

Contents

Preface *xix*

1 OVERVIEW **1**

- 1.0 Introduction 1
- 1.1 Understanding Project Management 2
- 1.2 Defining Project Success 5
- 1.3 The Project Manager–Line Manager Interface 6
- 1.4 Defining the Project Manager’s Role 9
- 1.5 Defining the Functional Manager’s Role 12
- 1.6 Defining the Functional Employee’s Role 15
- 1.7 Defining the Executive’s Role 16
- 1.8 Working with Executives 16
- 1.9 The Project Manager as the Planning Agent 17
- 1.10 Project Champions 19
- 1.11 The Downside Risk of Project Management 20
- 1.12 Project-Driven versus Non–Project-Driven Organizations 24
- 1.13 Marketing in the Project-Driven Organization 26
- 1.14 Classification of Projects 29
- 1.15 Location of the Project Manager 30
- 1.16 Differing Views of Project Management 32
- 1.17 Concurrent Engineering: A Project Management Approach 34
- 1.18 Total Quality Management (TQM): A Project Management Approach 35

Problems 39

Case Studies

- Jackson Industries 42
- Kombs Engineering 44
- Williams Machine Tool Company 45

2	PROJECT MANAGEMENT GROWTH: CONCEPTS AND DEFINITIONS	47
2.0	Introduction	47
2.1	General Systems Management	47
2.2	Project Management: 1960–1985	48
2.3	Project Management: 1985–2000	60
2.4	Resistance to Change	65
2.5	Systems, Programs, and Projects: A Definition	70
2.6	Product versus Project Management: A Definition	72
2.7	Maturity and Excellent: A Definition	74
2.8	Informal Project Management: A Definition	75
2.9	Project Life Cycles	76
2.10	Project Management Methodologies: A Definition	83
2.11	Systems Thinking	86
	Problems	89
	Case Studies	
	L. P. Manning Corporation	89
	Project Firecracker	90
3	ORGANIZATIONAL STRUCTURES	97
3.0	Introduction	97
3.1	Organizational Work Flow	100
3.2	Traditional (Classical) Organization	101
3.3	Developing Work Integration Positions	105
3.4	Line–Staff Organization (Project Coordinator)	109
3.5	Pure Product (Projectized) Organization	110
3.6	Matrix Organizational Form	113
3.7	Modification of Matrix Structures	124
3.8	Center for Project Management Expertise	128
3.9	Matrix Layering	129
3.10	Selecting the Organizational Form	131
3.11	Structuring the Small Company	139
3.12	Strategic Business Unit (SBU) Project Management	141
3.13	Transitional Management	143
	Problems	145
	Case Studies	
	Jones and Shephard Accountants, Inc.	151
	Fargo Foods	154
	Quasar Communications, Inc.	156

4 ORGANIZING AND STAFFING THE PROJECT OFFICE AND TEAM 161

- 4.0 Introduction 161
- 4.1 The Staffing Environment 162
- 4.2 Selecting the Project Manager: An Executive Decision 166
- 4.3 Skill Requirements for Program Managers 173
- 4.4 Special Cases in Project Manager Selection 180
- 4.5 Selecting the Wrong Project Manager 180
- 4.6 Next Generation Project Managers 185
- 4.7 Duties and Job Descriptions 186
- 4.8 The Organizational Staffing Process 191
- 4.9 The Project Office 199
- 4.10 The Functional Team 206
- 4.11 The Project Organizational Chart 208
- 4.12 Special Problems 211
- 4.13 Selecting the Project Management Implementation Team 214

Problems 217

Case Studies

- Government Project Management 223
- Falls Engineering 224
- White Manufacturing 227
- Martig Construction Company 228
- The Carlson Project 229

5 MANAGEMENT FUNCTIONS 231

- 5.0 Introduction 231
- 5.1 Controlling 232
- 5.2 Directing 233
- 5.3 Project Authority 237
- 5.4 Interpersonal Influences 246
- 5.5 Barriers to Project Team Development 249
- 5.6 Suggestions for Handling the Newly Formed Team 253
- 5.7 Team Building as an Ongoing Process 258
- 5.8 Leadership in a Project Environment 260
- 5.9 Life-Cycle Leadership 261
- 5.10 Organizational Impact 264
- 5.11 Employee-Manager Problems 266
- 5.12 Management Pitfalls 270
- 5.13 Communications 273
- 5.14 Project Review Meetings 284
- 5.15 Project Management Bottlenecks 284

