Supply Chain Management
Strategy, Planning, and Operation
Sunil Chopra
Kellogg School of Management
Dedication

I would like to thank my colleagues at Kellogg for all I have learned from them about logistics and supply chain management. I thank Peter Meindl for his collaboration during earlier editions of this book. I am grateful for the love and encouragement that my parents, Krishan and Pushpa, and sisters, Sudha and Swati, have always provided during every endeavor in my life. I thank my children, Ravi and Rajiv, for the joy they have brought me. Finally, none of this would have been possible without the constant love, caring, and support of my wife, Maria Cristina.

—Sunil Chopra

ABOUT THE AUTHOR

SUNIL CHOPRA

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Professor Chopra’s research and teaching interests are in supply chain and logistics management, operations management, combinatorial optimization, and the design of telecommunication networks. He has won several teaching awards at the MBA and Executive programs of Kellogg. He has authored more than 50 papers and two books.

He has been a department editor for Management Science and an associate editor for Manufacturing & Service Operations Management, Operations Research, and Decision Sciences Journal. He has also consulted for several firms in the area of supply chain and operations management.
# CONTENTS

**Preface** ix

**Part I  Building a Strategic Framework to Analyze Supply Chains**

**CHAPTER 1  UNDERSTANDING THE SUPPLY CHAIN  1**
- What Is a Supply Chain?  1
- The Objective of a Supply Chain  3
- Decision Phases in a Supply Chain  6
- Process Views of a Supply Chain  8
- Examples of Supply Chains  13
- Developing Skills for Your Career  17
  - Discussion Questions  18  •  Bibliography  18

**CHAPTER 2  ACHIEVING STRATEGIC FIT IN A SUPPLY CHAIN  19**
- Competitive and Supply Chain Strategies  19
- How is Strategic Fit Achieved?  22
- Supply Chain Levers to Deal with Uncertainty  31
- Expanding Strategic Scope  33
  - Discussion Questions  36  •  Bibliography  36
  - CASE STUDY: The Demise of Blockbuster  37

**CHAPTER 3  SUPPLY CHAIN DRIVERS AND METRICS  40**
- Financial Measures of Performance  40
- A Framework for Supply Chain Decisions  45
- Facilities  47
- Inventory  50
- Transportation  52
- Information  54
- Sourcing  56
- Pricing  58
  - Discussion Questions  61  •  Bibliography  61
  - CASE STUDY: Seven-Eleven Japan Co.  61
  - CASE STUDY: Financial Statements for Walmart Stores inc. and Macy’s inc.  68

**Part II  Designing the Supply Chain Network**

**CHAPTER 4  DESIGNING DISTRIBUTION NETWORKS AND APPLICATIONS TO OMNI-CHANNEL RETAILING  69**
- Factors Affecting Distribution Network Design in the Supply Chain  69
- Design Options for a Distribution Network  74
CHAPTER 5 NETWORK DESIGN IN THE SUPPLY CHAIN 103
The Role of Network Design in the Supply Chain 103
Factors Influencing Network Design Decisions 105
Framework for Network Design Decisions 110
Models for Designing a Regional Network Configuration 113
Models for Identifying Potential Sites in a Region 118
Models for Demand Allocation and Plant Location 121
  Discussion Questions 129 • Exercises 129 • Bibliography 134
  ► CASE STUDY: Designing the Production Network at CoolWipes 134
  ► CASE STUDY: Managing a Merger at Lightning Networks 135

CHAPTER 6 DESIGNING GLOBAL SUPPLY CHAIN NETWORKS 138
The Impact of Globalization on Supply Chain Networks 138
The Importance of Total Cost in Global Networks 140
Risk Management in Global Supply Chains 143
Evaluating Network Design Decisions using Decision Trees 147
To Onshore or To Offshore: The Value of Flexibility in a Supply Chain Under Uncertainty 157
  Discussion Questions 165 • Exercises 165 • Bibliography 167
  ► CASE STUDY: BioPharma, Inc. 168
  ► CASE STUDY: The Sourcing Decision at Forever Young 171

