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(第3版)

Managing the Supply Chain

(Third Edition)

大卫·辛奇-利维 (David Simchi-Levi)

[美] 菲利普·卡明斯基 (Philip Kaminsky) 著

伊迪斯·辛奇-利维 (Edith Simchi-Levi)

季建华 改编

中国人民大学出版社



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总 序

随着我国加入 WTO,越来越多的国内企业参与到国际竞争中来,用国际上通用的语言思考、工作、交流的能力也越来越受到重视。这样一种能力也成为我国各类人才参与竞争的一种有效工具。国家教育机构、各类院校以及一些主要的教材出版单位一直在思考,如何顺应这一发展潮流,推动各层次人员通过学习来获取这种能力。双语教学就是这种背景下的一种尝试。

双语教学在我国主要指汉语和国际通用的英语教学。事实上,双语教学在我国教育界已经不是一个陌生的词汇了,以双语教学为主的科研课题也已列入国家“十五”规划的重点课题。但从另一方面来看,双语教学从其诞生的那天起就被包围在人们的赞成与反对声中。如今,依然是有人赞成有人反对,但不论是赞成居多还是反对占上,双语教学的规模 and 影响都在原有的基础上不断扩大,且呈大发展之势。一些率先进行双语教学的院校在实践中积累了经验,不断加以改进;一些待进入者也在模仿中学习,并静待时机成熟时加入这一行列。由于我国长期缺乏讲第二语言(包括英语)的环境,开展双语教学面临特殊的困难,因此,选用合适的教材就成为双语教学成功与否的一个重要问题。我们认为,双语教学从一开始就应该使用原版的各类学科的教材,而不是由本土教师自编的教材,从而可以避免中国式英语问题,保证语言的原汁原味。各院校除应执行国家颁布的教学大纲和课程标准外,还应根据双语教学的特点和需要,适当调整教学课时的设置,合理选择优秀的、合适的双语教材。

顺应这样一种大的教育发展趋势,中国人民大学出版社同众多国际知名的大出版公司,如麦格劳-希尔出版公司、培生教育出版公司等合作,面向大学本科生层次,遴选了一批国外最优秀的管理类原版教材,涉及专业基础课,人力资源管理、市场营销及国际化管理等专业方向课,并广泛听取有着丰富的双语一线教学经验的教师的建议和意见,对原版教材进行了适当的改编,删减了一些不适合我国国情和不适合教学的内容;另一方面,根据教育部对双语教学教材篇幅合理、定价低的要求,我们更是努力区别于目前市场上形形色色的各类英文版、英文影印版的大部头,将目标受众锁定在大学本科生层次。本套教材尤其突出了以下一些特点:

- 保持英文原版教材的特色。本套双语教材根据国内教学实际需要,对原书进行了一定的改编,主要是删减了一些不适合教学以及不符合我国国情的内容,但在体系结构和内容特色方面都保持了原版教材的风貌。专家们的认真改编和审定,使本套教材既保持了学术上的完整性,又贴近中国实际;既方便教师教学,又方便学生理解和掌握。

- 突出管理类专业教材的实用性。本套教材既强调学术的基础性,又兼顾应用的广泛性;既侧重让学生掌握基本的理论知识、专业术语和专业表达方式,又考虑到教材和管理实践的紧密结合,有助于学生形成专业的思维能力,培养实际的管理技能。

- 体系经过精心组织。本套教材在体系架构上充分考虑到当前我国在本科教育阶段推广双语教学的进度安排,首先针对那些课程内容国际化程度较高的学科进行双语教材开发,在其专业模块内精心选择各专业教材。这种安排既有利于我国教师摸索双语教学的经验,使得双语教学贴近现实教学的需要;也有利于我们收集关于双语教学教材的建议,更好地推出后续的双语教材及教辅材料。

