

OPERATIONS NOW IS OPERATIONS TODAY

A colleague of mine once made what I found to be a most pertinent observation about our discipline. He noted that operations is arguably the function most critical to the success of any organization, yet it is almost always the least visible function within it. A major goal of the Third Edition of *Operations Now* is to raise the visibility of operations and supply chain management so that their importance to the overall enterprise is understood and acknowledged by all business students—not just students of operations and supply chain management. Two other goals remain from previous editions: One is to challenge the misperception that operations and supply chains are somehow isolated from other functional areas of the business. To gain a true understanding of operations and supply chain management, it is important to understand how intricately these functions intersect with other functional areas of a business and how their effectiveness depends on the extent to which their goals are aligned with the strategic goals of the organization they serve. The final goal of the book is to demonstrate how good operations and supply chain practices are vital to the success and profitability of any organization.

Heightened visibility of operations and supply chains, strategic alignment of the operations function with other functions of the organization and with its supply chain, and competitiveness appropriate to the contemporary business landscape: conveying these concepts is the goal of the Third Edition of *Operations Now*—a goal that I've tried to suggest with the image that appears on the cover of the book. As the advertising billboard suggests, *Operations Now* is as much my attempt to promote the importance of operations and supply chain management as it is to explain them. To be a good manager, one must understand all the functional areas of an organization, regardless of the specialized function one may perform. What is depicted on the billboard—the image of an old, preindustrialized city being painted over with and replaced by the image of a contemporary, high-tech metropolis—also acts as a metaphor for the evolution of operations and supply chain management. *Operations Now* is operations today, and these days operations is about organization integration, performance, and profitability—profitability not only with regard to the operation itself but also throughout the organization and the entire supply chain.

In the years since I began studying and teaching operations management, dramatic changes have occurred in the business environment. These changes have informed the operations management course as well as the expectations of the students who take it.

The discipline itself has changed in at least three fundamental ways.

- The focus is no longer limited to manufacturing concerns but, reflecting the direction in which our economy is moving, has broadened to include services as well.
- Today it is necessary to regard the operations function within its larger, organizational context. No discussion of operations is complete without addressing other functional areas of business. Regardless of the vantage point from which one begins the study of operations management, sooner or later one observes the operations function interacting with other business functions—intersecting with marketing here, nudging up against finance there. In short, it is no longer possible to view operations as less critical than, or in isolation from, other key functional areas of business: high-performance operations depend on their close coordination with all functional areas of the organization.
- Finally, the body of knowledge constituting “operations management” has expanded considerably in recent years. Such topics as project management, e-business

and e-commerce, lean manufacturing, and enterprise resource planning have found their way into a management curriculum that has begun to deemphasize the traditional departmental silos. Particularly representative of this fundamental change is the emergence—some would say “reemergence”—of supply chain management as a critical factor in the success and competitiveness of any organization. In fact, because of such factors as specialization, outsourcing, globalization, and dramatic advances in information technology, the lines between “operations management” and “supply chain management” have blurred so considerably in recent years that many practitioners could plausibly make the claim that the terms are now interchangeable. At the very least, it is no longer possible to discuss operations management without extending that discussion to include supply chains.

CHANGES IN HOW STUDENTS LEARN DICTATE HOW OPERATIONS MUST BE TAUGHT

Beyond the changes in our discipline, an even more fundamental change has occurred in our students. As primary beneficiaries of rapid advances in information technology, students today have easier and quicker access to more information than any previous generation. Such access has made them arguably more sophisticated than their counterparts of a decade earlier, but having access to such an abundance of information often leads to overload.

These are some of the fundamental issues by which I have been challenged through all three editions of this book. How can I create a table of contents that accurately reflects the state of operations management today? How can I package this information in a way that will be both appealing and digestible to today’s students—not just to operations management majors, but to all business students? Finally, how can I exploit new technology to produce better, more relevant instruction and learning materials?

OPERATIONS NOW: SUPPLY CHAIN PROFITABILITY AND PERFORMANCE

Operations Now: Supply Chain Profitability and Performance is my attempt to confront these issues. The “Now” indicates an effort to address both the changing content in the field of operations management as well as the latest methods available to help improve the quality of the instruction we deliver. A new subtitle to the Third Edition, *Supply Chain Profitability and Performance*, is intended to reflect the increase in the coverage and integration of supply chain concepts now found in the book. As with previous editions, every attempt has been made to ensure that the DVD and Web site accompanying *Operations Now: Supply Chain Profitability and Performance* create seamless extensions of the text rather than assets that were belatedly included after the fact.

