for Energy Policy Evaluation

Lusine Mkrtychyan, Da Ruan

1 Introduction	39
2 Fuzzy Cognitive Maps.....	40
3 Belief Degree-Distributed FCMs.....	45

4	Application Example of BDD-FCMs Group Mapping.....	48
5	Comparison of FCMs	52
6	Comparison of BDD-FCMs.....	54
7	An Example of Comparing Experts Using BDD-FCMs.....	55
8	Application Examples: Energy Policy Evaluation.....	57
9	Real-Life Case Study: Energy Policy Evaluation.....	59
10	Adding Confidence Levels(CVs) for Criteria: GBDD-FCMs and Experts’ Comparison Considering CL Values	62
11	Conclusions	65
	References	66

Chapter 4: The Risk of Comparative Effectiveness Analysis for Decision Making Purposes

Patricia Cerrito

1	Introduction	69
2	Preprocessing Data	70
3	Comparison of Multiple Drugs for Best Value.....	71
4	Effectiveness Analysis Using a Threshold Value.....	79
	4.1 NICE.....	79
	4.2 QALY	80
	4.3 Definition of Concepts.....	81
	4.4 Use of Text Analysis	82
	4.5 Text Analysis of Open Ended Questions.....	83
5	Discussion	86
	References	86
	Appendix: SAS Code for Preprocessing.....	87

Chapter 5: Portfolio Risk Management Modelling by Bi-level Optimization

Todor Stoilov, Krasimira Stoilova

1	Introduction	91
2	Taxonomy of the Risk	92
3	Portfolio Optimization Problem	95
4	Bi-level Hierarchical Optimization Problems.....	99
5	Solution of Portfolio Bi-level Problem.....	102
6	Assessment of the Bi-level Calculations	105
7	Conclusion.....	109
	References	110

Chapter 6: Possibilistic Decision-Making Models for Portfolio Selection Problems

Peijun Guo

1	Introduction	111
2	Markowitz’s Portfolio Selection Model	112
3	Upper and Lower Possibility Distributions	114
4	Identification of Upper and Lower Possibility Distributions.....	116

5 Possibilistic Decision-Making Models for Portfolio Selecting 118
 6 Numerical Example 119
 7 Conclusions 121
 References 122
 Appendix 123

Chapter 7: Searching Musical Representative Phrases Using Decision Making Based on Fuzzy Similarities

Emerson Castañeda, Luis Garmendia, Matilde Santos

1 Introduction 125
 2 Fuzzy Logic in Decision Making with Uncertainty..... 127
 2.1 Proximity and Similarity 128
 3 Measure of Specificity on Fuzzy Sets 129
 4 Intelligent Algorithm for Searching Musical Motifs 130
 4.1 Phrases and Variation Points 131
 4.2 Distance between Ordered Notes..... 131
 4.3 A W-Indistinguishability S of Consecutive Notes..... 131
 4.4 Choosing Operators for Different Meanings of “Representative Phrases” 132
 5 Experiments and Results 132
 6 Building a Proximity Relationship on the Set of Phrases 135
 7 A Method to Choose a Representative Phrase..... 138
 8 Computing the Specificity Measure of the Fuzzy Set “Similar to Other Phrases” and the Inference Independent Sets Using the Proximity on Phrases..... 140
 9 Conclusions and Remarks 148
 References 148

Chapter 8: A Risk-Based Multi-criteria Decision Support System for Sustainable Development in the Textile Supply Chain

Besoa Rabenasolo, Xianyi Zeng

1 Introduction 151
 2 Formalization of the Proposed Decision Support System 154
 2.1 Structure of the Evaluation Procedure 154
 2.2 List of Evaluation Indicators 155
 3 Computing the Overall Criterion from the Multiple Evaluation Indicators..... 157
 3.1 Existing Methods for Multicriteria Decision Making 157
 3.2 Proposed Procedure for Aggregating Evaluation Indicators..... 158
 4 Determination of the Weights..... 161
 5 An Illustrative Example 163
 6 Conclusion 169
 References 169