Part III Planning and Coordinating Demand and Supply in a Supply Chain

CHAPTER 7 DEMAND FORECASTING IN A SUPPLY CHAIN 172
The Role of Forecasting in a Supply Chain 172
Components of a Forecast and Forecasting Methods 174
Time-Series Forecasting Methods 178
Measures of Forecast Error 188
Building Forecasting Models using Excel 191
  Discussion Questions 199 • Exercises 200 • Bibliography 202
  ► CASE STUDY: Specialty Packaging Corporation 202

CHAPTER 8 AGGREGATE PLANNING IN A SUPPLY CHAIN 205
Aggregate Planning and its Role in a Supply Chain 205
The Basic Tradeoffs in Aggregate Planning 208
Aggregate Planning using Linear Programming 209
Aggregate Planning in Excel 217
  Discussion Questions 222 • Exercises 222 • Bibliography 224
  ► CASE STUDY: Kloss Planters and Harvesters 224
  ► CASE STUDY: Smartphone Production at Quicktronics 226
CHAPTER 9 SALES AND OPERATIONS PLANNING IN A SUPPLY CHAIN 227
Responding to Predictable Variability in the Supply Chain 227
Sales and Operations Planning at Red Tomato 231
Discussion Questions 238 • Exercises 238 • Bibliography 240
► CASE STUDY: Nintendo Game Girl 241
► CASE STUDY: Promotion Challenges at Gulmarg Skis 242

CHAPTER 10 COORDINATION IN A SUPPLY CHAIN 244
Lack of Supply Chain Coordination and its Impact on Performance 244
Obstacles to Coordination in a Supply Chain 248
Managerial Levers to Improve Coordination 252
Some Practical Approaches to Improve Supply Chain Coordination 258
Discussion Questions 263 • Bibliography 263

Part IV Planning and Managing Inventories in a Supply Chain

CHAPTER 11 MANAGING ECONOMIES OF SCALE IN A SUPPLY CHAIN CYCLE INVENTORY 264
The Role of Cycle Inventory in a Supply Chain 264
Economies of Scale to Exploit Fixed Costs 267
Aggregating Multiple Products in a Single Order 274
Economies of Scale to Exploit Quantity Discounts 282
Why do Suppliers offer Quantity Discounts? 288
Short-Term Discounting: Trade Promotions 294
Managing Multiechelon Cycle Inventory 298
Managerial Levers to Reduce Cycle Inventory 301
Discussion Questions 303 • Exercises 303 • Bibliography 307
► CASE STUDY: Delivery Strategy at MoonChem 307
► CASE STUDY: Pricing and Delivery at KAR Foods 309
Appendix 11A: Economic Order Quantity 310

CHAPTER 12 MANAGING UNCERTAINTY IN A SUPPLY CHAIN SAFETY INVENTORY 311
The Role of Safety Inventory in a Supply Chain 311
Factors Affecting the Level of Safety Inventory 313
Determining the Appropriate Level of Safety Inventory 317
Impact of Supply Uncertainty on Safety Inventory 326
Impact of Aggregation on Safety Inventory 328
Impact of Replenishment Policies on Safety Inventory 341
Managing Safety Inventory in a Multiechelon Supply Chain 344
Managerial Levers to Reduce Safety Inventory 345
Discussion Questions 346 • Exercises 346 • Bibliography 350
▶ CASE STUDY: Managing Inventories at ALKO Inc. 350
▶ CASE STUDY: Should Packing be Postponed to the DC? 353
Appendix 12A: The Normal Distribution 354
Appendix 12B: The Normal Distribution in Excel 355
Appendix 12C: Expected Shortage per Replenishment Cycle 355
Appendix 12D: Evaluating Safety Inventory For Slow-Moving Items 356