- 篇幅合理,价格相对较低。为适应国内双语教学内容和课时上的实际需要,本套教材进

行了一定的删减和改编,使总体篇幅更为合理;而采取低定价,则充分考虑到了学生实际的购买能力,从而使本套教材得以真正走近广大读者。

● 提供强大的教学支持。依托国际大出版公司的力量,本套教材为教师提供了配套的教辅材料,如教师手册、PowerPoint 讲义、试题库等,并配有内容极为丰富的网络资源,从而使教学更为便利。

本套教材是在双语教学教材出版方面的一种尝试。我们在选书、改编及出版的过程中得到了国内许多高校的专家、教师的支持和指导,在此深表谢意。同时,为使我们后续推出的教材更适于教学,我们也真诚地期待广大读者提出宝贵的意见和建议。需要说明的是,尽管我们在改编的过程中已加以注意,但由于各教材的作者所处的政治、经济和文化背景不同,书中内容仍可能有不妥之处,望读者在阅读时注意比较和甄别。

徐二明

中国人民大学商学院

改编者的话

《供应链设计与管理》(第1版)的中文版面世以来,弹指已八年,除了第3版中文版即将与读者见面以外,中国人民大学出版社又为读者奉献了相应的双语版,这对推动我国的双语教学和更好地理解原著的含义,具有很大的意义。

正如作者在英文第3版序言中所说,新形势下,企业与供应链的业务模式发生了很大的变化,尤其是互联网和电子商务的兴起以及RFID技术的应用,为供应链管理的发展提供了更广阔的空间。在此期间,中国的物流与供应链管理由粗放转向精益,由重规模转向重效益,其发展速度居世界前列。最近,中国政府将物流业作为唯一的服务行业,与其他九大制造行业一起列入“十大行业”,制定了相应的“十大行业振兴规划”,中国物流业之发展由此可以期待。

然而,随着全球化与外包的发展,供应链的复杂性与风险也日益显现,人们不再仅仅关注效率与精益,也开始关注供应链的风险管理与应急管理问题。正是出于对这个问题的关注,第3版增加并充实了许多新内容、新主题,尤其是供应链全球化中的风险管理以及与此相关的战略库存等内容。我国近几年也开展了这方面的研究。2008年初,我们荣幸承担了国家自然科学基金有关应急运作管理研究的重点项目,其研究主旨是供应链领域突发事件的预防、预警与应对。2008年,中国经历了特大地震和雨雪冰冻两场严重的自然灾害,目前正经历全球性的金融危机,所有这些都使我们深刻体会到:供应链管理在突发事件方面的研究工作十分重要,尚有许多课题需要深入探讨。

大卫·辛奇-利维教授在书中使用的大量案例,来自他担任工程部主任的麻省理工学院的制造业领袖项目。上海交通大学安泰管理学院目前正与麻省理工学院合作,创办中国的制造业领袖项目,我作为一名导师也参与了这个项目。这个项目要求深入到全球著名跨国公司中,了解它们供应链的问题并提出解决方案。学生在此过程中可以得到很大的锻炼,对教师来说,也是从实践中学习和研究供应链问题的一个极好机会。

对这样一本经典的畅销教材,在改编过程中,一方面,我们本着学习原著的原则,基本完整地保留了原书的正文,只删去了第1章和第2章的章末案例,以及最后的附录;另一方面,我们翻译了原书的简明目录、各章节标题、关键术语,方便读者学习使用。需要说明的是,为了方便读者更加详细地了解原著的内容,改编版删去的内容,读者可登录人大经管图书在线(<http://www.rdjg.com.cn>)阅读或下载。

由于时间紧张,加之改编者的水平有限,若有不当之处,恳请专家和同行批评、指正。

季建华

上海交通大学安泰管理学院

FOREWORD

In the last few years we have seen an explosion of publications on supply chain management; numerous books have been published and many articles have appeared in academic, trade, and popular magazines. These publications either are too technical—and therefore inaccessible to practitioners and students—or lack the breadth and depth that the topic deserves. Certainly, it is difficult to find a book appropriate for teaching supply chain management to business or engineering students. *Designing and Managing the Supply Chain* solves this problem!

