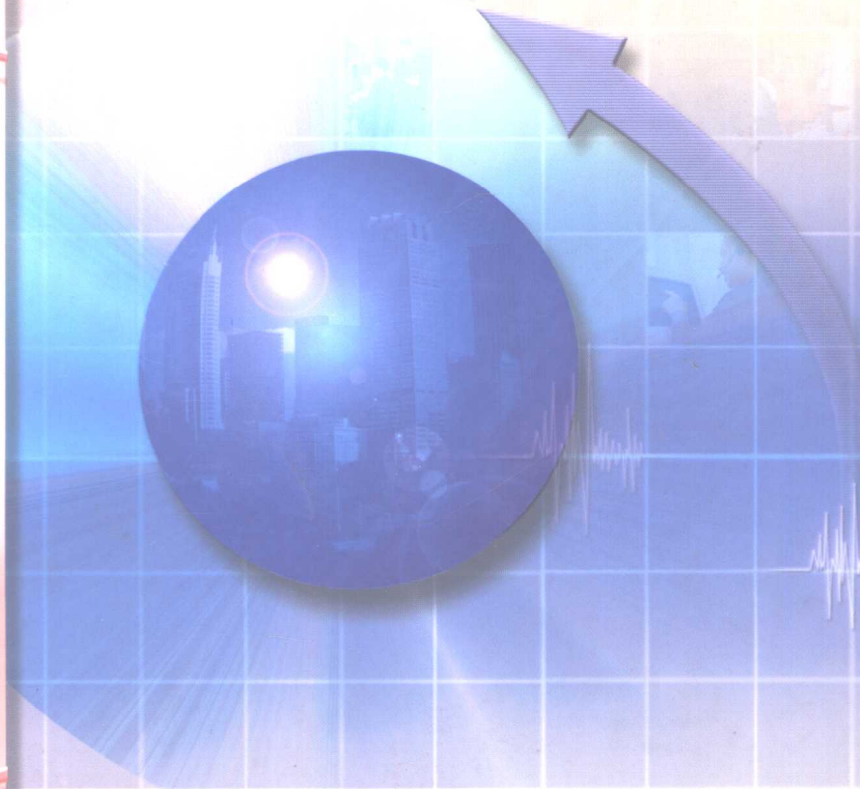


Sixth  Edition

OPERATIONS MANAGEMENT

STRATEGY AND ANALYSIS



LEE J. KRAJEWSKI LARRY P. RITZMAN

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STRATEGY AND ANALYSIS

SIXTH EDITION

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LEE J. KRAJEWSKI

University of Notre Dame

LARRY P. RITZMAN

Boston College

北方工业大学图书馆



00729131

Prentice
Hall

Prentice Hall
Upper Saddle River, NJ 07458

Library of Congress Cataloging-in-Publication Data

Krajewski, Lee J.

Operations management: strategy and analysis / Lee J. Krajewski, Larry P. Ritzman.—
6th ed.

p. cm.

Includes bibliographical references and index.

ISBN: 0-201-61545-2

I. Production management. I. Ritzman, Larry P. II. Title.

TS155 .K788 2001

658.5—dc21

2001033855

Executive Editor: Tom Tucker

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Cover Design/Cover Illustration: Blair Brown

Interior Design/Illustration (Interior): Proof Positive

Manager, Print Production: Christy Mahon

Composition: Progressive Information Technologies

Full-Service Project Management: Progressive Publishing Alternatives

Printer/Binder: Courier/Westford

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10 9 8 7 6 5 4 3 2
ISBN 0-201-61545-2

ABOUT THE AUTHORS



LEE J. KRAJEWSKI is the William R. and F. Cassie Daley Professor of Manufacturing Strategy at the University of Notre Dame. Prior to joining Notre Dame, Lee was a faculty member at The Ohio State University, where he received the University Alumni Distinguished Teaching Award and the College of Business Outstanding Faculty Research Award. He initiated the Center for Excellence in Manufacturing Management and served as its director for four years. In addition, he received the National President's Award and the National Award of Merit of the American Production and Inventory Control Society. He served as President Elect of the Decision Sciences Institute and was elected a Fellow of the Institute in 1988.

Lee's career spans more than thirty-two years of research and education in the field of operations management. He has designed and taught courses at both graduate and undergraduate levels on topics such as manufacturing strategy, introduction to operations management, operations design, and manufacturing planning and control systems.

