



# STRATEGIC LOGISTICS MANAGEMENT

FOURTH EDITION

JAMES R. STOCK & DOUGLAS M. LAMBERT



McGRAW-HILL INTERNATIONAL EDITION  
Marketing/Advertising Series

---

# Contents

---

<b>1</b>	<b>Logistics' Role in the Economy and the Organization</b>	<b>1</b>
	Introduction	2
	Definition of Logistics Management	2
	Systems Approach/Integration	4
	Logistics' Role in the Economy	5
	Logistics' Role in the Organization	6
	Logistics Leads to Competitive Advantage	6
	Logistics Adds Time and Place Utility	9
	Logistics Allows Efficient Movement to the Customer	10
	Logistics Is a Proprietary Asset	11
	Development of Logistics Management	11
	Historical Development	11
	Factors Underlying the Development of Interest in Logistics Management	13
	Key Logistics Activities	19
	Customer Service	20
	Demand Forecasting	20
	Inventory Management	20
	Logistics Communications	21
	Materials Handling	22
	Order Processing	22
	Packaging	23
	Parts and Service Support	23
	Plant and Warehouse Site Selection	23
	Procurement	24
	Reverse Logistics	24
	Traffic and Transportation	25
	Warehousing and Storage	25
	Why Should Logistics Activities Be Integrated?	25
	GLOBAL BOX: Why Be Concerned with Reverse Logistics and Environmental Issues?	27

The Total Cost Concept	28
The Relationship of Logistics Activities to Logistics Costs	28
Logistics and Corporate Profit Performance—The Strategic Profit Model	31
Net Profit	32
Asset Turnover	33
Return on Assets	33
Financial Leverage	33
Return on Net Worth	34
Using the Strategic Profit Model: An Example	35
Future Challenges and Areas for Logistics Performance Improvement	37
Supply Chain Management	37
Strategic Planning	38
Total Quality Management	38
Just-in-Time	39
Quick Response	40
Efficient Consumer Response	40
TECHNOLOGY BOX: Quick Response, Canadian Style	41
Logistics as a Competitive Weapon	42
Accounting for Logistics Costs	43
Logistics as a Boundary-Spanning Activity	43
Global Logistics	44
Increasing Skill Requirements	44
Logistics Information Systems	45
Strategic Alliances, Partnerships, and Outsourcing	46
Technology	47
E-Commerce	48
Green Marketing and Reverse Logistics	48
CREATIVE SOLUTIONS BOX: Creating Partnerships That Generate Solutions Within and Outside the Realm of Logistics	49
Summary	50
Suggested Readings	50
Questions and Problems	51

## **2 Supply Chain Management 53**

Introduction	54
Supply Chain Management versus Logistics	56
Channel Structure	59
Outsourcing	60
Postponement and Speculation	61
Time-to-Market Pressures	62
Other Issues Affecting Channel Structure	62
Supply Chain Network Structure	62
Identifying Supply Chain Members	63
The Structural Dimensions of the Network	64
Types of Business Process Links	65
Supply Chain Business Processes	67
Customer Relationship Management	68
Customer Service Management	68
TECHNOLOGY BOX: The Value Chain Initiative	69
Demand Management	69

Customer Order Fulfillment	70
Manufacturing Flow Management	70
Procurement	70
Product Development and Commercialization	71
Returns	71
Summary of Supply Chain Business Processes	71
GLOBAL BOX: Localizing Generic Products at Hewlett-Packard	72
Business Process Chains	73
The Management Components of Supply Chain Management	75
Planning and Control Methods	76
Work Flow/Activity Structure	76
Organization Structure	76
Communication and Information Flow Facility Structure	76
Product Flow Facility Structure	76
Management Methods	77
Power and Leadership Structure	77
Risk and Reward Sharing	77
Culture and Attitude	77
Supply Chain Design	79
The Manufacturer's Perspective	80
The Wholesaler's Perspective	80
The Retailer's Perspective	81
Supply Chain Design Considerations	81
Market Coverage Objectives	81
Product Characteristics	82
Customer Service Objectives	84
Supply Chain Performance Measurement	85
Reengineering Improvement into the Supply Chain	87
Implementing Integrated Supply Chain Management	88
CREATIVE SOLUTIONS BOX: How Milliken Drives Supply Chain	
Integration	90
Summary	91
Suggested Readings	92
Questions and Problems	94