The book is an important contribution and major milestone for the supply chain community. It is the first book that covers a comprehensive breadth of supply chain topics in depth, and addresses the major challenges in this area. It was written by experts from academia and industry who have been researching, consulting, and developing software for supply chain management for many years.

This book includes many classic and new case studies, numerous examples as well as in-depth analyses of some of the technical issues involved in inventory management, network design, and strategic partnering, to name a few. It is therefore an ideal textbook for classes on supply chain management at the undergraduate, Master's, and M.B.A. levels. Since each chapter is self-contained, instructors can pick the chapters they want to use depending on the length of the class and its requirements. The book comes with three computerized games. The Computerized Beer Game provides an excellent instructional tool that engages students in managing a supply chain and provides a starting point for discussing the value of information in the supply chain, strategic partnering, centralized decision making, and so forth. The Risk Pool Game allows students to gain insight on an important concept in supply chain management, called risk pooling. The Bidding Game illustrates important procurement strategies. The authors have been most creative in using games to motivate and expose students to challenging subjects.

Finally, since many companies view supply chain management as the core of their business strategy, this book also will be of interest to managers involved in any of the processes that make up the supply chain.

I want to compliment the authors for having written such an outstanding textbook for the supply chain community.

Hau L. Lee
Kleiner Perkins, Mayfield, Sequoia Capital Professor
Director, Stanford Global Supply Chain Forum
Stanford University

PREFACE*

Three years ago, when the second edition of this text was published, we mentioned our goal of building on the positive elements of the first edition and including what we had learned subsequently. We are pleased to note that that revision was successful; as with the first edition, we received a tremendous response from adopters, students, executives, and consultants. Nevertheless, new concepts have subsequently been developed, technological changes continue at an ever-increasing rate, and we have discovered a variety of important new teaching approaches and concepts, so the time is right for a newly revised edition.

The original edition of this book grew out of a number of supply chain management courses and executive education programs we taught at Northwestern University, as well as numerous consulting projects and supply chain decision-support systems we developed at LogicTools. Since then, we have continued teaching executive and regular courses, both at Massachusetts Institute of Technology and at the University of California, Berkeley, and have continued to develop a variety of supply chain decision-support tools. These courses have spawned many innovative and effective supply chain education concepts. The focus in these programs has always been on presenting, in an easily accessible manner, recently developed state-of-the-art models and solution methods important in the design, control, and operation of supply chains. Similarly, the consulting projects and decision-support systems developed by LogicTools have focused on applying these advanced techniques to solve specific problems faced by our clients. In the last three years, we have continued to add new models and techniques to these courses as they have been developed, and we continued the process of integrating these approaches, models, and solution methods into frameworks so that students can better put these ideas into perspective.

Interest in supply chain management, both in industry and in academia, has grown rapidly over the past two decades, and continues to grow. A number of forces have contributed to this trend. In the 90s, many companies recognized that they have reduced manufacturing costs as much as practically possible. Many of these companies discovered the magnitude of savings that can be achieved by planning and managing their supply chains more effectively. Indeed, a striking example in the 90s was Wal-Mart's success, which is partly attributed to implementing a new logistics strategy called cross-docking. At the same time, information and communication systems

* 为保留原书概貌，未对前言作任何删减。——改编者注

were widely implemented, and provide access to comprehensive data from all components of the supply chain.

In particular, the influence of the Internet and e-commerce on the economy in general and business practice in particular has been tremendous. Changes are happening extremely fast, and the scope of these changes is breathtaking! For instance, the direct business model employed by industry giants such as Dell Computers and Amazon.com enables customers to order products over the Internet and thus allows companies to sell their products without relying on third-party distributors or conventional stores. Similarly, the Internet has made a significant impact on business-to-business transactions and collaborations. At the same time, deregulation of the transportation industry has led to the development of a variety of transportation modes and reduced transportation costs, while significantly increasing the complexity of logistics systems.