5.16	Communication Traps	286
5.17	Proverbs	288
5.18	Management Policies and Procedures	289
	Problems	289
	Case Studies	
	Wynn Computer Equipment (WCE)	303
	The Trophy Project	304
	Leadership Effectiveness (A)	308
	Leadership Effectiveness (B)	310
	Motivational Questionnaire	318
6	TIME MANAGEMENT	325
6.0	Introduction	325
6.1	Understanding Time Management	325
6.2	Time Robbers	328
6.3	Time Management Forms	331
6.4	Introduction to Stress and Burnout	332
6.5	Stress in Project Management	336
6.6	Time Management Survey	337
6.7	Effective Time Management	352
6.8	Management Pitfalls	355
6.9	Project Communications	355
6.10	Project Management Bottlenecks	357
	Problems	357
	Case Studies	
	The Reluctant Workers	357
	Time Management for Project Managers	358
7	CONFLICTS	379
7.0	Introduction	379
7.1	Objectives	379
7.2	The Conflict Environment	381
7.3	Managing Conflict	385
7.4	Conflict Resolution	401
7.5	Understanding Superior, Subordinate, and Functional Conflicts	402
7.6	The Management of Conflicts	405
7.7	Conflict Resolution Modes	406
	Problems	408

Case Studies

- Facilities Scheduling at Mayer Manufacturing 411
- Scheduling the Safety Lab 413
- Telestar International 414
- The Problem with Priorities 415
- Handling Conflict in Project Management 416

8 SPECIAL TOPICS 423

- 8.0 Introduction 423
- 8.1 Performance Measurement on the Horizontal Line 423
- 8.2 Financial Compensation and Rewards 432
- 8.3 Effective Project Management in the Small Business Organization 439
- 8.4 Mega Projects 441
- 8.5 R&D Project Management 442
- 8.6 Code of Ethics 453

Problems 454

Case Studies

- American Electronics International 458

9 THE VARIABLES FOR SUCCESS 461

- 9.0 Introduction 461
- 9.1 Predicting Project Success 461
- 9.2 Project Management Effectiveness 466
- 9.3 Expectations 467
- 9.4 Force Field Analysis 469
- 9.5 Lessons Learned 474

Problems 474

10 WORKING WITH EXECUTIVES 475

- 10.0 Introduction 475
- 10.1 The Project Sponsor 475
- 10.2 The In-House Representatives 488
- 10.3 Selling Executives on Project Management 489

Problems 499

Case Studies

- The Blue Spider Project 503
- Greyson Corporation 514

Corwin Corporation	518
The Boeing 767: From Concept to Production (A)	526
The Boeing 767: From Concept to Production (B)	546

11 PLANNING 549

11.0	Introduction	549
11.1	General Planning	552
11.2	Identifying Strategic Project Variables	555
11.3	Life-Cycle Phases	558
11.4	Proposal Preparation	561
11.5	Understanding Participants' Roles	562
11.6	Project Planning	563
11.7	The Statement of Work	565
11.8	Project Specifications	570
11.9	Milestone Schedules	572
11.10	Work Breakdown Structure	573
11.11	WBS Decomposition Problems	580
11.12	Role of the Executive in Project Selection	584
11.13	Role of the Executive in Planning	587
11.14	The Planning Cycle	589
11.15	Work Planning Authorization	591
11.16	Why Do Plans Fail?	592
11.17	Stopping Projects	593
11.18	Handling Project Phaseouts and Transfers	595
11.19	Detailed Schedules and Charts	597
11.20	Master Production Scheduling	601
11.21	Program Plan	602
11.22	Total Project Planning	608
11.23	The Project Charter	613
11.24	Management Control	616
11.25	The Project Manager-Line Manager Interface	616
11.26	Fast-Tracking	618
11.27	Configuration Management	620
11.28	Procedural Documentation	621
11.29	Established Practices	624
	Problems	624
	Case Studies	
	The Two-Boss Problem	634
	Project Overrun	635
	Margo Company	636
	Denver International Airport (DIA)	638