Lee served as the editor of *Decision Sciences*, was the founding editor of the *Journal of Operations Management* (1980–1983), and has served on several editorial boards. Widely published himself, Lee has contributed numerous articles to such journals as *Decision Sciences*, the *Journal of Operations Management*, *Management Science*, *Harvard Business Review*, and *Interfaces*, to name just a few. He has received five best-paper awards. Lee's areas of specialization include manufacturing strategy, manufacturing planning and control systems, supply-chain management, and master production scheduling.



LARRY P. RITZMAN is the Thomas J. Galligan, Jr. Professor in Operations and Strategic Management at Boston College. He previously served at The Ohio State University for twenty-three years, where he acted as department chairperson and received several awards for both teaching and research. He received his doctorate at Michigan State University, having had prior industrial experience at the Babcock and Wilcox Company. Over the years, he has been privileged to teach and learn more about operations management with numerous students at all levels—undergraduate, MBA, executive MBA, and doctorate.


Particularly active in the Decision Sciences Institute, Larry has served as Council Coordinator, Publications Committee Chair, Track Chair, Vice President, Board Member, Executive Committee Member, Doctoral Consortium Coordinator, and President. He was elected a Fellow of the Institute in 1987 and earned the Distinguished Service Award in 1996. He has received three best-paper awards. He is a frequent reviewer, discussant, and session chair for several other professional organizations.

Larry's areas of particular expertise are operations strategy, production and inventory systems, forecasting, multistage manufacturing, disaggregation, scheduling, and layout. An active researcher, Larry's publications have appeared in such journals as *Decision Sciences*, *Journal of Operations Management*, *Production and Operations Management*, *Harvard Business Review*, and *Management Science*. He has served in various editorial capacities for several journals.

PREFACE

Operations Management: Strategy and Analysis, Sixth Edition, continues its hallmark reputation for innovation in presenting operations management as a powerful tool for achieving organizational objectives and gaining competitive advantage. Our goal is to help students become effective managers in today's competitive, global environment. First, because many students who take this course will go on to become managers in service and manufacturing organizations in a variety of departments and functional areas, we focus on processes—the fundamental unit of work in all organizations. It is all about processes! This unifying theme opens up the topics in operations management to all students, regardless of their majors or career paths. They discover the challenge of both managing and understanding the interrelatedness of activities throughout the organization, and how the operations function fits into the organization. Second, we seek to help students discover the excitement of the dynamic field of operations management (OM). We engage them by offering a wealth of interesting examples at numerous service and manufacturing firms that bring operations alive, presenting new technologies for enhancing decision making and data gathering, and including realistic cases that encourage open debate of important issues. Third, to put the subject in appropriate context, we want students to gain an understanding of what managers do about processes, to realize that operations management involves many cross-functional links, and to learn more about the tools that managers can use to make better operating decisions.

PHILOSOPHY OF OPERATIONS MANAGEMENT: STRATEGY AND ANALYSIS

A Balanced Perspective. The Sixth Edition blends the latest in strategic issues with proven analytic techniques. It reflects our philosophy that OM texts should address both the “big picture” strategic issues and also the analytic tools that facilitate decision making. It is not just about “concepts” or just about “numbers,” but recognizes both dimensions. Strategic and managerial issues have been woven into the fabric of each chapter to emphasize that management decisions about operations and processes should be consistent with corporate strategies shared by managers in all functional areas. Tools and techniques, including computer models and Internet capabilities, are also woven into the text as ways to solve problems and develop tactics that help achieve the firm's overall goals and strategies. We also continue to provide a balanced treatment of manufacturing and services throughout the text, and give special recognition to service provider processes of with an  icon in the margin. This approach not only reflects the remarkable growth of the service sector in the global economy, but also helps the student view how designing and managing processes are fundamental to all activities throughout any organization.

Operations Management Within the Whole Firm. Our message to students is clear: This text presents practical approaches to solve operations problems, and the solutions to those problems can and do make a difference in a firm's competitiveness. New to the Sixth Edition are interdisciplinary perspectives that begin and end each chapter, giving students a better appreciation for how operations relates throughout the whole business.