Chapter 9: Fuzzy Decision System for Safety on Roads

Matilde Santos, Victoria López

1 Introduction 171
2 Modeling Reliability and Risk..... 172
3 Description of the Fuzzy System That Evaluates the Risk on Road..... 176
 3.1 Environment Fuzzy Subsystem 176
 3.2 Driver Fuzzy Subsystem..... 178
 3.3 Car Fuzzy Subsystem 180
4 Risk Fuzzy System Implementation 182
5 Conclusions 186
References 186

Part II: Risk Management in Business Decision Making

Chapter 10: A New Latex Price Forecasting Model to Reduce the Risk of Rubber Overproduction in Thailand

Jitian Xiao, Panida Subsorn

1 Introduction 191
2 The Public Agricultural Rubber Industry in Thailand 193
3 The Rubber Price Forecasting Model and Analysis Procedure 194
 3.1 The Training Techniques..... 194
 3.1.1 Non-NN Training Technique..... 194
 3.1.2 NN Training Technique 196
 3.2 Components of the Forecasting Model..... 197
 3.3 Data Analysis Procedures 198
4 Experimental Results..... 198
 4.1 One Year Rubber Latex Price Forecasts..... 199
 4.2 Four Month Rubber Latex Price Forecasts 201
5 Conclusions 202
References 202

Chapter 11: An Agent-Based Modeling for Pandemic Influenza in Egypt

Khaled M. Khalil, M. Abdel-Aziz, Taymour T. Nazmy, Abdel-Badeeh M. Salem

1 Introduction 205
2 Epidemiological Modeling Approaches 206
3 Multi-agent Related Models 208
 3.1 Main Risk-Based Decision Making Activity 208
4 Proposed Model..... 209
 4.1 Proposed Extension to SIR Model..... 209
 4.2 Proposed Multi-agent Model 210
5 Proposed Model Validation 213
6 Pandemic Control Strategies 214

7 Experiments and Analysis of Results 215
 8 Conclusion 217
 References 218

Chapter 12: Supply Chain Risk Management: Resilience and Business Continuity

Mauricio F. Bloss, Hui Ming Wee, Wen-Hsiung Yang

1 Introduction to Risk in Supply Chain 219
 2 Resilience in Supply Chain 222
 2.1 Resilience Management System Requirements 223
 2.1.1 Best Practices of a Resilient Organization 226
 2.2 Business Continuity in Supply Chain 227
 2.2.1 Supply Chain Continuity Framework 229
 2.2.2 Business Assessment Process 230
 3 Conclusion and Future Research Proposal 234
 References 234

Chapter 13: A Fuzzy Decision System for an Autonomous Car Parking

Carlos Martín Sánchez, Matilde Santos Peñas, Luis Garmendia Salvador

1 Introduction 237
 2 Analysis and Comparison of Different Approaches to the Parking Problem 239
 3 Problem Description 240
 3.1 The Car Model 241
 3.2 Modeling the Scenario 242
 4 The Car Parking Fuzzy Decision System 244
 4.1 Car Parking Fuzzy Variables 246
 4.2 Car Parking Fuzzy Rules 247
 4.2.1 Backward Strategy 248
 4.2.2 Forward Approaching the Bay 249
 4.2.3 Forward Moving Away from the Rear Obstacle 250
 4.2.4 Strategy Selector 251
 5 Results of the Car Parking Fuzzy Decision System with Different Fuzzy Operators 252
 5.1 Discussion of the Decisions Based on the Fuzzy Logic Used for the Car Application 253
 6 Conclusions 256
 References 256

Chapter 14: Risk-Based Decision Making Framework for Investment in the Real Estate Industry

