Purchasing and Supply Chain Management

Second Edition

W. C. Benton, Jr.
The Max M. Fisher College of Business
The Ohio State University
Preface xiii
About the Author xxi
Note to Students xxii

PART ONE
INTRODUCTION TO PURCHASING AND SUPPLY CHAIN MANAGEMENT 1

Chapter 1
Purchasing and Supply Chain Management 3
Introduction 3
Purchasing Managers, Buyers, and Purchasing Agents 4
The Supply Management Process 5
Purchasing Dollar Responsibility 7
Potential for Profit 9
Integrated Supply Management (ISM) 10
Annual Inventory-Ordering-Transportation Costs 11
Organizing for Purchasing 13
Centralized versus Decentralized Purchasing 13
  Advantages of Centralized Purchasing 13
  Disadvantages of Centralized Purchasing 14
The Future Organization Concept 14
Reporting Assignment 14
The Supply Management Concept 15
Careers in Purchasing 17
Summary 17
Discussion Questions 18
Suggested Cases 18
References 19

Chapter 2
Purchasing Decisions and Business Strategy 21
Introduction 21
Purchasing and Competitive Strategy Linkage 22
Competitive Strategy 23
Competitive Priorities 24
Purchasing Criteria 25
Supply Chain Strategy 25
Supply Chain Relationship Quality 27
  Supply Chain Relationship Quality Indexing Example 28
The Integrated Buying Model 31
  Cost 32
  Quality Level 32
  Lead Time 32
  Constraints 33
The Strategic Sourcing Plan 33
  Developing a Strategic Sourcing Plan 33
  Program Objectives by Phase 34
Purchasing Strategy Trends 36
Summary 36
Discussion Questions 37
Suggested Cases 37
References 38
Appendix A: Supply Chain Relationship Quality Study 39

Chapter 3
The Legal Aspects of Purchasing 45
Introduction 45
Authority of the Purchasing Manager 46
Execution of Contracts and Purchase Orders by the Purchasing Manager 47
Essentials of a Purchase Contract 48
The Requirements for a Contract 48
Offers 49
Invitation to Do Business 49
Counteroffers 50
The Time Limits of an Offer 50
Firm Offers 51
Option Contracts 51
Bid Bonds 52
Promissory Estoppels 52
Oral Contracts 52
Terms of a Contract 52
  Quantity 52
  Quality 53
  Price and Credit Terms 53
  Delivery Terms 53
  Leasing 53
PART TWO
MATERIALS MANAGEMENT  61

Chapter 4
Materials Management  63

Introduction  63
Materials Requirements Planning and Capacity Requirements  64
  Capacity Planning  64
  Capacity and Inventory  64
Throughput Time  65
Order Cycle  65
  Integrated Materials System  66
  Order Cycle—Activities  67
  Lead Time  67
Customer Satisfaction  67
  Material Availability  68
  On-Time Shipment  69
  On-Time Receipt  69
  Complete Shipment  69
  Quality of Receipt  69
  Flexibility  70
  Responsiveness to Inquiry  70
  Customer Satisfaction—The Balance  70
Quality  71
  The Quality Level  73
  Objective Quality  74
Specifying Materials  74
  Raw Materials  75
  Purchased Parts  75
Maintenance Repair, and Operating (MRO) Supplies  76
  Maintenance  76
  Repair  76
  Operating Supplies  77
Tooling  77

Chapter 5
Inventory Management  81

Introduction  81
Independent versus Dependent Demand  83
Inventory Management Overview  83
ABC Classification of Inventory Items  85
Independent Demand  86
  Costs in an Inventory System  87
  Quantity Discounts  90
  Safety Stock  91
Dependent-Demand Systems  94
  The Material Requirements Concept  95
  The General Lot-Sizing Problem  95
  Quantity Discounts for the Variable Demand Case  96
  Illustration of Various Variable-Demand Lot-Sizing Models  98
Summary  104
Discussion Questions  105
Exercises  105
Suggested Cases  108
References  109
Appendix 5A: Areas under the Normal Curve  110