Active Learning. Motivating students to learn and apply OM concepts to processes is an important ingredient to a successful course. In the Sixth Edition, we have retained

several popular and time-tested features that give students a deeper understanding of realistic business issues and enable them to become active participants in and out of the classroom. For example, *OM Explorer* tutors, end-of-chapter cases, and experiential exercises involve the students in actually applying the concepts and theories explained in the text. New to the Sixth Edition are the *Extend* and *SimQuick* simulators. The multiple activities available at the textbook's Web site expand learning beyond the textbook and the classroom; they include Internet activities, tours, *OM Explorer* computer assignments, and previews of the latest "industrial strength" commercial software now used in practice. Such features recognize the rapid growth of information technology, which is significantly reshaping processes around the world.

ORGANIZATION

We have chosen to organize the text so that it moves from strategic choices to tactical decisions. Chapter 1 is an introductory chapter on the meaning and role of processes and operations. It demonstrates the role of processes in every phase of businesses and functional areas, and then explores how to manage processes to provide a competitive advantage for the firm. It also shows how trends in productivity, service operations, global competition, quality, technology, and environmental concerns are broadening the scope and increasing the importance of operations management in all organizations.

Part 1 (Strategic Choices) consists of one chapter and one supplement. Chapter 2 discusses key issues in customer-driven operations strategy that affect a company's future. Competitive priorities (for individual processes and even major business units), global strategies, service and manufacturing strategies, and new technologies such as e-commerce are important pillars of operations strategy. So is how these choices relate to customer needs and corporate strategy. Identifying the pattern of decisions—and how the pattern should vary by situation—is demonstrated with detailed tours of two real organizations: a hospital and a steel company.

Part 2 (Process) consists of three chapters and one supplement. Chapter 3 looks at important choices about processes, which are fundamental to all activities that produce goods and services. Key decisions include process choice, outsourcing, flexibility, customer involvement, and automation. These decisions, and how they are related, are described for processes of both manufacturers and service providers. We cover economies of scope and job design, and then provide a systematic approach to improving processes that includes both reengineering and process improvement. Chapter 4 focuses on project processes, so common in everyday life as well as in business. While projects can be large or small, unique or routine, they all require special approaches to manage them effectively. Chapter 5 turns to another important issue in designing processes: the use of technology. Every process uses one or more technologies. The increasing role of information technology is given particular attention, including its components, e-commerce, the Internet and World Wide Web, and enterprise resource planning (ERP). Strategic issues, such as first-mover considerations and implementation guidelines, are also covered.

Part 3 (Quality) consists of two chapters. Quality issues underlie all processes and work activities. Chapter 6 reflects current thought on quality management, including teamwork, continuous improvement through TQM, benchmarking, quality function deployment, and basic tools for data analysis. Chapter 7 shows how inspection and statistical methods can be combined to monitor and measure the capability of the process to produce goods or services to specification.

Part 4 (Capacity, Location, and Layout) consists of three chapters and two supplements. This part focuses on decisions that require long-term commitments about the process. Managers must help determine the process's capacity, where to locate new facilities (including global operations), and how to organize the layout of the processes within a facility. Discussion of these decisions completes our coverage of how to design processes for service providers and manufacturers.

Part 5 (Operating Decisions) consists of seven chapters and three supplements. This part deals with operating the processes after they have been designed. Chapters 11–17 examine the issues that managers face as they coordinate quarter-to-quarter and day-to-day issues in concert with an overall operations strategy. Topics include the supply-chain management and how to coordinate the internal and external supply chain, forecasting demand, managing inventory, controlling output and work-force levels over time, planning resource levels, managing lean systems and deciding which elements of just-in-time techniques to implement, scheduling the use of resources, and establishing priorities of work to be done.

The seven supplements interspersed in the text provide more in-depth coverage of techniques, including decision making, computer-integrated manufacturing, waiting lines, simulation, special inventory models, linear programming, and master production scheduling. Many of the supplements apply to multiple chapters, not simply to the chapter that they follow. Even more supplements are accessible on the Student CD-ROM packaged free with every new copy of the textbook. They cover learning curve analysis, measuring output rates, acceptance sampling plans, and financial analysis. Each topical supplement is complete within itself and includes a full problem set when appropriate. This arrangement makes incorporating this important material into courses easy and pedagogically effective for instructors.

