

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	
	Teloxly Engineering (A)	948
	Teloxly 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>