



dandelion.com

© 2008 AGI Information Management Consultants
May be used for personal purposes only or by
libraries associated to dandelion.com network.

FOURTH EDITION

Business Logistics Management

Planning, Organizing, and Controlling the Supply Chain

Ronald H. Ballou

*Weatherhead School of Management
Case Western Reserve University*

Prentice
Hall

Prentice Hall, Upper Saddle River, New Jersey 07458

Contents

Preface xiii

PART I: INTRODUCTION AND PLANNING 1

CHAPTER 1 Business Logistics—A Vital Subject 3

Introduction	3	✓
Business Logistics Defined	5	✓
The Supply Chain	6	✓
The Activity Mix	7	
Importance of Logistics	11	✓
Business Logistics in the Firm	20	
Objectives of Business Logistics	22	✓
Approach to the Study of Logistics	23	
Concluding Comments	24	
Questions and Problems	25	
Exercise: Examples of Good Logistics Strategy, or Lack Thereof	27	

CHAPTER 2 Logistics Strategy and Planning 29

Corporate Strategy	29	
Logistics Strategy	31	✓
Logistics Planning	33	
Concluding Comments	47	
Questions and Problems	48	

PART II: CUSTOMER SERVICE GOALS 51

CHAPTER 3 The Logistics Product 53

Nature of the Logistics Product	53	
---------------------------------	----	--



Contents

The 80-20 Curve	58
Product Characteristics	62
Product Packaging	66
Product Pricing	67
Incentive Pricing Arrangements	74
<i>Concluding Comments</i>	76
<i>Questions and Problems</i>	77
CHAPTER 4 Logistics Customer Service	80
Customer Service Defined	81
Order Cycle Time	86
Importance of Logistics Customer Service	89
Defining a Sales-Service Relationship	92
Modeling the Sales-Service Relationship	94
Cost versus Service	96
Determining Optimum Service Levels	97
Service as a Loss Function	100
Service as a Constraint	101
Service Contingencies	103
<i>Concluding Comments</i>	106
<i>Questions and Problems</i>	106
CHAPTER 5 Order Processing and Information Systems	110
Defining Order Processing	111
Order-Processing Examples	115
Other Factors Affecting Order-Processing Time	121
The Logistics Information System	122
Information System Examples	126
<i>Concluding Comments</i>	130
<i>Questions</i>	131
PART III: TRANSPORT STRATEGY	133
CHAPTER 6 Transport Fundamentals	135
Importance of an Effective Transportation System	135
Service Choices and Their Characteristics	137
Single-Service Choices	141
Intermodal Services	146
Agencies and Small Shipment Services	148



Company-Controlled Transportation	149
International Transportation	150
Transport Cost Characteristics	153
Rate Profiles	157
Line-Haul Rates	161
Special Service Charges	172
Private Carrier Costing	176
Documentation	178
International Transport Documentation	180
<i>Concluding Comments</i>	181
<i>Questions and Problems</i>	181
CHAPTER 7 Transport Decisions	185
Transport Service Selection	185
Vehicle Routing	191
Vehicle Routing and Scheduling	199
Ship Routing and Scheduling	212
Freight Consolidation	214
<i>Concluding Comments</i>	216
<i>Questions</i>	216
<i>Problems</i>	217
<i>Case Study: Fowler Distributing Company</i>	229
<i>Case Study: Metrohealth Medical Center</i>	232
<i>Case Study: Orion Foods, Inc.</i>	239
PART IV: INVENTORY STRATEGY	243
CHAPTER 8 The Storage and Handling System	245
Need for a Storage System	245
Reasons for Storage	246
Storage System Functions	248
Storage Alternatives	254
Materials-Handling Considerations	261
Storage-System Costs and Rates	267
<i>Concluding Comments</i>	270
<i>Questions and Problems</i>	272
CHAPTER 9 Forecasting Logistics Requirements	273
Nature of the Problem	274



Contents

Forecasting Methods	277
Useful Techniques for Logisticians	281
Special Prediction Problems for Logisticians	294
Flexibility and Quick Response—An Alternative to Forecasting	298
Concluding Comments	299
Questions and Problems	299
Case Study: World Oil	305
CHAPTER 10 Inventory Policy Decisions	308
Appraisal of Inventories	309
Types of Inventories	311
Classifying Inventory Management Problems	312
Inventory Objectives	315
Push Inventory Control	319
Basic Pull Inventory Control	322
Advanced Pull Inventory Control	328
Pipeline Inventories	349
Aggregate Control of Inventories	350
Concluding Comments	361
Questions	362
Problems	362
Case Study: Complete Hardware Supply, Inc.	371
Case Study: American Lighting Products	373
Case Study: American Red Cross: Blood Services	381
CHAPTER 11 Purchasing and Supply Scheduling Decisions	394
Supply Scheduling	396
Purchasing	415
Concluding Comments	429
Questions	430
Problems	430
Case Study: Industrial Distributors, Inc.	435
CHAPTER 12 Storage and Handling Decisions	437
Site Selection	438
Planning for Design and Operation	439
Materials-Handling System Design	456
Order-Picking Operations	473
Concluding Comments	475



Questions and Problems 475

Technical Supplement 479

PART V: LOCATION STRATEGY ✓ 481

CHAPTER 13 Facility Location Decisions 483

Single-Facility Location 487

Multifacility Location 494

Dynamic Warehouse Location 511

Retail/Service Location 516

Concluding Comments 523

Questions 524

Problems 525

Case Study: Superior Medical Equipment Company 532

Case Study: Ohio Auto and Driver's License Bureaus 534

Case Study: Southern Brewery 537

Technical Supplement 540

CHAPTER 14 The Network Planning Process ✓ 542

The Problem of Network Configuration 542

Data for Network Planning 545

The Tools for Analysis 564

Conducting the Analysis 570

A Case Study 585

Concluding Comments 588

Questions and Problems 589

Case Study: Usemore Soap Company: A Warehouse Location Case Study 592

PART VI: ORGANIZATION AND CONTROL ✓ 605

CHAPTER 15 Logistics Organization 607

Organizing the Logistics Effort 607

Organizational Choices 612

Organizational Orientation 617

Organizational Positioning 619

Interfunctional Management 622

Interorganizational Management 623

Alliances and Third-Party Providers 627



Contents

<i>Concluding Comments</i>	632
<i>Questions and Problems</i>	633
CHAPTER 16 Logistics Audit and Control	635
A Framework for the Control Process	635
Control System Details	641
Control in Practice	643
Control Information, Measurement, and Interpretation	645
Corrective Action	656
Control Links to Artificial Intelligence	658
<i>Concluding Comments</i>	660
<i>Questions and Problems</i>	661
 APPENDIX A Areas under the Standardized Normal Distribution	 662
 APPENDIX B Unit Normal Loss Integrals	 664
 SELECTED BIBLIOGRAPHY	 667
 INDEX	 673