From its conception in the First Edition, the Web site was intended to house only those assets that were best utilized in a virtual environment—assets that could not be used, or used far less effectively, in print. This design principle remains in place with the Third Edition. It is certainly possible to use the textbook independently of the DVD and Web site, though using the three together provides an infinitely richer and more rewarding learning experience for students.

PROFITABILITY AS THE FOCUS OF OPERATIONS MANAGEMENT

At the core of every business is the need to create products and services of value and sell them at a price that is greater than the cost of creating them. Operations man-

agement is the management of the processes used to create that value and the resources needed to make those processes possible.

Business profitability—measured by profit margin, return on assets, and return on equity—depends on a firm’s ability to generate sales of the products and services it creates and manage the associated costs, so that a margin of profit is attained. Operations managers are expected both to control the costs of resources that are required to create processes and to manage the processes needed to create value. Because customers ultimately establish the value of a product or service according to the quantities in which they purchase it, operations management has a significant impact on the profitability of a business, its ability to compete, and its ultimate success.

MOTIVATING TODAY’S STUDENTS

Because it dictates the financial productivity of a firm’s assets, operations management is at the core of business success; yet operations is often viewed by business students as an inessential part of their business education. This misperception makes the course difficult to teach. More important, it can result in students entering the workforce insufficiently acquainted with operations management and the pivotal role it plays in the success of virtually every organization. *Operations Now* addresses this challenge by changing the context in which operations management is presented. *Operations Now* places operations decisions and concepts into their real-world context—the financial performance of the firm—through the use of a unique organizational model: the Resource/Profit Model.

WHAT’S NEW? CONTINUOUS IMPROVEMENT IN OPERATIONS NOW

Advances made in product and service quality evolve from pressures that force businesses to differentiate themselves from their competitors. New products and services often start with the idea of “building a better mousetrap.” A different perspective on solving an old problem—combined with the availability of new technologies—is often all that is needed to form the impetus for a product or service that is truly different.

It is precisely this series of events that resulted in the first edition of this text, and the same motivation has driven improvements made to the Second and Third Editions of the book. *Operations Now* continues to differentiate itself from other operations management texts through content, organization, and pedagogy.

The Resource/Profit Model

Users of previous editions will recognize the Resource/Profit Model. This model formed the organizational and conceptual model upon which the First and Second Editions were based; this framework continues, with some adjustments with the Third Edition.

The model places the content of the text within the context of financial performance and provides students with an intuitive organizational framework within which the operations and supply chain functions can be regarded. The model’s financial foundation enables *Operations Now* to present operations and supply chain management concepts and tools in a way that will interest all students whose futures will include increasing business profitability. It suggests a correlation between the soundness and efficiency of the operations and supply chain functions and the profitability of the firm that it serves.

As noted, the Resource/Profit Model has been modestly reorganized for this edition to heighten the importance of supply chain management by positioning it not simply as one integrating framework but as an extension of the operations core.

An Optimal Balance of Textbook, Web Site, and DVD Assets

Operations Now continues to deliver its content across print and virtual environments. With the Third Edition, an optimal distribution of these assets has been achieved across these media, offering greater flexibility to instructors and a wider variety of learning opportunities for students. Courses can be conducted with equal success using either “print-only” or cross-media options.

An Organization Reflecting the Current State of the Discipline

The Table of Contents has been reorganized in response to reviewer recommendations and in order to better reflect the realities of the changing business landscape. The key change in this edition is an increased emphasis on supply chain management and the integration of supply chain concepts throughout the text.

Unit One, “Foundations for Success,” remains a strong introduction to the field of operations Management, exploring the concepts of Profitability, Strategy and Value, and Processes. Unit Two, “Components of Value,” focuses on topics essential to businesses of all kinds in their quest for customer value: Costs, Quality, and Timeliness. In Unit Three, “Managing Resources to Create Value,” specific approaches to resource management are discussed. As well as the chapters found in this unit in the Second Edition, like Resource Planning, Inventory, Lean Systems, Capacity, Constraint Management, Facilities, and Workforce, there is a substantially revised Supply Chain Management chapter and an entirely new chapter on Logistics.