### **3 Customer Service 95**

Introduction	96
What Is Customer Service?	96
Definition of Customer Service	98
Elements of Customer Service	98
Methods of Establishing a Customer Service Strategy	102
Consumer Reactions to Stockouts	102
Cost/Revenue Trade-Offs	105
ABC Analysis	108
The Customer Service Audit	110
CREATIVE SOLUTIONS BOX: The Value of Customer Retention	111
Developing and Reporting Customer Service Standards	126
TECHNOLOGY BOX: What Does No. 1 Do for an Encore?	128
Impediments to an Effective Customer Service Strategy	128
Improving Customer Service Performance	129

GLOBAL BOX: How IBM Gets Closer to Its Worldwide Customers 132  
Global Customer Service Issues 133  
Summary 133  
Suggested Readings 134  
Questions and Problems 135  
**Appendix: Customer Service Questionnaire 136**

#### **4 Order Processing and Information Systems 145**

Introduction 146  
Customer Order Cycle 146  
    How Do Customer Orders Enter the Firm's Order Processing  
    Function? 149  
    The Path of a Customer's Order 150  
The Communications Function 151  
    Advanced Order Processing Systems 151  
    Inside Sales/Telemarketing 156  
    Electronic Data Interchange 158  
TECHNOLOGY BOX: One Industry's Approach to eProcurement 160  
BOX 4-1: At Ford, E-Commerce Is Job 1 163  
Integrating Order Processing and the Company's Logistics Management  
    Information System 165  
    Basic Need for Information 166  
    Designing the Information System 166  
CREATIVE SOLUTIONS BOX: Using Information to Speed Execution 169  
    Using Logistics Information Systems to Support Time-Based  
    Competition 170  
    Decision Support Systems 172  
    Artificial Intelligence and Expert Systems 174  
    Database Management 176  
    Enterprise Resource Planning 176  
Financial Considerations 179  
Summary 181  
Suggested Readings 181  
Questions and Problems 182

#### **5 Financial Impact of Inventory 187**

Introduction 188  
Financial Aspects of Inventory Strategy 188  
    Inventory and Corporate Profitability 188  
    Inventory and Least Total Cost Logistics 191  
Inventory Carrying Costs 193  
    Calculating Inventory Carrying Costs 196  
Industry Examples 203  
    A Consumer Packaged Goods Industry Example 203  
    A Bulk Chemicals Industry Example 208  
The Impact of Inventory Turnover on Inventory Carrying Costs 212  
Inventory Carrying Costs within the Supply Chain 214  
CREATIVE SOLUTIONS BOX: Why More Inventory Ownership Is Being  
    Shifted to Suppliers 216

TECHNOLOGY BOX: Shell Improves Value through “Supplier Managed Inventory”	218
Summary	218
Suggested Readings	219
Questions and Problems	219
<b>Appendix: Inventory Carrying Costs—Six Case Studies</b>	<b>222</b>

## **6 Inventory Management 227**

Introduction	228
Basic Inventory Concepts	228
Why Hold Inventory?	228
Types of Inventory	232
Basic Inventory Management	235
Inventory Management under Conditions of Certainty	236
Inventory Management under Uncertainty	243
Calculating Safety Stock Requirements	244
Calculating Fill Rate	249
How Much to Order: Fixed Order Interval Model	251
Inventories and Customer Service	252
Production Scheduling	254
Symptoms of Poor Inventory Management	254
GLOBAL BOX: DHL Helps Fujitsu Enhance Global Service	255
Improving Inventory Management	256
ABC Analysis	256
Forecasting	258
How ERP Systems Contribute to Improved Inventory Management	260
TECHNOLOGY BOX: Collaborative Forecasting and Replenishment Internet Protocol	261
CREATIVE SOLUTIONS BOX: Saturn’s Happy Dealers	262
Order Processing Systems	262
Impact of an Inventory Reduction on Corporate Profit Performance	263
Summary	267
Suggested Readings	267
Questions and Problems	268

## **7 Managing Materials Flow 273**

Introduction	274
Scope of Materials Management Activities	275
Purchasing and Procurement	276
TECHNOLOGY BOX: Internet 101—Enabling the Supply Chain	277
Production Control	278
Inbound Logistics	278
Warehousing and Storage	279
Data and Information Systems	279
Inventory Planning and Control	280
Reverse Logistics	280
Forecasting	281
Total Quality Management (TQM)	282
GLOBAL BOX: Certifying Quality with ISO 9000	283