CHAPTER 13 LINKING PRODUCT AVAILABILITY TO PROFITS 358
Factors Affecting the Desired Level of Product Availability 358
Evaluating the Optimal Level of Product Availability 362
Basic Managerial Levers to Improve Supply Chain Profitability 370
The Value of Speed in a Seasonal Supply Chain 372
The Value of Postponement in a Seasonal Supply Chain 377
Setting Product Availability for Multiple Products under Capacity Constraints 382
Discussion Questions 385 • Exercises 385 • Bibliography 388
▶ CASE STUDY: The Need for Speed at Winner Apparel 388
Appendix 13A: Optimal Level of Product Availability 390
Appendix 13B: An Intermediate Evaluation 390
Appendix 13C: Expected Profit from an Order 391
Appendix 13D: Expected Overstock from an Order 392
Appendix 13E: Expected Understock from an Order 392
Appendix 13F: Simulation using Spreadsheets 393

Part V Designing and Planning Transportation Networks

CHAPTER 14 TRANSPORTATION IN A SUPPLY CHAIN 396
Transportation Modes and their Role in a Supply Chain 396
Transportation Infrastructure and Policies 402
Design Options for a Transportation Network 405
Mumbai Dabbawalas: A Successful Same-Day Delivery Network 411
Trade-Offs in Transportation Design 412
Tailored Transportation 420
Discussion Questions 423 • Bibliography 423
▶ CASE STUDY: Designing the Distribution Network for Michael's Hardware 424
▶ CASE STUDY: The Future of Same-Day Delivery: Same as the Past? 425
▶ CASE STUDY: Selecting Transportation Modes for China Imports 426

Part VI Managing Cross-Functional Drivers in a Supply Chain

CHAPTER 15 SOURCING DECISIONS IN A SUPPLY CHAIN 427
The Sourcing Decision in a Supply Chain 427
Total Cost of Ownership 437
Designing a Sourcing Portfolio: Tailored Sourcing 439
CHAPTER 16 PRICING AND REVENUE MANAGEMENT IN A SUPPLY CHAIN 464

The Role of Pricing and Revenue Management in a Supply Chain 464
Differential Pricing for Multiple Customer Segments 467
Dynamic Pricing and Overbooking for Perishable Assets 474
Discounting and Peak Pricing for Seasonal Demand 481
Constructing a Portfolio of Bulk Contracts and Spot Buying 482
Some Practical Challenges When using Revenue Management 484
Discussion Questions 485 • Exercises 485 • Bibliography 486
▶ CASE STUDY: To Savor or to Groupon? 486

CHAPTER 17 SUSTAINABILITY AND THE SUPPLY CHAIN 489

The Role of Sustainability in a Supply Chain 489
The Tragedy of the Commons 491
Key Pillars of Corporate Social Responsibility 495
Sustainability and Supply Chain Drivers 499
The Role of Incentives and Regulation for Sustainability 502
Discussion Questions 507 • Bibliography 507

Part VII Online Chapter

CHAPTER A INFORMATION TECHNOLOGY IN A SUPPLY CHAIN

The Role of IT in a Supply Chain
The Supply Chain IT Framework
The Future of IT in the Supply Chain
Risk Management in IT
Discussion Questions • Bibliography

Index 508
PREFACE

This book is targeted toward an academic as well as a practitioner audience. On the academic side, it is appropriate for MBA students, engineering master’s students, and senior undergraduate students interested in supply chain management and logistics. It can also serve as a suitable reference for both concepts as well as providing a methodology for practitioners in consulting and industry.

