

List of Figures

Morphological Analysis	
1. Attributes for an Energy Policy Situation	11
2. One Combination of Attributes Indicated in a Morphological Chart	12
Nominal Group Technique	
1. Index Card Illustrating Rank-Order Voting Process	17
Rating Scales	
1. Examples of Rating Scales Applied to Discrimination Among Three Projects	30
Multiple Criteria Utility Assessment	
1. Utility Matrix for Evaluating Alternatives	32
2. Utility Function	33
3. Utility Functions for Evaluating Farmer Contact Strategies	34
4. Utility Matrix for Ministry of Agriculture Farmer Contact Strategy	35
Organizational Climate Analysis	
1. Dimensions to Be Considered in Climate Assessment	41
Function Expansion	
1. Function Hierarchy for Employment System	46
2. Forecasting the Function Expansion on the Most Regularly Occurring Concern	48
3. Function Expansion List for Employment Service	48
Objective Trees	
1. An Example of a Partial Objective Tree Developed for a Hydro-Electric Project	50
2. Examples of Quantitative, Binary-Event and Qualitative Objectives Classified by Methods of Measurement	51
3. An Example of an Objective Tree Developed for a Hydro-Electric Project	53
Intent Structures	
1. Format for Intent Structure	56
2. Logic Elements for Intent Structures	56
3. Use of AND Logic Element	58
4. Use of OR Logic Element	58
5. Use of the Exclusive OR (XOR) Logic Element	59
6. Intent Structure for Hydro-Electric Reservoir Project	62
System Definition Matrix	
1. System Definition Matrix Format: A Hospital System	68
2. System Definition Matrix in Lis: Format for Alcoholics Treatment Center	70

Tree Diagrams	
1. Tree Graph Form	75
2. Fundamentals of Tree Diagram Construction	76
3. Relevance Tree Examples for Family Planning Program	77
4. Tree Diagram to Start Oval Diagram for Nomad Pastoralism Eco-System	79
Oval Diagramming	
1. Oval Diagram for Nomad Pastoralism Eco-System	82
2. Multiple Causal Relationships	84
3. Types of Interaction Between Two Variables, A and B	84
4. Illustration of Threshold Relationships	85
5. Illustration of Irreversible Effects	85
6. Summary of Symbols and Notation for Oval Diagramming	87
7. Influence Tree Diagram Prepared to Start Oval Diagram of Nomad Pastoralism Eco-System	88
8. The Initial Steps in Constructing an Oval Diagram from a Tree Diagram	89
9. Oval Diagram Depicting Causal Loops in Nomad Pastoralism Eco-System	90
Interaction Matrix Diagramming	
1. Interaction Matrix Diagram Derived from Oval Diagram of Nomad Pastoralism Relationships	93
2. Properties of Relationships	94
3. Examining an Interaction Matrix for Intransitive Relationships	97
4. Reduced Cross-Interaction Matrix for Environmental Assessment	98
5. Oval Diagram for Nomad Pastoralism Eco-System	100
6. Revised Interaction Matrix Diagram Showing Influences on Interventions in System	101
7. Tree Diagram Clarifying the Influence Relationships in the Interaction Matrix Diagram Example	102
Flowcharts	
1. A Flowchart for the Task of Constructing a Flowchart	108
2. Examples of Decision Points for Flowcharting	110
3. Behavioral Model of Development Administration	111
Decision Tables	
1. Decision Table Used by Donor Agency for Depositing Loan Funds into Special Program Account	114
2. Flowchart of Interpolation Procedure to Determine Internal Rate of Return	116
3. Mixed Entry Decision Table for Determining Internal Rate of Return by Interpolation	118
Histograms	
1. Sample Histogram for Raw Data	132
2. Histogram for Clustered Data	133
3. Mean and Standard Deviation of Raw Data Values	135
4. Mean of Grouped Data	136
5. Standard Deviation of Grouped Data	136