Nur Atiqah Rochin Demong, Jie Lu

1 Introduction 259
 2 Risk-Based Decision Making Concepts 261

2.1	Definition of Risk and Risk-Based Decision Making.....	261
2.2	Types of Risk.....	262
2.2.1	Systematic Risk	262
2.2.2	Unsystematic or Idiosyncratic Risk	263
2.3	Risk Analysis.....	263
2.3.1	Risk Identification	264
2.3.2	Risk Estimation.....	264
2.3.3	Risk Assessment.....	264
3	Risk-Based Decision Making Process.....	265
3.1	Main Risk-Based Decision Making Activity.....	265
3.2	Types of Risk-Based Decision Making Process	267
3.2.1	Static Risk-Based Decision Making Process	267
3.2.2	Dynamic Risk-Based Decision Making Process.....	268
3.3	Decision Support Technology for Risk-Based Decision Making Process...	269
4	Risk Sources and Risk Factors in the Real Estate Industry	270
4.1	Financial Risk.....	270
4.2	Economic Risk.....	271
4.3	Scheduled Risk	272
4.4	Policy Risk.....	272
4.5	Technical Risk and Others.....	272
4.6	Risk Factors Based on Stages of Real Estate Investment	273
5	Risk-Based Decision Making Techniques for Real Estate Project Investment	274
5.1	Quantitative RBDM Technique.....	274
5.1.1	Beta.....	274
5.1.2	Projection Pursuit Model Based on Particle Swarm Optimization (PSO)	275
5.1.3	Condition Value-at-Risk (CVaR)	275
5.1.4	Maximal Overlap Discreet Wavelet Transform (MODWT).....	275
5.1.5	Markowitz's Portfolio Analysis and Regression Analysis.....	275
5.1.6	Statistical Stepwise Regression Analysis and Neural Network Sensitivity Analysis	275
5.2	Qualitative RBDM Technique.....	276
5.2.1	Fuzzy Comprehensive Valuation Method	276
5.2.2	Variable Precision Rough Set (VPRS)	276
5.3	Hybrid RBDM Technique	276
5.3.1	Radial Basis Function Neural Network	277
5.3.2	Support Vector Machine.....	277
5.3.3	Analytic Hierarchy Process	277
5.3.4	Real Option Method	277
6	Issues and Challenges of Risk-Based Decision Making.....	278
7	Summary	279
	References	280

Chapter 15: Risk Management in Logistics*Hui Ming Wee, Mauricio F. Blos, Wen-Hsiung Yang*

1	Introduction	285
2	Scope	286
2.1	Logistics Processes	286
2.1.1	Physical Flow	287
2.1.2	Information Flow	288
2.2	Risk Management	288
2.2.1	Mitigation Strategy	289
2.2.2	Contingency Strategy.....	290
3	Risk Management Process in Logistic.....	291
3.1	Risks Identification.....	293
3.1.1	Sources or Drivers of Risk.....	294
3.1.2	Vulnerabilities	295
3.2	Risk Analysis and Evaluation.....	296
3.2.1	Assessment Techniques	296
3.2.2	Risk Evaluation.....	296
3.3	Risk Treatment-Mitigation Strategy	297
3.3.1	Preference	298
3.3.2	Trade-Off.....	298
3.3.3	Tailored Mitigation Strategies	299
3.4	Implementation.....	299
3.4.1	Governance.....	300
3.4.2	Control and Monitoring	301
3.4.3	Continuous Improvement	301
4	Performance Evaluation	301
5	Conclusions	303
	References	303

Part III: Risk Assessment and Response Systems**Chapter 16: Natural Disaster Risk Assessment Using Information Diffusion and Geographical Information System***Zhang Jiquan, Liu Xingpeng, Tong Zhijun*

1	Introduction	310
2	Basic Theory and Method of Information Diffusion	311
2.1	Information Diffusion.....	311
2.2	Information Matrix	313
3	The Application of GIS in Risk Assessment Natural Disaster	314
3.1	Components and Functions of GIS.....	314
3.2	Applications of GIS	314
4	Case Analysis	316
4.1	The Study Area and Statistical Analysis of Grassland Fire Disasters	316
5	Conclusions	329
	References	329