NEW TO THIS EDITION

The seventh edition has focused on changes that enhance students’ ability to sharpen their critical thinking and data analytics skills as they study with the book. All concepts discussed in the book are linked to strategic decision making in a supply chain, and all quantitative ideas are illustrated using spreadsheets that can be implemented in practice. Some specific changes in the seventh edition include:

- The link between supply chain decisions and the financial performance of a firm is developed in detail in Chapter 3.
- The concepts underlying the design of distribution networks are illustrated in the context of omni-channel retailing in Chapter 4. The evolution of retailing is used throughout the book to illustrate the link between supply chain concepts and strategic decision making in a supply chain.
- Each section of each chapter in the book is associated with a clearly identified learning objective that is summarized at the end of the section.
- We have added new mini-cases in Chapters 5, 8, and 15. Information in other cases has been updated to be current.
- New exercises have been added in several chapters.
- For all numerical examples discussed in the book, we have developed spreadsheets that students can use to understand the concept at a deeper level. These spreadsheets are referred to in the book and allow the student to try different “what-if” analyses. These spreadsheets are available at www.pearsonhighered.com/chopra along with basic guidance on how they may be created and used.
- We have continued to add current examples throughout the book, with a particular focus on bringing in more global examples.

SOLVING TEACHING AND LEARNING CHALLENGES

To be successful, supply chain practitioners must be able to formulate effective supply chain strategy and be able to solve any resulting supply chain problems using the available analytical tools. In a supply chain class this creates the challenge of teaching students to think strategically while supporting their decisions with robust quantitative analysis. This book is designed to help faculty and students overcome this challenge through its conceptual and pedagogical structure. Conceptually, the book aims to develop an understanding of the following key areas and their interrelationships:

- The strategic role of a supply chain
- The key strategic drivers of supply chain performance
- Analytic methodologies for supply chain analysis

To illustrate the strategic importance of good supply chain management, we provide many current examples to show how companies have succeeded through effective supply chain management or failed because of weak supply chain management. Our strategic framework, the use of Excel-based models to explain analytic methodologies, and several mini-cases to help students internalize the link between the analytic methodologies and strategic decision making provide pedagogical support for faculty using the book.
Preface

Within the strategic framework, we identify facilities, inventory, transportation, information, sourcing, and pricing as the key drivers of supply chain performance. The book is structured to dig deeper into each driver to understand its role in the success of a supply chain, its interaction with other drivers, analytic methodologies to support decisions related to the driver, and managerial levers related to the driver that help improve supply chain performance.

Every analytic methodology is illustrated with its application in Excel. Students have access to the associated Excel file along with instructions to construct and use the file. The Excel files help students deepen their understanding of the link between the analytic models and the strategic decisions they support.

Mini Cases

Most chapters have mini cases that can be used by faculty to ensure that students can apply the concepts and methodologies in the context of strategic decision making for a business.

DEVELOPING CAREER SKILLS

Skills learned in this book will be of great use no matter what path students choose to follow. The book is developed with the premise that good strategic decisions cannot be made without access to relevant analytics, and all analytics should be designed to support decision making. As a result, students will develop critical thinking, the ability to formulate and analyze problems, and support their recommendations with analytics that uses data literacy and computing skills.

Excel Based Models

• Every chapter in the book pushes students to think critically in order to define and solve supply chain problems. For example, Chapter 4 develops a framework for distribution networks and then pushes students to think about how retailing may evolve in the future as consumer preferences and technology change. The first part of the chapter teaches frameworks and concepts related to the design of distribution networks. The last part of the chapter then pushes the students to analyze retailing by applying the knowledge they have gained in order to decide how retailers need to change in order to succeed in the 21st century.

• All the analytics in the book are developed through the use of Microsoft Excel. This helps students develop data literacy, computing skills, and the knowledge of how to apply information technology to support decision making. The analytics that are developed in these chapters in turn support the framework laid out in Chapter 4. Whereas Chapter 4 helps students to think conceptually about why certain retailing models have succeeded for selling jewelry while others have failed, the succeeding chapters help students quantify financial metrics for different retail networks. As a result, students learn how to use data and models to improve strategic decision making.
TABLE OF CONTENTS OVERVIEW