The text aims at core-curriculum courses at the undergraduate and graduate levels. It covers all the basic topics in the area of operations management and allows the instructor to challenge the students at the appropriate level for their academic maturity. The book can be used in many ways, depending on the course objectives. It offers considerable flexibility in order, depth of coverage (qualitative or quantitative), and level (undergraduate or graduate). Thus instructors will find that the organization of the text allows smooth adaptation to various course syllabi. Once Chapters 1 and 2 have been covered, instructors can easily rearrange chapters and supplements to suit their individual course and teaching needs. The truth is that there is too much content in operations management to cover in one course. Thus the instructor will assign some materials and not others. Sequencing of materials depends on the orientation of your instructor, and what topics have already been covered in your program. We designed the book to be used flexibly, regardless of the orientation.

CHANGES FOR THE SIXTH EDITION

Following are highlights of content changes made to enhance coverage of the ever-changing field of operations management. These changes are based on extensive feedback from professors and students. All of these changes support the overall text philosophy.

- **NEW! Increased Emphasis on Processes.** Beginning in Chapter 1, we put increased emphasis on the central role of processes. Making decisions about processes naturally leads to issues in the various chapters on competitive priorities, technology, project management, quality, capacity, layout, supply-chain management, and the like. We wanted to create a better “buy-in” for a course

in operations management. Our new focus on processes does just that, because students understand that processes underlie activities throughout the organization, not just in one functional area.

- **NEW! Managing Technology.** We significantly upgraded the chapters on managing technology, incorporating the latest developments in e-commerce (both B2B and B2C) and enterprise resource planning (ERP). Together, a chapter, case, and video on technology management explore the stages of technology development, the challenges of choosing and implementing new technology, and how technology can create a competitive advantage (Chapter 5, Managing Technology). These topics are developed further throughout in many Managerial Practices and business examples throughout the text.
- **NEW! Updated Coverage of Supply-Chain Management.** Chapter 11 on supply-chain management has been given a major face-lift. It brings out many of the newer things going on with supply chains, while building on the base provided in the last edition. New sections include managing the customer interface, and managing the supplier interface. The section on e-purchasing is rewritten to include catalog hubs, exchanges, and auctions. Other important additions include postponement, channel assembly, and green purchasing (Chapter 11, Supply-Chain Management).
- **NEW! Process Management for Services.** Chapter 3, Process Management, has been given a major revision. The parts on service processes are strengthened with a new paradigm on how process choice relates with customization and volume. It now has more of a “how to” slant to revising processes, and there is more emphasis on flowcharting and simulation. Having a link to the SmartDraw Web site where students can download a trial version and Extend+ Manufacturing LT software on the Student CD-ROM adds a new dimension to process analysis.
- **NEW! Across the Organization.** Focusing on processes allows us to expand our coverage of cross-functional perspectives. Each chapter begins and ends with a discussion of how the chapter topic is important to professionals in a variety of disciplines. In every chapter, cross-functional connections link operations management to accounting, finance, human resources, marketing, and management information systems. (See pages 29 and 58.)
- **NEW! Early Coverage of Project Management.** Chapter 4, Managing Project Processes, has been moved to the front of the text for two reasons: It is a topic of interest to all students regardless of their functional area emphasis, and it allows for some problem solving early in the outline. It focuses on the management of project processes. Having Microsoft Project (120-day evaluation) software available on the Student CD-ROM allows students to gain experience with advanced commercial software for project management.
- **NEW! Resource Planning.** Chapter 15, Resource Planning, has been renamed and its scope broadened. There is a completely new section on resource planning for services, including resources such as financial assets, human resources, equipment and inventories.
- **NEW! Student CD-ROM.** This CD-ROM is packaged free with each new copy of the text. It contains OM Explorer, Extend+ Manufacturing LT software with simulation cases, Microsoft Project (120-day evaluation) software, a link to the SmartDraw Web site, CD-ROM Topics, CD-ROM tours of the Lower Florida Keys Hospital and Chaparral Steel, and a link to the MyPhlip Web site with additional student and faculty resources.