Chapter 6
Just-in-Time (Lean) Purchasing  111

Introduction  111
Lean Production Systems  112
  Just-in-Time Production System  114
  Kanban Production Control System  115
Significance of Purchasing  119
JIT Purchasing  119
Purchasing Benefits  122
Implementation of JIT Purchasing  123
Role of Culture  126
Critical Analysis of the JIT Concept  127
Summary  129
Discussion Questions  129
Suggested Cases  129
References  130
PART THREE
FUNDAMENTALS OF PURCHASING AND SUPPLY CHAIN MANAGEMENT 131

Chapter 7
Purchasing Procedures, E-Procurement, and Systems Contracting 133

Introduction 133
Purchasing Procedures 134
Systems Contracting 136
What Is Systems Contracting? 136
E-Procurement 137
Two Broad E-Procurement Purchasing Categories 138
Indirect Materials Purchasing 138
Direct Materials Purchasing 139
Reverse Auctions 140
What Are Reverse Auctions? 140
Implementing a Reverse Auction 141
Electronic Data Interchange (EDI) and Purchasing 141
What Is EDI? 141
Implementation 143
The Implementation Team 144
EDI in Practice 144
Future Outlook 145
Radio Frequency Identification (RFID) 146
What Is RFID and How Does It Work? 146
Advantages of RFID 147
Disadvantages of RFID 148
RFID Implementation 148
E-Sourcing and Purchasing 150
Summary 153
Discussion Questions 153
Suggested Cases 153
References 154
Appendix 7A: Systems Contract Agreement 155

Chapter 8
Supplier Selection and Evaluation 157

Introduction 157
Make versus Buy 158
Benefits of Outsourcing 158
Sources of Supplier Information 159
Strategic Selection 160
Supplier Relationship Management (SRM) 160
Four Pure Supply Management Relationships 161
Supplier Relationship Management Programs 162
Criteria for Supplier Evaluation 163
Three Common Supplier Evaluation Systems 163
Strategic Supplier Relationship Management 167
The Strategic Supplier Relationship Management Program 168
The SRM Scoring System 173
Supplier Development 175
Single versus Multiple Sources 175
Supplier Reduction 178
Industry Examples 180
Apparel Industry 180
Chemical Industry 181
Electronics Industry 183
Construction Industry 184
Summary 185
Discussion Questions 186
Suggested Cases 186
References 187

Chapter 9
Strategic Outsourcing 189

Introduction 189
Why Do Organizations Outsource Business Processes? 191
The Hidden Costs of Outsourcing 192
Quality Costs 192
Supplier or Vendor Relationship Management 192
Internal Coordination 193
Implementation of External Sourcing Model 193
Product/Service Design and Development 194
Governmental and Political-Related Expenses 194
Supply Chain Risk Management 195
Miscellaneous Financial Considerations 195
Core Competencies 196
Outsourcing Trends 196
Elements of Strategic Outsourcing 197
Strategic Evaluation 198
Financial Evaluation 198
Supplier Selection and Contract Development 199
Transition to External Sourcing Model 200
Relationship Management 202
Summary 204
Discussion Questions 205
Suggested Cases 205
References 206

Chapter 10
Global Sourcing 209

Introduction 209
Costs of Global Sourcing 212
Currency Exchange Rates 212
Chapter 11
Supply Partnerships and Supply Chain Power 231