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Building a Strategic Framework to Analyze Supply Chains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 1: Understanding the Supply Chain</td>
<td>Introduces the supply chain, the managerial objective, and key decisions</td>
</tr>
<tr>
<td>Ch. 2: Achieving Strategic Fit in a Supply Chain</td>
<td>Discusses the need to align strategy with supply chain capabilities</td>
</tr>
<tr>
<td>Ch. 3: Supply Chain Drivers and Metrics</td>
<td>Defines key drivers of supply chain performance and associated performance metrics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 2</th>
<th>Designing the Supply Chain Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 4: Designing Distribution Networks and Applications to Omni-Channel Retailing</td>
<td>Introduces framework for designing distribution networks with an application to omni-channel retailing</td>
</tr>
<tr>
<td>Ch. 5: Network Design in the Supply Chain</td>
<td>Presents analytic models that support network design</td>
</tr>
<tr>
<td>Ch. 6: Designing Global Supply Chain Networks</td>
<td>Discusses risks in global supply chains and analytic methodologies that incorporate uncertainty in network design</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 3</th>
<th>Planning and Coordinating Demand and Supply in a Supply Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 7: Demand Forecasting in a Supply Chain</td>
<td>Introduces techniques for demand forecasting and measuring forecast error</td>
</tr>
<tr>
<td>Ch. 8: Aggregate Planning in a Supply Chain</td>
<td>Introduces methodologies to plan supply to meet seasonal demand</td>
</tr>
<tr>
<td>Ch. 9: Sales and Operations Planning in a Supply Chain</td>
<td>Discusses how optimally managing both demand and supply can grow supply chain profits</td>
</tr>
<tr>
<td>Ch. 10: Coordination in a Supply Chain</td>
<td>Discusses obstacles to coordination and managerial levers that help improve coordination in a supply chain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 4</th>
<th>Planning and Managing Inventories in a Supply Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 11: Managing Economies of Scale in a Supply Chain – Cycle Inventory</td>
<td>Introduces methodologies to obtain optimal batch sizes and discusses managerial levers that help reduce cycle inventory without hurting costs</td>
</tr>
<tr>
<td>Ch. 12: Managing Uncertainty in a Supply Chain – Safety Inventory</td>
<td>Introduces methodologies to obtain safety inventory and discusses managerial levers that help reduce safety inventory without hurting product availability</td>
</tr>
<tr>
<td>Ch. 13: Linking Product Availability to Profits</td>
<td>Discusses managerial levers that help increase profits in a supply chain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 5</th>
<th>Designing and Planning Transportation Networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 14: Transportation in a Supply Chain</td>
<td>Discusses options and tradeoffs when designing a transportation network</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 6</th>
<th>Managing Cross Functional Drivers in a Supply Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. 15: Sourcing Decisions in a Supply Chain</td>
<td>Introduces the concept of total cost in the context of sourcing and discusses the benefits of sharing risk and reward in a supply chain</td>
</tr>
<tr>
<td>Ch. 16: Pricing and Revenue Management in a Supply Chain</td>
<td>Discusses how differential pricing can help increase profits in a supply chain</td>
</tr>
<tr>
<td>Ch. 17: Sustainability and the Supply Chain</td>
<td>Discusses the challenge to sustainability posed by the tragedy of the commons and the role of incentives and regulation for improved sustainability</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part 7</th>
<th>Online Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch. A: Information Technology in a Supply Chain</td>
<td>Introduces a framework for the role of information technology in a supply chain</td>
</tr>
</tbody>
</table>
INSTRUCTOR TEACHING RESOURCES

At the Instructor Resource Center, http://www.pearsonhighered.com/irc, instructors can easily register to gain access to a variety of instructor resources available with this text in downloadable format. If assistance is needed, our dedicated technical support team is ready to help with the media supplements that accompany this text. Visit https://support.pearson.com/getsupport for answers to frequently asked questions and toll-free user support phone numbers.

This program comes with the following teaching resources.