Administration and Control of Materials Flow	287
Kanban/Just-in-Time Systems	289
MRP Systems	294
ERP Systems	301
DRP Systems	303
BOX 7-1: How DRP II Forecasts Demand—a Case History	305
The Logistics–Manufacturing Interface	306
TECHNOLOGY BOX: Seven Benefits of Information Technology	307
CREATIVE SOLUTIONS BOX: Excellence in Logistics Strategies	308
Summary	308
Suggested Readings	309
Questions and Problems	310

## **8 Transportation 311**

Introduction	312
Time and Place Utility	313
Transportation–Logistics–Marketing Interfaces	313
Transportation Costs, Pricing, and Related Issues	314
TECHNOLOGY BOX: Routing Software Streamlines Service	315
Transportation Service Characteristics	320
Transportation Carrier Characteristics	320
Legally Defined Forms of Transportation	321
Basic Transportation Modes	322
Intermodal Combinations	328
Other Transport Options	332
Transportation Regulation and Deregulation	335
Regulatory History	335
Impacts of Deregulation	338
Global Aspects of Transportation	342
GLOBAL BOX: Trading with Mexico	344
CREATIVE SOLUTIONS BOX: Goodyear Tire & Rubber Company Takes a New Approach to Carrier Productivity	345
Summary	345
Suggested Readings	346
Questions and Problems	347

## **9 Decision Strategies in Transportation 349**

Introduction	350
Traffic and Transportation Management	350
Basics of Traffic Management	350
Shipper Perspectives	354
BOX 9-1: A Case Study in Outsourcing: Ryder/Xerox	361
Carrier Perspectives	366
Transportation Productivity	370
Technology Issues	373
International Transportation	375
TECHNOLOGY BOX: Help for the Cyber Shipper	376
GLOBAL BOX: Anyone Can Sell on the Web, But Can You Deliver Worldwide?	377

The Transportation Audit	377
CREATIVE SOLUTIONS BOX: How Rohm & Haas Used Technology and Reengineering to Save \$100 Million	379
Summary	379
Suggested Readings	380
Questions and Problems	381
<b>Appendix:</b> Sample Transportation Service Quality Questionnaire	382
<b>10 Warehousing</b>	<b>389</b>
Introduction	390
Nature and Importance of Warehousing	391
Types of Warehousing	395
Warehousing Operations	396
Warehousing Tasks	396
Warehousing Functions	397
Public versus Private Warehousing	401
Advantages and Disadvantages of Public Warehousing	401
Advantages and Disadvantages of Private Warehousing	404
Facility Development	405
Size and Number of Warehouses	405
Location Analysis	410
Warehouse Layout and Design	417
International Dimensions of Warehousing	421
GLOBAL BOX: BBN Communications Serves Customers Worldwide	422
Warehouse Productivity	423
TECHNOLOGY BOX: Software with a Vroommmmmmmmm—Porsche	426
Financial Dimensions of Warehousing	426
CREATIVE SOLUTIONS BOX: Less Warehousing, Better Distribution	428
Summary	429
Suggested Readings	429
Questions and Problems	431
<b>Appendix A:</b> Case Study—Public versus Private Warehousing	432
<b>Appendix B:</b> Case Study—Warehouse Consolidation	435
<b>11 Materials Handling, Computerization, and Packaging</b>	<b>441</b>
Introduction	442
Materials Handling Equipment	442
Manual or Nonautomated Systems	442
Automated Systems	449
GLOBAL BOX: Automation Helps Distribute Mazda Automobiles in Europe	450
Warehousing in a Just-in-Time (JIT) Environment	459
Packaging	460
Functions of Packaging	460
Trade-Offs in Packaging	462
BOX 11–1: Green Manufacturing Has Major Implications for Logistics	464
Package Design	464
BOX 11–2: Designing the Optimal Package	465



BOX 11–3: Carriers Get into the Packaging Act 466  
Computer Technology, Information, and Warehouse Management 467  
TECHNOLOGY BOX: A Complete Overhaul at McKesson 470  
CREATIVE SOLUTIONS BOX: Design for Payback 473  
Summary 473  
Suggested Readings 474  
Questions and Problems 475