- **NEW! OM Explorer.** This complete decision-support software package is designed *specifically for this text*. It has the look and feel of an Excel worksheet environment, and works with Excel 2000 and Excel 97. There are two drop-down menus that are user friendly—one for Tutors and one for Solvers. The 66 *Tutors* provide coaching for all of the difficult analytical methods presented in the text. They extend self-testing opportunities beyond the printed page. The Tutor icon shown in the margin flags all Tutor applications in the textbook. The package also contains 40 powerful *Solvers*, general-purpose routines to solve problems often encountered in practice. Both Tutors and Solvers can be used extensively for the problems at the end of each chapter.
- **NEW! Microsoft Project (120-day evaluation) Software.** This package is quite popular in practice for managing projects. The package can be used to solve the problems and the case at the end of Chapter 4 in addition to any problems or cases the instructor may add.
- **NEW! Link to SmartDraw Web site.** Students can download a trial version of this software which allows them to draw complex process flow charts, organizational charts, and other diagrams and figures to support their analysis of problems in the text or provided by their instructor.
- **NEW! SimQuick.** This simulation software is Excel-based and easy-to-use, and the manual and program can be bundled with this text at a 50% discount. To order this package, use ISBN 0-13-072122-0.
- **NEW! Simulation Cases.** In-depth demonstrations of the simulation package Extend+ Manufacturing LT are integrated into three key chapters and one supplement. Additional challenging case problems are included at the end of nine chapters and two supplements, and are available on the Student CD-ROM. The students use the models to answer questions regarding the cases. These cases support our thrust in active learning. Extend + Manufacturing LT is a student version of the graphic simulation program Extend, and pre-existing models are provided on the Student CD-ROM. For instructors ordering SimQuick, an optional simulation package, eight case problems are provided.
- **NEW! OM Explorer and Internet Activities.** This element appears at the end of most chapters, directing students to the text's Web site, where interesting Internet activities, virtual plant tours, and Tutor exercises using OM Explorer can be found. The Internet has become a critical tool for success in business. Students can get online to build research skills and reinforce their understanding of operations management concepts. Future business graduates will use the Internet to find and share information in ways we cannot even imagine today. The Web site is designed to take advantage of Internet resources and provide a host of integrated Internet applications to show students the possibilities the World Wide Web offers for understanding operations management.
- **NEW! CD-ROM Topics.** Additional CD-ROM topics contains the following supplements: Learning Curve Analysis, Measuring Output Rates, Acceptance Sampling Plans, and Financial Analysis.
- **NEW! Screen Captures and Photos.** The sixth edition includes 46 screen captures demonstrating the use of OM Explorer, Microsoft Project, Extend, and SmartDraw. The text integrates these packages into the analysis of meaningful problems. There are also 80 photos which give the reader a better visual understanding of the different business examples.

- **NEW! Company URLs.** The URLs are now provided for all companies featured in the Opening Vignettes and Managerial Practices, allowing students to explore them more fully beyond what is said in the text.
- **NEW! Margin Items.** Three new margin items will be included in the sixth edition:
 1. *Definitions*—Short definitions of boldfaced terms are provided for easy reference.
 2. *Service icon*—This icon indicates coverage of a service application.
 3. *CD-ROM icons*—This icon will indicate where a software application can be used. The icons may indicate a Tutor alongside an example, or OM Explorer, SmartDraw, Extend, or Microsoft Project alongside a problem.
- **NEW! JIT Program.** The sixth edition can be obtained in the form of customized publishing with the JIT program of Prentice Hall.
- **NEW! MyPHLIP Web site.** This content-rich, interactive Web site for students and professors includes: *In the News* articles with discussion questions, Internet exercises, Virtual Plant tours, an Interactive study guide (true/false, multiple choice, and essay questions) and more. In the faculty resource section instructors can download the Instructor's Resource Manual, Instructor's Solutions Manual, and answers to all the *In the News* articles and Internet exercises. The New MyPhilip Web site also allows instructor's to personalize their Web site with some additional content, personal notes and reminders, send messages to individual students or all students linked to their courses, check out links to articles in today's business news, and much more. Go to <http://www.prenhall.com/krajewski>.
- **NEW! WebCT, Blackboard, and CourseCompass.** Prentice Hall now makes its class-tested online course content available in WebCT, Blackboard, and CourseCompass. Instructors receive easy-to-use design templates, communication, testing, and course management tools. To learn more, contact your local Prentice Hall representation or go to <http://www.prenhall.com/demo> for a quick preview of our online solutions.

CONTEMPORARY COVERAGE

Following are highlights of the other key features of the text.