<table>
<thead>
<tr>
<th>Supplements available to instructors at <a href="http://www.pearsonhighered.com/irc">www.pearsonhighered.com/irc</a></th>
<th>Features of the Supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instructor’s Solution Manual</strong> developed by the author</td>
<td>• Case Teaching Notes and Worksheets</td>
</tr>
<tr>
<td></td>
<td>• Spreadsheets for all quantitative examples</td>
</tr>
<tr>
<td></td>
<td>• Discussion questions</td>
</tr>
<tr>
<td></td>
<td>• Example figures</td>
</tr>
<tr>
<td></td>
<td>• Additional exercises</td>
</tr>
<tr>
<td></td>
<td>• Solutions to all questions and problems in the book</td>
</tr>
<tr>
<td><strong>Test Bank</strong> authored by Geoff Willis of the University of Central Oklahoma</td>
<td>2000 multiple-choice, true/false, short-answer, and graphing questions with these annotations:</td>
</tr>
<tr>
<td></td>
<td>• Correct answer</td>
</tr>
<tr>
<td></td>
<td>• Difficulty level (1 for straight recall, 2 for some analysis, 3 for complex analysis)</td>
</tr>
<tr>
<td></td>
<td>• Learning outcome reference</td>
</tr>
<tr>
<td></td>
<td>• Topic covered</td>
</tr>
<tr>
<td></td>
<td>• AACSB learning standard (Analytical Thinking; Information Technology; Application of Knowledge)</td>
</tr>
<tr>
<td><strong>TestGen® Computerized Test Bank</strong></td>
<td>TestGen allows instructors to:</td>
</tr>
<tr>
<td></td>
<td>• Customize, save, and generate classroom tests</td>
</tr>
<tr>
<td></td>
<td>• Edit, add, or delete questions from the Test Item Files</td>
</tr>
<tr>
<td></td>
<td>• Analyze test results</td>
</tr>
<tr>
<td></td>
<td>• Organize a database of tests and student results.</td>
</tr>
<tr>
<td><strong>PowerPoint Presentations</strong> authored by Jeff Heyl of the Lincoln University</td>
<td>Slides include all the graphs, tables, and equations in the textbook. PowerPoints meet accessibility standards for students with disabilities. Features include, but not limited to:</td>
</tr>
<tr>
<td></td>
<td>• Keyboard and Screen Reader access</td>
</tr>
<tr>
<td></td>
<td>• Alternative text for images</td>
</tr>
<tr>
<td></td>
<td>• High color contrast between background and foreground colors</td>
</tr>
</tbody>
</table>

For Students

The following material is available to students at http://www.pearsonhighered.com/chopra:

- Spreadsheets for numerical examples discussed in the book. These provide the details of the example discussed, but are live and allow the student to try different what-if analyses.
- Spreadsheets that allow students to build every table shown in Chapters 5 through 16.
- Online chapter: Chapter A: Information Technology in a Supply Chain.
- Technical Note: Routing and Scheduling in Transportation. This note is also bundled with the Instructor’s Manual available on www.pearsonhighered.com/irc.
ACKNOWLEDGMENTS

I would like to thank the many people who helped throughout this process. I thank the reviewers whose suggestions significantly improved the book, including: Steven Brown, Arizona State University; Ming Chen, California State University, Long Beach; Sameer Kumar, University of Saint Thomas; Frank Montabon, Iowa State University; Brian Sauser, University of North Texas; and Paul Venderspek, Colorado State University, and Michael Godfrey, University of Wisconsin Oshkosh.

I would also like to thank my editor, Neeraj Bhalla, content producer, Sugandh Juneja, editorial assistant, Linda Albelli, and the people at SPi, including Nicole Suddeth, Ronel Mirano, and Raja Natesan, for their efforts with the book. Finally, I would like to thank you, the readers, for reading and using this book. I hope it contributes to all your efforts to improve the performance of companies and supply chains throughout the world. I would be pleased to hear your comments and suggestions for future editions of this text.

Sunil Chopra
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