## 12 Procurement 477

Introduction 478  
Purchasing Activities 478  
    The Strategic Role of Purchasing 480  
    Supplier Selection and Evaluation 481  
GLOBAL BOX: Implementing a Global Buying Strategy 484  
    Total Quality Management 486  
    Forward Buying 487  
Just-in-Time Purchasing 489  
    Difficulties in Implementing JIT 490  
    Importance of Buyer–Supplier Communication 491  
    Supplier Selection 491  
    Purchase Agreements 492  
    Value Analysis 492  
    “Loose” Engineering Specifications/Early Supplier Involvement 492  
    Control of Inbound Transportation 492  
    Supplier Development 493  
    Benefits of JIT Purchasing 493  
    JIT II 494  
Purchasing Research and Planning 495  
Purchasing Cost Management 495  
    Cost Reduction Programs 496  
    Price Change Management 496  
CREATIVE SOLUTIONS BOX: How Companies Can Cut Costs by Joining  
    Buying Pools 497  
    Volume Contracts 498  
    Systems Contracts and Stockless Purchasing 498  
Measurement and Evaluation of Purchasing Performance 499  
    Performance Measures 500  
    Impact of Procurement on Return on Net Worth 502  
Strategic Sourcing 503  
    Procurement Pathways 504  
    Segmenting the Buy 504  
    Sourcing Process Excellence 504  
E-Procurement 505  
TECHNOLOGY BOX: E-Procurement 506  
Managing Supplier Relationships 508  
    Types of Partnerships 508  
    The Partnership Model 509  
Summary 513  
Suggested Readings 513  
Questions and Problems 514

**13 Global Logistics 515**

- Introduction 516
- International Supply Chain Strategies 519
  - Exporting 520
  - Licensing 522
  - Joint Ventures 522
  - Ownership 523
  - Importing 524
  - Countertrade and Duty Drawbacks 524
- The Global Marketplace—Uncontrollable Elements 525
  - Economic 527
  - Competition 529
- GLOBAL BOX: Wal-Mart in Europe 530
- TECHNOLOGY BOX: NAFTA and Technology Combine to Cut Customs
  - Delays 531
  - Technology 531
  - Geography 532
  - Social and Cultural 532
  - Political and Legal 534
- Exporting Basics 535
  - Export Distributor 535
  - Customshouse Broker 536
  - International Freight Forwarder 536
  - Trading Company 537
  - Non-Vessel-Operating Common Carrier 537
- Documentation 538
- Terms of Trade 540
- Free Trade Zones 541
- CREATIVE SOLUTIONS BOX: Polaroid's Approach to Global
  - Logistics 542
- Summary 542
- Suggested Readings 543
- Questions and Problems 543
- Appendix:** The Basics: What You Need to Know about INCOTERMS 545

**14 Global Logistics Strategies 549**

- Introduction 550
- Global Logistics Issues 551
  - Guidelines in Developing a Global Logistics Strategy 553
  - Organizing for Global Logistics 554
- GLOBAL BOX: "Localized" Global Distribution 555
  - Financial Aspects of Global Logistics 556
- The Global Marketplace—Controllable Elements 558
  - Customer Service 558
  - Inventory 559
  - Transportation 559
  - Warehousing 560
  - Other Activities 561
- Global Market Opportunities 564

North America	564
TECHNOLOGY BOX: Internet Software Cuts Costs	566
Pacific Rim	567
Western Europe	571
Eastern Europe	573
Maquiladora Operations	574
CREATIVE SOLUTIONS BOX: Wanted: Creative Do-It-Yourself Shippers	576
Summary	576
Suggested Readings	577
Questions and Problems	579

## **15 Organizing for Effective Logistics 581**

Introduction	582
Importance of an Effective Logistics Organization	582
GLOBAL BOX: Organizing for the 21st Century	583
Logistics Organizational Structures	586
Development of Business Structures	586
Teams	591
Using Teams	592
Decision-Making Strategies in Organizing for Logistics	593
The Logistics Mission Statement	593
Components of an Optimal Logistics Organization	596
TECHNOLOGY BOX: New Technologies Are Changing the Way We Work	596
An Approach to Developing an Optimal Logistics Organization	600
Organizational Structures of Successful Companies	602
Effectiveness of the Logistics Organization	605
Logistics Training	609
CREATIVE SOLUTIONS BOX: Logistics Training at MegaProducts	610
Summary	611
Suggested Readings	612
Questions and Problems	613

