Preface

Sound intuition is important in business, and especially so in the rapidly changing area of supply chain management. It helps one to size up situations quickly by identifying opportunities and assessing the impact of alternative responses. This book emphasizes principles governing human and system behavior and simple analytical tools that promote insight. The purpose is to provide a basis for sound intuition in the context of supply chain management.

AUDIENCE

The book is designed for use in an introductory course on supply chain management, and is also suitable for an introductory operations management course that is taught with a supply chain emphasis and framework. I have used the book in both my undergraduate and my graduate classes, though I have written the book with the undergraduate course in mind.

Throughout the book, there is an emphasis on principles of nature and managerial insights that stem from analysis. These principles and insights are easy to grasp for most students. At the same time, there is a relatively high degree of rigor in the analyses. Chapters that cover analytical models begin with simple analyses and introduce added complexity/realism as the chapter progresses. An instructor is free to pursue the degree of rigor in analysis that is appropriate for his/her course. And, when some analytical models are not covered, the associated managerial insights can still be covered. In summary, the content is structured so that an instructor can choose the level of analysis that fits his/her program and learning objectives. Even if analysis of some issue is not covered or required, the instructor may still require an understanding of the managerial insights that follow from analysis.

OVERVIEW OF THE ORGANIZATION

The book is divided into three major parts—foundation, principles and tools, and synthesis—that are comprised of 12 chapters and three chapter supplements. Four appendices are located at the end of the book.

Part One, "*Foundation*," which contains three chapters, introduces material that is referred to and expanded upon in subsequent chapters. Chapter 1 provides an introductory discussion of what supply chain management is about, how it relates to other functional areas, and why it is important. Chapter 2 introduces information technologies that are relevant for supply chain management. Chapter 3 introduces six drivers of supply chain performance, elements and origins of two management philosophies that are relevant for SCM, and two fundamental approaches for managing material flows.

Part Two, "*Principles and Tools*," which contains eight chapters and three chapter supplements, covers principles and tools for managing supply chains. The content is structured around the five basic supply chain activities of *buy, make, move, store,* and *sell.* These activities represent an organizing framework for Part Two. The framework reinforces how concepts in individual chapters are interrelated and support a larger system governing the movement, transformation, and usage of resources.

While there is discussion that spans multiple activities, each chapter in Part Two largely focuses on concepts in the context of a particular supply chain activity (i.e., buy, make, move, store, or sell). The compartmentalization of content facilitates comprehension, especially in the early stages of learning about a field.

Part Three, "*Synthesis*," which is a single chapter, brings together earlier content by taking a step back to review and consider the entire system. There are three main sections.

The first section covers strategic frameworks that are useful for diagnosing whether a firm's supply chain strategy makes sense for the environment in which it operates. Strategic frameworks could also be presented at the beginning of the book. I positioned this material at the end for two reasons. First, I think students develop a greater appreciation and understanding of strategic issues once operational elements are understood.[1] Second, I think a discussion of strategy complements a summary of the text . . . how ideas from individual chapters support the formulation and execution of a supply chain strategy.

The second section reviews a systematic approach (i.e., SCOR) for identifying performance improvement targets consistent with a supply chain strategy, and for redesigning supply chain processes to achieve performance improvements. The effective application of SCOR requires an understanding of how alternative designs for various supply chain processes influence performance in different environmental and market conditions, which leads to the final section.

The third section reviews how concepts from the first 11 chapters are interrelated, promote a meaningful understanding of supply chain behavior, and ultimately serve as a basis for improving supply chain performance.

Appendix 1 defines and illustrates the principles of nature that appear in the text. Principles of nature are scattered throughout the book and represent an important element of student learning. The purpose of this appendix is to provide a single point of reference for all of the principles.

Appendix 2 covers cryptology. I included this topic for three reasons. First, supply chains increasingly rely on low cost and easy-to-set-up electronic communication links between firms. In addition to the Internet, a critical but lesser-known element that makes this possible is public key encryption and digital signatures. Appendix 2 provides a basic understanding of these technologies. Second, I think it is an interesting topic that can inspire a sense of learning just for the fun of it. Finally, there is a deep result that underlies a managerial insight in Chapter 9 regarding claims by software vendors. Students who are curious to learn more about the result are referred to this appendix.

Appendix 3 lists the notation and formulas that appear in the text.

Appendix 4 contains a normal probability table and a unit normal loss table.

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[1] Similar to why strategies in chess are better understood and appreciated after playing the game for awhile.

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