A Substantially Greater Number and Variety of Problems with More Emphasis on Quantitative Techniques

The Second Edition increased the number of end-of-chapter problems by 50 percent over the First Edition. The Third Edition has increased the quantitative material even more. First, there are now Solved Problems at the end of all appropriate chapters—a feature that is new to this edition. Second, *Operations Now* boasts not only a greater number of problems than ever before but a greater variety of problems as well. Included with the Third Edition is a new category of problems, labeled “Advanced Problems.” These problems, contributed by active instructors, serve as a bridge between the simple problem sets found in earlier editions of the book and the Interactive Cases that were a hallmark of the Second Edition and which have been retained and updated in the Third Edition. Presenting students with Solved Problems for reference and then Advanced Problems as an intermediate step between the basic problems and the cases enables students to progress through the material at a more graduated pace. With more study aids at their disposal and progressively more challenging opportunities to practice the concepts in the text, students are likely to retain more of what they learn.

New, Revised, and Updated Chapters

The scope of the revision of *Operations Now* is considerable. Among the changes incorporated into the Third Edition are:

- An entirely new chapter (Chapter 12), “Logistics: Positioning Goods in the Supply Chain,” which covers the fundamentals of logistics and transportation.
- Significant revisions of Chapter 3, “Strategy and Value”; Chapter 4, “Processes”; Chapter 7, “Quality Tools”; and Chapter 9, “Supply Chain Management.”

Below is a comprehensive list of the key changes and updates for all the chapters of the Third Edition of *Operations Now*:

Chapter	Major Changes and Additions
Chapter 1 Introduction	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced discussion linking operations and supply chain management. ■ Reorganized introduction to the text.
Chapter 2 Profitability: Business Success from Operations Success	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced coverage of the links between OM and SCM and profitability measures. ■ Added references to not-for-profit organizations. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 3 Strategy and Value: Competing through Operations	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced coverage of strategic supply chain issues. ■ Expanded mission coverage. ■ Enhanced coverage of “core competencies.” ■ New section on supply chain strategies. ■ New section on environmental scanning. ■ Application Case.
Chapter 4 Processes: Turning Resources into Capabilities	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced linkages between process decisions and strategy for manufacturing and service. ■ Enhanced linkages between process decisions and profitability. ■ Expanded coverage of design for logistics (DFL) and new coverage of design for environment (DFE). ■ Coverage of process-oriented, product-oriented, and cellular layouts moved from Chapter 3. ■ New sections on developing new products and services. ■ Enhanced coverage on process improvement tools. (mapping, service blueprinting, etc.). ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 5 Costs: The Price of Value Creation	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced linkages to OM decisions. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 6 Quality: Meeting Customer Expectations	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced linkages to SCM. ■ Updated Baldrige coverage. ■ Application Case.
Chapter 7 Quality Tools: From Process Performance to Process Perfection	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Major revision and expansion of SPC coverage. ■ Enhanced coverage of X-bar and R-charts, with new chart construction examples. ■ New coverage, with chart-construction examples, for P- and C-charts.

Chapter	Major Changes and Additions
	<ul style="list-style-type: none"> ■ Revised six sigma coverage. ■ Expanded Taguchi methods coverage. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 8 Timeliness: Scheduling and Project Management	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Increased description of the relationship between queue length and resource utilization. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 9 Supply Chain Management: Managing Business-to- Business Interactions	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Increased linkages to strategy and competitive advantage. ■ New section on purchasing. ■ Expanded coverage of perfect order measure and calculation problem/example. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 10 Demand Forecasting: Building the Foundation for Resource Planning	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Expanded SCM integration, CPFR. ■ Expanded discussion of the importance of graphing prior to any forecasting effort. ■ Expanded accuracy measures to include MAPE and tracking signals. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 11 Inventory: Managing to Meet Demand	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Replaced periodic review model with target level model. ■ Replaced advanced MRP example with smaller example. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 12 Logistics: Positioning Goods in the Supply Chain	<p>This chapter focuses on logistics and transportation. Level 1 topic headings for this chapter are:</p> <ul style="list-style-type: none"> ■ Introduction to Logistics ■ Logistics Network Configuration ■ Outsourcing Logistics Services ■ Reverse Logistics ■ Transportation ■ Transportation Management Systems ■ Warehousing ■ Supply Chain Security ■ Information Technology ■ Measuring and Monitoring Logistics Costs <p>Logistics-specific content from the Second Edition chapter on SCM was also moved into this chapter.</p>

Chapter	Major Changes and Additions
Chapter 13 Lean Systems: Eliminating Waste throughout the Supply Chain	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced coverage of the linkage between lean and competitive advantage/strategy. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 14 Capacity: Matching Productive Resources to Demand	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced linkages between capacity and SCM. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 15 Constraint Management: Simplifying Complex Systems	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 16 Facilities: Making Location and Layout Decisions	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Expanded coverage of location decisions in the supply chain (warehouses, distribution centers, etc.). ■ Discussion of infrastructural issues in decisions. ■ Expanded coverage of outsourcing. ■ Solved Problems and Advanced Problems. ■ Application Case.
Chapter 17 Workforce: Optimizing Human Capital	<ul style="list-style-type: none"> ■ Updated box inserts. ■ Enhanced coverage of globalization issues. ■ Solved Problems and Advanced Problems. ■ Application Case.