Finally, new forces contributed to the increased interest in supply chain management in the last five years. As offshoring and globalization of manufacturing operations continue to grow, supply chain complexity and risks have significantly increased. This, together with rising energy costs and the acceleration of merger and acquisition activities, has motivated many companies to reevaluate their supply chain strategies in order to better utilize existing resources and infrastructure.

It is therefore not surprising that many companies are involved in the analysis of their supply chains. In most cases, however, this analysis is performed based on experience and intuition; very few analytical models or planning tools have been used in this process. In contrast, in the last two decades, the academic community has developed various models and tools for supply chain management. Unfortunately, the first generation of this technology was not robust or flexible enough to allow industry to use it effectively. This, however, has changed over the last few years, during which improved analysis and insight, and effective models and decision-support systems, have been developed; however, these are not necessarily familiar to industry. Indeed, to our knowledge there is no published work that discusses these problems, models, concepts, and tools in an accessible manner and at an appropriate level.

In this book, we intend to fill this gap by providing state-of-the-art models, concepts, and solution methods that are important for the design, control, operation, and management of supply chain systems. In particular, we have attempted both to convey the intuition behind many key supply chain concepts and to provide simple techniques that can be used to analyze various aspects of the supply chain.

The emphasis is on a format that will be accessible to executives and practitioners, as well as students interested in careers in related industries. In addition, it will introduce readers to information systems and decision-support tools that can aid in the design, analysis, and control of supply chains.

The book is written to serve as

- A textbook for M.B.A.-level logistics and supply chain management courses.
- A textbook for B.S. and M.S. industrial engineering courses on logistics and supply chain management.
- A reference for teachers, consultants, and practitioners involved in any one of the processes that make up the supply chain.

Of course, supply chain management is a very broad area, and it would be impossible for a single book to cover all of the relevant areas in depth. Indeed, there is considerable disagreement in academia and industry about exactly what these relevant areas are. Nevertheless, we have attempted to provide a broad introduction to many critical

facets of supply chain management. Although many essential supply chain management issues are interrelated, we have strived wherever possible to make each chapter as self-contained as possible, so that the reader can refer directly to chapters covering topics of interest.

The discussion ranges from basic topics of inventory management, logistics network planning, distribution systems, and customer value to more advanced topics of strategic alliances, the value of information in the supply chain, supply contracts, procurement and outsourcing, product design and the interface between product design and supply chain strategies, business processes and information technology including decision-support systems, technology standards and risk management, and international issues in supply chain management. Each chapter utilizes numerous case studies and examples, and mathematical and technical sections can be skipped without loss of continuity.

NEW IN THE THIRD EDITION

The third edition of the book represents a substantial revision. Indeed, while we kept the same structure and philosophy as in the previous editions, we have placed an increasing importance on finding or developing effective frameworks that illustrate many important supply chain issues. At the same time, motivated by new development in industry, we have added material on a variety of topics while increasing the coverage of others.

In brief, the major changes include

- New case studies such as Amazon.com's European Distribution Strategy; Dell Inc.: Improving the Flexibility of the Desktop PC Supply Chain; H. C. Strack, Inc.; Steel Works Inc.; Selectron: From Contract Manufacturer to Global Supply Chain Integrator; and Zara.
- New topics such as network planning, strategic inventory, risk management strategies, global sourcing strategies, and technology standards.
- New chapters on network planning, distribution strategies, supply contracts, pricing, and technology standards.
- New concepts such as the development supply chain, strategic sourcing, and service-oriented architecture.

Specifically,

- We have introduced the concept of the "development supply chain" (Chapter 1) and applied it to product design and supply chain strategies (Chapter 11).
- We have expanded our discussion of network planning and increased our emphasis on strategic safety stock and inventory planning in supply networks (Chapter 3).
- We have added a chapter on supply contracts for strategic and commodity components (Chapter 4).
- We have enhanced our discussion of the impact of lead time on supply chain strategy (Chapter 6).
- We have added a chapter on distribution strategies where we focus on the impact of inventory pooling and customer search (Chapter 7).
- We have substantially revised the chapter on procurement and outsourcing strategies, focusing on framework for outsourcing, strategic purchasing, and supplier footprint (Chapter 9).