12	NETWORK SCHEDULING TECHNIQUES	671
12.0	Introduction	671
12.1	Network Fundamentals	674
12.2	Graphical Evaluation and Review Technique (GERT)	679
12.3	Dependencies	679
12.4	Slack Time	680
12.5	Network Replanning	686
12.6	Estimating Activity Time	690
12.7	Estimating Total Program Time	691
12.8	Total PERT/CPM Planning	692
12.9	Crash Times	694
12.10	PERT/CPM Problem Areas	698
12.11	Alternative PERT/CPM Models	700
12.12	Precedence Networks	701
12.13	Lag	704
12.14	Understanding Project Management Software	704
12.15	Software Features Offered	706
12.16	Software Classification	708
12.17	Project Software Evaluation	709
12.18	Implementation Problems	713
	Problems	714
	Case Studies	
	Crosby Manufacturing Corporation	722
13	PROJECT GRAPHICS	725
13.0	Introduction	725
13.1	Customer Reporting	726
13.2	Bar (Gantt) Chart	727
13.3	Other Conventional Presentation Techniques	734
13.4	Logic Diagrams/Networks	738
	Problems	740
14	PRICING AND ESTIMATING	741
14.0	Introduction	741
14.1	Global Pricing Strategies	742
14.2	Types of Estimates	743
14.3	Pricing Process	746
14.4	Organizational Input Requirements	749
14.5	Labor Distributions	750
14.6	Overhead Rates	754
14.7	Materials/Support Costs	757

14.8	Pricing Out the Work	759
14.9	Smoothing Out Department Man-Hours	761
14.10	The Pricing Review Procedure	762
14.11	Systems Pricing	765
14.12	Developing the Supporting/Backup Costs	766
14.13	The Low-Bidder Dilemma	770
14.14	Special Problems	770
14.15	Estimating Pitfalls	771
14.16	Estimating High-Risk Projects	772
14.17	Project Risks	773
14.18	The Disaster of Applying the 10 Percent Solution to Project Estimates	777
14.19	Life-Cycle Costing (LCC)	779
14.20	Logistics Support	784
14.21	Economic Project Selection Criteria: Capital Budgeting	787
14.22	Payback Period	787
14.23	The Time Value of Money	788
14.24	Net Present Value (NPV)	789
14.25	Internal Rate of Return (IRR)	790
14.26	Comparing IRR, NPV, and Payback	791
14.27	Risk Analysis	791
14.28	Capital Rationing	792
	Problems	794
	Case Studies	
	Polyproducts Incorporated	798
	Small Project Cost Estimating at Percy Company	801
	Capital Industries	804
	Payton Corporation	805
	Cory Electric	806
	Camden Construction Corporation	809
15	COST CONTROL	813
15.0	Introduction	813
15.1	Understanding Control	817
15.2	The Operating Cycle	820
15.3	Cost Account Codes	821
15.4	Budgets	828
15.5	Variance and Earned Value	829
15.6	Recording Material Costs Using Earned Value Measurement	848
15.7	The Material Accounting Criterion	850
15.8	Material Variances: Price and Usage	851
15.9	Summary Variances	853

- 15.10 Status Reporting 853
- 15.11 Cost Control Problems 860
- Problems 862

Case Studies

- The Bathtub Period 873

16 TRADE-OFF ANALYSIS IN A PROJECT ENVIRONMENT 875

- 16.0 Introduction 875
- 16.1 Methodology for Trade-off Analysis 879
- 16.2 Contracts: Their Influence on Projects 897
- 16.3 Industry Trade-off Preferences 898
- 16.4 Conclusion 901

17 RISK MANAGEMENT 903

- 17.0 Introduction 903
- 17.1 Definition of Risk 905
- 17.2 Tolerance for Risk 906
- 17.3 Definition of Risk Management 907
- 17.4 Certainty, Risk, and Uncertainty 907
- 17.5 Risk Management Process 913
- 17.6 Risk Planning 914
- 17.7 Risk Assessment 915
- 17.8 Risk Identification 915
- 17.9 Risk Analysis 920
- 17.10 The Monte Carlo Process 927
- 17.11 Risk Handling 932
- 17.12 Risk Monitoring 937
- 17.13 The Use of Lessons Learned 938

- Problems 942

Case Studies

- Telox Engineering (A) 948
- Telox Engineering (B) 949

18 LEARNING CURVES 951

- 18.0 Introduction 951
- 18.1 General Theory 951
- 18.2 The Learning Curve Concept 953
- 18.3 Graphic Representation 954
- 18.4 Key Words Associated with Learning Curves 956