New Pedagogy

- **Solved problems.** The Second Edition had an example of each problem introduced. Each example also corresponds to an Excel Tutor that shows how that example can be solved in a spreadsheet. The Third Edition maintains those example problems and the Excel Tutor and adds a section of solved problems at the end of the chapter. There is a solved problem for each type of problem in the chapter. The solved problems are explained in a step-by-step fashion.
- **Advanced Problems.** The Second Edition increased the number of end-of-chapter problems by more than 50 percent. The Third Edition, in addition to adding solved problems above and beyond the previously existing examples, adds Advanced Problems for each chapter. Advanced Problems are more integrative, require more effort in terms of extracting and identifying relevant information, and give students a chance to extend their problem-solving skills.
- **Application Cases.** The Second Edition had Video Cases, Interactive Cases, and Exploratory Cases at the end of chapters. Exploratory Cases required investigation and searching online. We have eliminated the Exploratory Cases and replaced them with more traditional Application Cases. The new application cases provide an integrated or more complex scenario for the student to study, analyze, and provide recommendations for.
- **Callbacks.** We have kept the Second Edition’s chapter-opening vignettes, which provide a real-world example of the chapter’s main subject and explain how it affects a real company. We have further integrated these real-world examples into the chapter by using “Callbacks,” which appear in the margins to show how the topic

at hand affects the company from the vignette, further reinforcing the day-to-day importance of operations in every company's functions.

- **Chapter names.** We have added subtitles to all chapter names to better describe chapter content.
- **Solutions to odd-numbered problems.** In the First and Second Editions, we did not provide students with end-of-chapter problem solutions. Instructors had all solutions on their CD. In the Third Edition, we will provide solutions to all odd-numbered end-of-chapter problems on the student Web site. We will continue to provide all solutions on the instructor's CD.

Updated and Improved *Homework Manager* Option

McGraw-Hill's *Homework Manager*, which serves as a study aid for students and homework resource for instructors, is available to the student at a modest additional cost. It offers students online practice in solving problems and instructors the capabilities and convenience of automatic, online grading. McGraw-Hill's *Homework Manager* also provides instructors with the opportunity to assign problems from the book that are algorithmically generated.

Making the Most of the Media Available

Used in conjunction with the integrated Web site and DVD, *Operations Now* creates a new standard for the delivery of operations management content and pedagogy. It moves beyond the traditional framework by exploiting technologies to provide a wealth of content and support that is accessible through the DVD and at its Online Learning Center at <http://www.mhhe.com/opsnow3e>. To maximize their effectiveness, each of the three delivery channels is used for what it presents best.

Text

The text delivers a basic narrative covering the fundamental concepts of operations management, with both traditional end-of-chapter material and innovative pedagogy, including Video, Interactive, and Application Cases. The first two of these cases are designed to be used in conjunction with videos and Java-based, interactive models and simulations found on the Student DVD and Online Learning Center.

Student DVD

The DVD delivers static multimedia content, including:

- Sixteen full-length videos that accompany the Video Cases presented in the text.
- Excel Tutor spreadsheets.
- Interactive Models.
- Self-Assessment Quizzes.

Online Learning Center

The text's dedicated Web site delivers dynamic content such as:

- PowerPoint presentations.
- Supplemental readings.
- Business tours.
- Other activities that depend on the most up-to-date resources maintained online by businesses.

- McGraw-Hill's *Homework Manager*, a new technology designed to add an almost endless variety to automatically graded end-of-chapter problems.

Giving Students a Competitive Advantage

By using *Operations Now: Supply Chain Profitability and Performance*, students will learn that a fundamental prerequisite to the success of any business is its ability to combine resources to create value. It will become clear to those students that in order to compete effectively, the value created must exceed that of competitors. The ownership of the resources is necessary, but is not alone sufficient to ensure that enhanced levels of value are created. The firm must creatively combine resources into value-creating processes. Those resources come from across the business, not from within any single functional silo.

When all these variables interact and intersect in a coordinated fashion, the outcome, like the music emanating from a good symphony orchestra, is high performance that leads to profitability.

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