Introduction 231
Benchmark Supplier Partnerships: Chrysler Corporation 232
Importance of Supply Chain Partnership Awareness 232
Partnerships: Definition and Overview 232
Relationship Intensity 233
Traditional Sourcing 234
Reduced Supplier Bases 235
Supply Chain Partnerships 236
Benefits of Supplier Partnerships 237
Risks of Supplier Partnerships 237
Partnership Implementation and Critical Success Factors 238
Power Influences on Supply Chain Relationships 240
Power and Dependence 240
Power, Commitment, and Trust 241
Power, Cooperation, and Compliance 242
Power and Conflict 242
Power and Satisfaction 243
Power, Performance, and Profitability 243
Automobile Industry Example of Power Asymmetry 244
Summary 244
Discussion Questions 246
Suggested Cases 246
References 247
Appendix 11A: Channel and Supply Chain Power 248

Chapter 12
Total Quality Management (TQM) and Purchasing 255

Introduction 255
Quality Requirements for Suppliers 256
Quality Assurance Expectations 256
Quality Target Commitment 256
Preventive Quality 257
Quality Awards 264
The Deming Award 264
The Malcolm Baldrige National Quality Award 264
Continuous Improvement and the Supplier 265
ISO 9000 266
Quality Function Deployment (QFD) 267
Supplier Evaluations 267
Engineering and Design 268
Summary 268
Discussion Questions 269
Suggested Cases 269
References 270
Appendix 12A: Taguchi Method 271
Appendix 12B: Acceptance Sampling 275

PART FOUR
PRICE/COST ANALYSIS AND NEGOTIATION STRATEGIES 279

Chapter 13
Price Determination 281

Introduction 281
The Purchasing Decision 282
Price-Setting Strategy (Economic) 282
Price-Making Strategy (Psychological) 283
Discounts 283
Cash Discounts 283
Trade Discounts 283
Quantity Discounts 283
Price and the Law 284
Price 284
Costs 286
The Learning Curve 286
The Model 287
Example Problem 289
Pricing Strategy 291
Standard Price List 291
Competitive Bidding 291
Negotiations 293
Chapter 14
Bargaining and Negotiations 321
Introduction 321
Psychological Bargaining Framework 323
Payoff System 324
Bargaining Strategy 325
Economic Bargaining Framework 326
An Experiment in Distributive Bargaining 328
Planning for a Formal Negotiation 332
Planning (Seller’s Perspective) 332
Planning (Buyer’s Perspective) 333
A Richer Model of the Buyer-Seller Interaction 336
Summary 338
Discussion Questions 338
Suggested Cases 339
References 340

PART FIVE
SPECIAL PURCHASING APPLICATIONS 341

Chapter 15
Purchasing Transportation Services 343
Introduction 343
Transportation’s Role in Purchasing 344
Mode Selection 344
Relative Prices for Transportation
Goods and Services 350
Carrier Selection 350
Carrier Evaluation 351
Rate Determination 351
Third-Party Relationships 353
Freight Consolidation 353
Documentation/Tracing/Claims 354
Terms and Conditions of Transportation Purchasing 354
Three Transportation Purchasing Examples 355
Ross Laboratories 355
Consolidated Stores 356
Copeland Inc. 356
Summary 357
Discussion Questions 358
Suggested Cases 358
References 359

Chapter 16
Equipment Acquisition and Disposal 361
Introduction 361
Department Requisition 363
Company Goals and Objectives 363
New Project Ideas 363
Cash-Flow Analysis 366
Economic Evaluation 367
Payback 367
Average Rate of Return 367
Net Present Value 367
Internal Rate of Return (IRR) 368
Profitability Index (IRR) 369
Selection 369
Financial Plan Analysis 370
Types of Leases 370
Lease versus Borrow and Purchase 371
Implementation 371
Expenditure Control 371
Audits 371
Disposal of Capital Equipment 371
Purchasing New versus Used Capital Equipment 371
New Equipment Purchases 372
Used Equipment Purchases 372
Summary 372
Discussion Questions 373
Exercises 373
Suggested Cases 374
References 375
Appendix 16A: Federal Acquisition Regulation; Electronic and Information Technology 376
Appendix 16B: Lease versus Borrow and Purchase Example 381
Appendix 16C: Present Value Table 386