18.5	The Cumulative Average Curve	957
18.6	Sources of Experience	960
18.7	Developing Slope Measures	964
18.8	Unit Costs and Use of Midpoints	965
18.9	Selection of Learning Curves	965
18.10	Follow-on Orders	967
18.11	Manufacturing Breaks	967
18.12	Learning Curve Limitations	968
18.13	Prices and Experience	970
18.14	Competitive Weapon	972
	Problems	974
	Case Studies	
	Insight Optical Equipment Company	975
19	MANAGING CULTURAL DIFFERENCES	987
19.0	Introduction	987
19.1	An Introduction to Global Projects	987
19.2	Uniqueness and Trends in Global Projects	988
19.3	Cultural Challenges Broken Down by Knowledge Areas	989
19.4	The Project Manager's Checklist for Global Projects	1000
19.5	Managing during Political, Social, and Economic Reform	1000
19.6	An Introduction to Project Management in South Africa	1001
19.7	Internal Factors Affecting Project Management	1001
19.8	External Factors Affecting Project Management	1003
	Problems	1008
20	STRATEGIC PLANNING FOR EXCELLENCE IN PROJECT MANAGEMENT	1009
20.0	Introduction	1009
20.1	Influence of Economic Conditions	1009
20.2	What Is General Strategic Planning?	1012
20.3	What Is Strategic Planning for Project Management?	1013
20.4	Critical Success Factors for Strategic Planning	1017
20.5	Identifying Strategic Resources	1023
20.6	Strategic Selection of Projects	1028
20.7	Portfolio Selection of Projects	1031
20.8	Horizontal Accounting	1034
20.9	Continuous Improvement	1036
20.10	The Project Office/Center for Excellence	1039
20.11	Why Does Strategic Planning for Project Management Fail?	1040
20.12	Organizational Restructuring	1042
20.13	Career Planning	1044

21	MODERN DEVELOPMENTS IN PROJECT MANAGEMENT	1045
21.0	Introduction	1045
21.1	The Project Management Maturity Model (PMMM)	1045
21.2	Developing Effective Procedural Documentation	1050
21.3	Project Management Methodologies	1056
21.4	Continuous Improvement	1057
21.5	Capacity Planning	1062
21.6	Competency Models	1063
21.7	Managing Multiple Projects	1066
21.8	End-of-Phase Review Meetings	1067
22	THE IMPACT OF CONCURRENT ENGINEERING ON PROJECT MANAGEMENT	1069
22.0	Introduction	1069
22.1	Understanding Concurrent Engineering	1070
22.2	Project Planning	1072
22.3	Risk Management	1073
22.4	Creeping Scope	1073
22.5	Project Management Guidelines	1074
22.6	Selecting the Project Manager	1077
22.7	The Project Office	1077
22.8	The Functional Team	1079
22.9	Project Sponsorship	1080
22.10	Wage and Salary Administration	1081
22.11	Conclusion	1082
23	QUALITY MANAGEMENT	1083
23.0	Introduction	1083
23.1	Definition of Quality	1085
23.2	The Quality Movement	1086
23.3	The Taguchi Approach	1090
23.4	The Malcolm Baldrige National Quality Award	1093
23.5	ISO 9000	1096
23.6	Quality Management Concepts	1097
23.7	The Cost of Quality	1100
23.8	The Seven Quality Control Tools	1103
23.9	Process Capability (C_p)	1120
23.10	Acceptance Sampling	1123
23.11	Operating Characteristic Curves	1123
23.12	Implementing Six Sigma	1126
23.13	Quality Leadership	1129
23.14	Responsibility for Quality	1130

23.15	Quality Circles	1131
23.16	Just-In-Time Manufacturing (JIT)	1131
23.17	Total Quality Management (TQM)	1134
24	CONTRACTS AND PROCUREMENT	1139
24.0	Introduction	1139
24.1	Procurement	1140
24.2	Requirement Cycle	1141
24.3	Requisition Cycle	1142
24.4	Solicitation Cycle	1143
24.5	Award Cycle	1145
24.6	Types of Contracts	1146
24.7	Incentive Contracts	1152
24.8	Contract Type Versus Risk	1153
24.9	Contract Administration Cycle	1155
24.10	Using a Checklist	1157
24.11	Proposal-Contractual Interaction	1159
24.12	Summary	1163
	Appendix A. Solutions to the Project Management Conflict Exercise	1165
	Appendix B. Solution to Leadership Exercise	1171
	<i>Author Index</i>	<i>1177</i>
	<i>Subject Index</i>	<i>1181</i>