- **Interactive Teaching Approach.** Motivating students to learn and apply operations management concepts within the context of the firm is an important aspect of the learning process. The sixth edition of *Operations Management* offers a variety of creative teaching and learning tools that actively engage students and reinforce their understanding of operations management.
- **Experiential Learning Exercises.** There are three experiential learning exercises: Min-Yo Garment Company (Chapter 2), SPC with a Coin Catapult (Chapter 7), and Sonic Distributors (Chapter 11). Each of these experiences is an in-class simulation exercise that actively involves the students. Team-based discussion questions reinforce student learning. Each exercise has been thoroughly tested in class and proven to be a valuable learning tool.
- **Cases.** All chapters end with at least one case that can either serve as a basis for classroom discussion or provide an important capstone problem to the chapter, challenging students to grapple with the issues of the chapter in a less

structured and more comprehensive way. Many of the cases can be used as in-class exercises without prior student preparation.

- **Chapter Opening Vignettes.** Each chapter opens with an example of how a company actually dealt with the specific operations issues addressed in the chapter. (See page 92, for example.)
- **Questions from Managers.** In the margins are questions linked to the material being presented. These voices from the real world highlight key concepts and permit a quick review of concepts being presented. (See page 96, for example.)
- **The Big Picture.** Four, full-color, two-page spreads present the layouts of the Lower Florida Keys Hospital (pp. 52–53), Chaparral Steel (pp. 56–57), King Soopers Bakery (pp. 100–101), and the Coors Field baseball stadium (pp. 162–163) to reinforce concepts.
- **Managerial Practices.** Boxed inserts show operations management in action at various firms. Balanced between service and manufacturing organizations, these inserts present current examples of how companies—successfully or unsuccessfully—meet the operations challenges facing them. Almost all of the Managerial Practices have been replaced or refreshed to assure up-to-date coverage. (See page 94, for example.)
- **Examples.** Numerous Examples throughout the chapter are a very popular feature designed to help students understand the quantitative material. Whenever a new technique is presented, an Example is immediately provided to walk the student through the solution. Usually there is a companion computerized Tutor, indicated by an icon with the Tutor number, to afford another learning opportunity to try out the new technique. The sixth edition has added the feature of a “Decision Point” to conclude an Example, which focuses on the decision implications for managers (NEW!). (See page 122, for example.)
- **Solved Problems.** At the end of each chapter, detailed solutions demonstrate how to solve problems with the techniques presented in the chapter. These solved problems reinforce basic concepts and serve as models for students to refer to when doing the problems that follow. (See pages 129–131, for example.)
- **Text Web Site.** The Web site (<http://www.prenhall.com/krajewski>) is a great starting point for operations management resources and features a range of student and instructor resources.

ENHANCED INSTRUCTIONAL SUPPORT SYSTEM

- **Instructor's Solutions Manual.** Updated by the authors, so as to keep it current and eliminate any errors, the **Solutions Manual** provides complete solutions to all discussion questions, problems, and notes for each case and experiential exercise in the text. Selected computer screen captures are included to illustrate the different software capabilities available. Each case note includes a brief synopsis of the case, a description of the purposes for using the case, recommendations for analysis and goals for student learning from the case, and detailed teaching suggestions for assigning and discussing the case with students. Each element of the Solutions Manual was checked and rechecked, and then Professor Vijay Gupta reviewed it again to eliminate any lingering flaws. The Solutions Manual is intended for instructors who may in turn choose to share parts of it with students, possibly through WebCT. An electronic version

of the entire manual, written in MS Word, is provided on the Instructor's Resource CD-ROM.