Chapter 17: Applications of Social Systems Modeling to Political Risk Management

Gnana K. Bharathy, Barry Silverman

1	Introduction: Issues with Risk Assessment and Motivation	331
2	Social Systems Modeling Framework	335
2.1	Considerations for a Social Systems Model	335
2.2	Introduction to Framework	338
2.3	Country Modeling Case	343
2.4	Modeling Methodology	344
3	Social System Model Contributing to Risk Framework	349
3.1	Risk Conception and Hazard Identification	349
3.2	Risk Assessment	355
3.3	Treatment of Risk	363
4	Conclusions	365
	References	367

Chapter 18: An Integrated Intelligent Cooperative Model for Water-Related Risk Management and Resource Scheduling

Yong-Sheng Ding, Xiao Liang, Li-Jun Cheng, Wei Wang, Rong-Fang Li

1	Introduction	373
2	The Integrated Model for Risk Management of Disasters	374
2.1	The Artificial Intelligent Approaches	374
2.2	The AI-Based Integrated Intelligent Cooperative Model for Risk Management of Disasters	375
3	The Intelligent Classification of Regional Drought Severity Based on Double-Layered Radial Base Function Neural Networks	377
3.1	Radial Base Function Neural Network	378
3.2	The Design of the Intelligent Classification Model Using Double-Layered RBFNN	380
3.2.1	Design Principle	380
3.2.2	Parameters and Data Preparation for Modeling	382
4	The Intelligent Optimization of Multiple Reservoirs Operation Using Improved Particle Swarm Optimization	382
4.1	Particle Swarm Optimization	383
4.1.1	The Basic Principle of PSO	383
4.1.2	Standard PSO Algorithm	384
4.2	An Improved PSO Algorithm for Long Term Optimal Hydraulic Scheduling of Multi-reservoir Systems	386
4.2.1	An Improved PSO Algorithm	386
4.2.2	Optimal Scheduling of Multi-reservoir System	387
4.2.3	Constraint Handling	391

5	Simulation and Results	392
5.1	Simulation for the Drought Evaluation.....	392
5.2	Simulation of the Water Resource Scheduling of Reservoirs.....	396
5.2.1	Curve Fitting.....	396
5.2.2	Simulation Results.....	398
6	Conclusions	399
	References	400

Chapter 19: Determining the Significance of Assessment Criteria for Risk Analysis in Business Associations

Omar Hussain, Khresna Bayu Sangka, Farookh Khadeer Hussain

1	Introduction	403
2	Significance of Assessment Criteria during Risk Analysis	405
2.1	Related Work.....	406
2.2	Problem Definition	406
3	Analytic Hierarchy Process to determine the Significance of the Assessment Criteria.....	407
4	Analytic Network Process to Ascertain the Significance of the Assessment Criteria.....	412
5	Conclusion.....	415
	References	415

Chapter 20: Artificial Immune Systems Metaphor for Agent Based Modeling of Crisis Response Operations

Khaled M. Khalil, M. Abdel-Aziz, Taymour T. Nazmy, Abdel-Badeeh M. Salem

1	Introduction	417
2	The Proposed Response Model	418
2.1	Proposed Hierarchical Architecture for Multi-agent Response Model.....	418
2.2	AIS Operational Architecture for Multi-agent Model	419
3	Crisis Response to Pandemic Influenza in Egypt	423
4	Experiments.....	425
5	Conclusions	426
	References	427

Chapter 21: Mobile-Based Emergency Response System Using Ontology-Supported Information Extraction

Khaled Amailef, Jie Lu

1	Introduction	429
2	Emergency Response System within m-Government Dimensions.....	430
2.1	The MERS Conceptual Framework.....	431
2.2	Risk and Risk Management System	432
3	An Information Extraction and Text Aggregation.....	433
3.1	Information Extraction	433
3.2	Information Aggregation Definitions	434

3.3	Named Entity Recognition	434
3.4	Maximum Entropy Model	435
4	System Architecture for SMS Text Extraction and Aggregation	436
5	Ontology-Based Representation for Unstructured SMS Text	440
6	An Illustrated Example	441
7	System Implementation	443
7.1	Text Collection	444
7.2	Results	444
8	Conclusion	447
	References	447
	Author Index	451
	Editors	453