

Contents

Introduction	
Expert Systems and Organizations	1
Michael Masuch	
Chapter 1	
Experts, Expert Systems, and Organizations	13
Jeremiah J. Sullivan	
1.1 Experts and Expert Systems.	13
1.2 Decision-Support Systems and Expert Systems.	20
1.3 Integrating Expert Systems in Organizations	24
1.4 Summary	33
Chapter 2	
Devising Expert Systems in Organization Theory:	
The Organizational Consultant.	35
Helmy H. Baligh, Richard M. Burton and Børge Obel	
2.1 Introduction.	35
2.2 Creating Knowledge Bases from the Literature.	36
2.3 An Expert System for the Contingency Theory of Organization .	39
2.4 Composing the Knowledge Base	44
2.5 The Organizational Consultant for Designing an Organization .	45
2.6 An Illustration	47
2.7 Validation	52
2.8 Alternative Expert Systems	56
Chapter 3	
Creating an Expert System to Design Organizations: DESIGN 6	59
Helmy H. Baligh, Richard M. Burton and Børge Obel	
3.1 Introduction.	59
3.2 Design-First	61
3.3 The Expert System “DESIGN 6”	62
3.4 Results	65
3.5 A Comparison of the Two Expert Systems.	69
3.6 Validation of the Expert System.	70
3.7 The Special Needs of Design-First	72
3.8 Conclusions.	74

Appendix: Terms, Definitions and Concepts for DESIGN 6	75
Chapter 4	
Formalizing Organizational Theory: A Knowledge-Based Approach	79
Josh C. Glorie, Michael Masuch and Maarten Marx	
4.1 Introduction.	79
4.2 The Potential of Knowledge-Based Computer Applications	81
4.3 Contingency Theory and The Structuring of Organizations.	83
4.4 The Theory's Core Assumptions: Design Hypotheses	85
4.5 The Language of Formalization	86
4.6 The Formalization Process.	92
4.7 Observations and Conclusions	96
Appendix	99
Chapter 5	
Building an Artificial Intelligence Model of Management Policy Making: A Tool for Exploring Organizational Issues	105
Roger I. Hall	
5.1 Introduction.	105
5.2 The Conceptual Framework.	106
5.3 The Corporate System Model.	108
5.4 The Policy Making AI Model	111
5.5 Relevance and Possible Uses of the Modelling Method	120
Chapter 6	
Expert Systems Supporting Organization and Information Management	123
Henk W. M. Gazendam	
6.1 Introduction.	123
6.2 Interactive Object-Oriented Modelling.	123
6.3 A Method to Describe Organization Model Types.	126
6.4 Prototype Organization Models Based on Different Organization Metaphors.	128
6.5 Example Programs and Implementation.	134
6.6 Suggestions for Further Research	141
Appendix: Methodology of Model Description.	143
Chapter 7	
Environmental and Organizational Interactions in the Design of Knowledge Based Systems: Armand Hatchuel and Benoît Weil	
The METAL Case	155

7.1	Introduction	155
7.2	Strategic Planning of Off-Shore Drilling Activities: A Challenge for Oil Corporations	157
7.3	METAL's Birth	158
7.4	METAL's Knowledge Base	162
7.5	Conclusions.	168
 Chapter 8		
	Casting Managerial Skills into a Knowledge Based System	171
	Tim O. Peterson and David D. van Fleet	
8.1	The Functions of Management	171
8.2	Performance Appraisal	172
8.3	Performance Mentor	176
8.4	Can Expert Systems Really Help?	179
8.5	Discussion and Implications.	182
 Chapter 9		
	A Cost/Benefit Analysis of Expert Systems	185
	H. A. M. Daniels and P. van der Horst	
9.1	Introduction.	185
9.2	Cost/Benefit Analysis	187
9.3	System Development and Project Management.	188
9.4	Case Study	190
9.5	Conclusions.	192
 Chapter 10		
	An Overview of Expert System Principles.	195
	Linda van der Gaag and Peter Lucas	
10.1	Introduction.	195
10.2	Expert System Architecture	197
10.3	Knowledge Representation and Inference.	199
10.4	User Interface and Explanation Facilities	219
10.5	Knowledge Engineering	221
10.6	Conclusions.	224
 About the Authors		
	225	
 References		
	231	
 Systematic Index		
	247	