- **Instructor's Resource Manual.** The Instructor's Manual includes:
 - Sample course outlines.
 - A summary of the various ancillaries that accompany the text.
 - Annotated Lecture Notes for each chapter and supplement which summarizes, in outline form, the material of each chapter and supplement.
 - In-class exercises called "Applications."
 - Solutions to the in-class Applications are supplied as transparency masters (and available electronically on the Instructor's Resource CD-ROM).
 - Miniature reproductions of the PowerPoint slides available on the Instructor's Resource CD-ROM.
- **Instructor's Resource CD-ROM.** The Instructor's Resource CD-ROM provides the electronic files for the entire Solutions Manual (in MS Word), the Annotated Lecture Notes (in MS Word), in-class Applications (in MS Word), and solutions to the Applications (in PowerPoint). Providing these materials as MS Word and PowerPoint files (NEW!), rather than pdf files, allows the instructor to customize portions of the material and provide them to their students as appropriate. It also provides the **PowerPoint Lecture Presentation** that has been updated and enriched by Jeff Heyl of Lincoln University in New Zealand. *Test Manager*, the computerized test bank with its online testing component, is another important component on the CD-ROM.
- **Test Bank and Computerized Test Bank.** Professor Ross Fink of Bradley University Foster College of Business has made a major overhaul of the Test Bank. Containing nearly 2,000 items, the Test Bank includes a balance of conceptual and technique-oriented questions. Short-answer and essay questions are included in each chapter to test students' conceptual understanding of the material and critical-thinking skills. The Test Bank is available in Prentice Hall's test generating software, *Test Manager*. It allows the instructor to pick and choose questions, revising them as necessary, and create customized exams.
- **Video Package.** Designed *specifically for this text*, this video package contains the following videos: *TQM at Christchurch Parkroyal*, *Process Choice at the King Soopers Bakery*, *Queuing at First Bank Villa Italia*, *Inventory and Textbooks*, *Service Scheduling at Air New Zealand* (NEW!), *Project Management at Nantucket Nectars* (NEW!), and *Managing Information Technology at Prentice Hall* (NEW!). The videos provide pedagogical value in that they incorporate summary "bullet point" screens and interviews with managers regarding significant issues.

ACKNOWLEDGMENTS

We wish to thank various people at Prentice Hall who made up the publishing team. Those most closely involved with the project and for whom we hold the greatest admiration include Tom Tucker, Executive Editor, who supervised the overall project and was always ready to lend a helping hand as we made the transition from Addison Wesley Longman after the merger; Ron Librach, Development Editor, whose creative publishing insight of some key chapter revisions and ability to coordinate the convoluted flow of manuscript were much appreciated; Jennifer Surich, Assistant Editor, who coordinated several print ancillaries and videos; Nancy Welcher, Multimedia

Project Manager, who produced all Internet and CD-ROM materials; Cynthia Regan, Managing Editor, who managed to assemble an excellent product from a seemingly endless array of components; Pamela Rockwell, Copy Editor, who knows how to turn our prose into much better material; Diane Austin, Photo Researcher, who created a wealth of great photo options for the text; Beverly Amer, whose talents in creating two new videos augment the already impressive library that Jeff Heyl created earlier; and Debbie Clare, Senior Marketing Manager, whose promotional efforts make all the work of the publishing team worthwhile. We are especially appreciative of the work done by KMT Software Inc., particularly by Richard Cranford and Jim Kinlan, whose computer skills and perseverance won the day in creating the new *OM Explorer* software.

We also thank our colleagues who provided extremely useful guidance for the sixth edition. They include the following:

Xin (James) He <i>South Carolina State</i>	W. Blaker Bolling <i>Marshall University</i>
Jeffrey L. Rummel <i>University of Connecticut</i>	Muzaffar A. Shaikh <i>Florida Institute of Technology</i>
Ceasar Douglas <i>Grand Valley State University</i>	Billy M. Thorton <i>Colorado State University</i>
Sarah McComb <i>University of Massachusetts, Amherst</i>	Girish Shambu <i>Canisius College</i>

We are also indebted to Ross Fink at Bradley University Foster College of Business who did a masterful job on the Test Manager and the Interactive Study Guide, to Vijay Gupta for his outstanding work making sure that the Solutions Manual was fully accurate, and to Tom Wood at James Madison University who did great work on the *Instructor's Resource Manual*. Special thanks go to John Gallaughier of Boston College who gave us invaluable and extensive insight on e-commerce and the needed revisions to the Managing Technology. Kudos also go to Larry Miele of Boston College, who creatively pulled together the various materials that went into the *OM Explorer* and *Internet Activities* sections, and updated an experiential exercise and case. Brooke Saladin's cases continue to make it easy for instructors to add interest and excitement to their classes. We also are indebted to Robert Klassen, University of Western Ontario, for the models and cases using the Extend simulator, and to David Hartvigsen, University of Notre Dame, for the cases using *SimQuick* simulator and the original materials for the Software Previews. Two graduate students at Boston College also provided valued input. Maryann Symanowicz and Michelle Beretvas Mittlesteadt were marvelous in spotting errors in the *Solutions Manual* and *OM Explorer* software. Michelle had the particular skills and steadfastness to find just the right company examples to illustrate important concepts in an interesting and educational way, even when publication due dates were pressing.