## **16 Financial Control of Logistics Performance 615**

Introduction	616
The Impact of Logistics on Customer and Product Profitability	616
Limitations of Current Profitability Reports	621
The Importance of Accurate Cost Data	622
Total Cost Analysis	622
Controlling Logistics Activities	624
GLOBAL BOX: One Common System	625
Case Studies	626
Solving the Problem of Insufficient Cost Data	628
Standard Costs and Flexible Budgets	629
Budgetary Practices	633
Productivity Standards	634
Statistical Process Control	636

TECHNOLOGY BOX: Enabling Managers to Develop Performance Metrics	640
Logistics Costs and the Corporate Management Information System	640
Activity-Based Costing	644
CREATIVE SOLUTIONS BOX: Activity-Based Costing at Pitney Bowes Inc.	645
Segment Profitability Reports	646
The Role of the Order Processing System	646
Summary	647
Suggested Readings	647
Questions and Problems	648
<b>Appendix: Developing Standard Costs and Flexible Budgets for Warehousing</b>	<b>651</b>

## **17 Measuring and Selling the Value of Logistics 655**

Introduction	656
Key Value Metrics	656
Customer Satisfaction	657
Customer Value-Added	660
Total Cost Analysis	664
TECHNOLOGY BOX: Allegiance Healthcare Corporation	665
Profitability Analysis	666
The Strategic Profit Model	668
Shareholder Value	670
Shareholder Value Method	672
CREATIVE SOLUTIONS BOX: Calculating EVA	674
Advantages of Shareholder Value over Traditional Accounting Measures	675
Disadvantages of Shareholder Value	676
How Logistics Affects EVA	677
Revenue Growth	677
Operating Cost Reductions	677
Working Capital Efficiency	678
Fixed Capital Efficiency	679
Selling the Value Advantage	679
Summary	680
Suggested Readings	682
Questions and Problems	682

## **18 The Strategic Logistics Plan 683**

Introduction	684
What Is Strategic Planning?	684
The Importance of Planning	685
The Corporate Planning Process	685
Evaluation of the Consumer and Identification of Potential Target Markets	687
Evaluation and Selection of Target Markets	687
GLOBAL BOX: If Procter & Gamble Isn't Global, Who Is?	689

Formulation of Supply Chain Objectives and Strategy	690
Identification and Evaluation of Supply Chain Structure Alternatives	690
Selection of the Supply Chain Structure	690
Formulation of the Strategic Logistics Plan	691
Evaluation and Selection of Individual Logistics Members of the Supply Chain	692
Performance Evaluation and Supply Chain Modification	692
TECHNOLOGY BOX: What's in a Name?	693
Developing a Strategic Logistics Plan	694
The Logistics Audit	694
The Logistics Plan	702
An Industry Example	704
CREATIVE SOLUTIONS BOX: Collaboration Is the Way to Go	705
Future Challenges	708
Supply Chain Management	708
E-Commerce	711
Summary	713
Suggested Readings	713
Questions and Problems	714
<b>Appendixes</b>	715
A: Customer Service/Order Administration Audit	715
B: Transportation (Inbound and Outbound) Audit	717
C: Warehouse Operations Audit	719
D: Inventory Management and Forecasting Audit	721
E: Production Planning/Scheduling Audit	723
F: Marketing/Sales Audit	725
G: Financial Control/Accounting Audit	727
H: Purchasing Audit	728
I: General/Senior Management Audit	730
<b>Cases</b>	
Case 1 Horizon Foods Corporation	734
Case 2 Unichema	736
Case 3 L.L. Bean, Inc.	748
Case 4 Metalico: The SAP Proposal	751
Case 5 Giles Laboratories	763
Case 6 Hewlett-Packard Spokane Division	768
Case 7 Ladner Building Products	779
Case 8 KKC Computer Consolidation	786
Case 9 Favored Blend Coffee Company	790
Case 10 Coastal Logistics Inc.: Establishing Third-Party Logistics Services	793
Case 11 Supplier Management at Sun Microsystems (A)	801
Case 12 The Laura Ashley and Federal Express Strategic Alliance	815
Case 13 SKF	828
Case 14 Procter & Gamble: Improving Consumer Value Through Process Redesign	830
Case 15 Ford Motor Company: Supply Chain Strategy	847
Name Index	855
Subject Index	862