Subjective Probability Assessment	
1. A Probability Density Function	138
2. A Probability Density Function for the Tourist Industry of Temasek	140
Decision Trees	
1. Decision Tree for Farmer with Choice of New Seed Variety and Double Cropping	142
2. The Decision Tree Representation of a Decision Under Risk	144
3. Analyzing the Decision Tree to Determine Maximum Expected Profit/Hectare	145
Contingency Analysis	
1. Contingency Table with Qualitative Evaluation of Plan Performance	148
2. Contingency Table for Agricultural Strategy Planning	150
Exponential Smoothing Forecasts	
1. Plots of Past Data	156
2. Work Sheet for Exponential Smoothing	159
Regression Forecasting	
1. Graph of Regression Line	161
2. Regression Computation	163
Scenarios	
1. A Standard Format for a Scenario	166
Delphi	
1. Schedule for Delphi	170
2. Frequency Distribution of Estimates of Minimum Wage	171
Cash Flow Analysis	
1. Graphic Illustration of Cash Flows for a Project	178
2. Small Farmer Tractor Utilization: Purchase Option	180
3. Computing the Net Incremental Benefit or Cash Flow Resulting from a Project	182
Discounting	
1. Computing the Present Worth of a Series of Nonuniform Payments	186
Net Present Worth	
1. Computing the Net Present Worth: Small Farmer Tractor Utilization—Purchase Option	190
2. Cash Flow Analysis: Small Farmer Tractor Utilization—Rental Option	191
3. Net Present Worth Calculated from Discounted Cash Flow for Tractor Utilization—Rental Option	192
Benefit-Cost Ratio	
1. Computing the Benefit-Cost Ratio for Small Farmer Tractor Utilization: Purchase Option	196
2. Cash Flow Analysis: Small Farmer Tractor Utilization— Tractor Cooperative Option	197
3. Computing Benefit-Cost Ratios for Small Farmer Tractor Utilization: Cooperation Option	198

x / LIST OF FIGURES

Internal Rate of Return	
1. Flowchart of Interpolation Procedure to Determine Internal Rate of Return	202
2. The Annual and Total Cash Flows for the Small Farmer Tractor Utilization Options	203
3. Computation of the Internal Rate of Return for the Small Farmer Tractor Options	204
Impact-Incidence Matrix	
1. Impact-Incidence Matrix for Cost-Benefit Analysis	208
2. Impact-Incidence Matrix Example: Tractor Training Program	210
Cost-Benefit Analysis	
1. Summary of Assumptions for Small Farmer Tractor Utilization	216
2. Comparing the Small Farmer Tractor Utilization Options	216
Cost-Effectiveness Analysis	
1. Reliability and Acceptance Rates for Alternative Means of Birth Control	222
2. Cost Analysis of Alternative Means of Birth Control	222
3. Cost-Effectiveness of Alternative Birth Control Means	223
IDEALS Strategy	
1. Function Hierarchy for IDEALS Strategy	232
2. Identifying Measures of Effectiveness, Regularities, and Ideal Concepts	233
3. Preliminary System Definition Matrix for a Job Information System	234
Planning, Programming, and Budgeting	
1. Goals and Programs for the Federal Economic Development Administration	238
2. Analysis of Program Alternatives	239
Critical Path Method	
1. Project Network for the Activities Necessary to Arrange a Seminar	242
2. Activity Card with Location of Notations	244
3. Table Format for Computation of Critical Path	245
4. Immediate Predecessor and Successor Relationships	246
5. Completed Activity Table for Activities to Arrange a Seminar	249
6. Completed Project Network Showing Critical Path and Milestones	250
Gantt Charts	
1. A Gantt Chart Example: Planning and Conducting a Survey	253
2. Critical Path Network for Survey Project	256
3. Activity Table for Survey Project	257
4. Gantt Chart for Survey Example after Adjustments for Limited Manpower	258
Logical Framework	
1. The "Logical Framework"	261
2. An Example of a Logical Framework	263