We also gratefully acknowledge Cheryl Pauley, University of Notre Dame, for her expert help in typing and proofing manuscript, searching the Web, creating figures, and for being understanding when deadlines loomed. We also thank Sarv Devaraj and Jerry Wei for their suggestions and moral support during the project.

Finally, we thank our families for putting up with our days of seclusion even when the weather was nice. Our wives, Judie and Barb, have provided the love, stability, and encouragement that we needed while we were "with book" for our sixth time.

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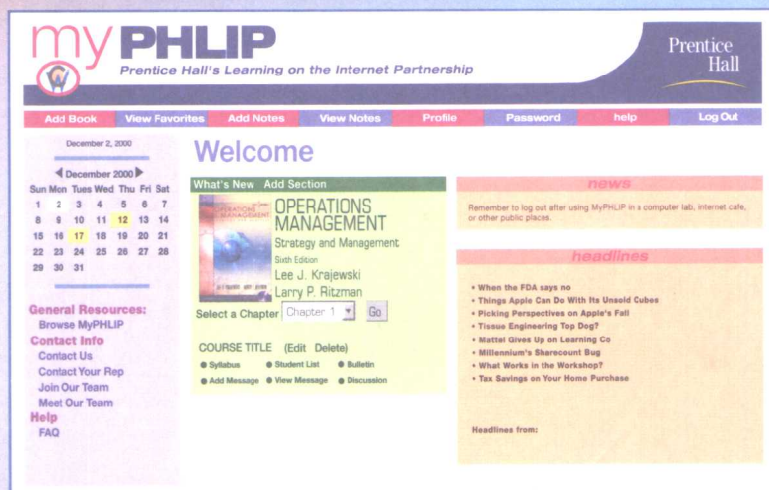
OPERATIONS MANAGEMENT

SIXTH EDITION

IS MORE THAN A TEXT—IT'S A FULLY-INTEGRATED TEACHING AND LEARNING PACKAGE!

The MyPHLIP (Prentice Hall's Learning on the Internet Partnership) Companion Web site is your personal guide to the free online resources for your book and is located at www.prenhall.com/krajewski.

It's the most advanced, text-specific site available on the Web!



For Students:

An Online Study Guide—An interactive, online study guide offers self-assessment questions for each chapter, including multiple choice, true/false, and essay questions. Students receive immediate feedback on objective-oriented questions to test their understanding of key concepts, a great tool to improve their grade in the classroom.

In the News—Current events articles, linked to relevant chapters, are added throughout the year to show how operations effects our daily lives. Each article is summarized by our team of expert professors and includes group activities, critical-thinking exercises, and follow-up discussion questions.

Internet Exercises—Text-specific Internet Exercises are continually added throughout the year. These exercises are designed to promote students' critical-thinking skills as they use the Internet to explore current operation issues and concepts.

Virtual Tours—These tours provide direct links to real companies practicing key concepts. After touring their Web site, students are asked questions directly related to the concepts discussed in the chapter.

And more...

For Instructors:

MyPHLIP pages—Your personal access page unites all your MyPHLIP Web sites.

Notes—Add personal notes to our resources for personal reminders and references.

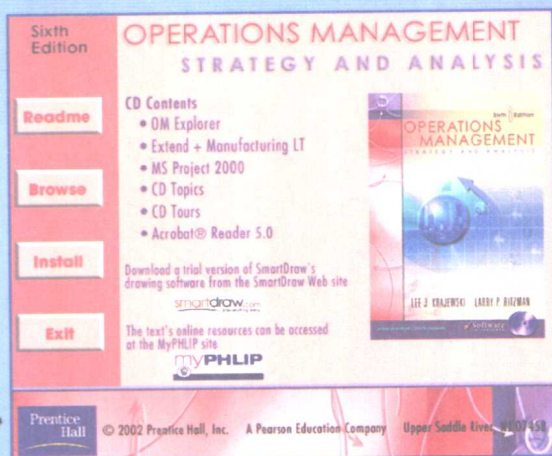
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