- We have developed a new framework for risk management in global supply chains (Chapter 10).
- We have added a chapter on smart pricing and revenue management in supply chains (Chapter 13).
- We have added a chapter on technology standards such as service-oriented architecture and RFID (Chapter 15).
- We have added and updated numerous examples to illustrate various concepts, frameworks, and strategies.

The book also includes three software package—the **Computerized Beer Game**, the **Risk Pool Game**, and the **Bidding Game**—that help to illustrate many of the concepts we discuss in the book. Indeed, in teaching executives and M.B.A. students, we have found that these games help students better understand issues and concepts such as the bullwhip effect, the value of information in the supply chain, and the impact of lead times, centralized decision making, risk pooling, and supplier competition on supply chain operations. As in the second edition, we have included a Microsoft Excel spreadsheet to help students understand many of the supply contracts concepts introduced in Chapter 4.

◀ 电脑啤酒游戏、风险分担游戏、竞标博弈游戏

Parts of this book are based on work we have done either together or with others.

- Chapters 1 and 3 borrow extensively from *The Logic of Logistics*, written by J. Bramel and D. Simchi-Levi and published by Springer in 1997; second edition (with X. Chen and J. Bramel) appeared in October 2004.
- The development supply chain concept was first introduced by C. H. Fine from MIT and then applied by C. H. Fine and D. Simchi-Levi to develop effective supply chain strategies. Some of their ideas are discussed in Chapters 1 and 11.
- Some of the material on the bullwhip effect appears in an article by F. Y. Chen, Z. Drezner, J. K. Ryan, and D. Simchi-Levi in *Quantitative Models for Supply Chain Management*, edited by S. Tayur, R. Ganeshan, and M. Magazine, and published by Kluwer Academic Publishers in 1998.
- The material in Chapter 6 is taken from two papers, one written by D. Simchi-Levi and E. Simchi-Levi and the second written by these two authors and M. Watson. This latter paper appeared in *The Practice of Supply Chain Management*, edited by T. Harrison, H. Lee, and J. Neale, published by Kluwer Academic Publishers in 2003.
- The material on inventory pooling and customer search discussed in Chapter 7 is based on the paper “Centralization of Stocks: Retailers vs. Manufacturer,” by R. Anupindi and Y. Bassok, published in *Management Science* in 1999. This paper motivated D. Simchi-Levi to develop (together with X. Chen and Y. Sheng) a simulation model used in Examples 7-2 and 7-3.
- Some of the material in Chapter 9 is based on teaching material received by the authors from C. P. Teo from the National University of Singapore and V.M. de Albeniz from IESE, Spain.
- Chapter 14 borrows extensively from an article by C. Heinrich and D. Simchi-Levi published in *Supply Chain Management Review*, May 2005.
- The discussion on RFID in Chapter 15 is based on a chapter written by D. Simchi-Levi in the book *RFID and Beyond: Growing Your Business Through Real World Awareness*, edited by C. Heinrich and published by Wiley in 2005.
- The Computerized Beer Game is discussed in an article by P. Kaminsky and D. Simchi-Levi that appeared in *Supply Chain and Technology Management*,

edited by H. Lee and S. M. Ng and published by The Production and Operations Management Society.

- The Bidding Game is based on an article by V. Martinez de Albeniz and D. Simchi-Levi "Competition in the Supply Option Market," Working Paper, MIT, 2005.
- Some of the material on risk management is taken from an article by D. Simchi-Levi, L. Snyder, and M. Watson published in *Supply Chain Management Review* in 2002.

David Simchi-Levi; Philip Kaminsky; Edith Simchi-Levi

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