运作管理原理

Foundations of Operations Management

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双语教学丛书
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前　　言

　　我们撰写本书，是因为运作管理日益需要一本简单明了而又内容丰富的教学用书。大多数学习这门课程的学生，无论是在本科阶段还是研究生阶段，其学习主要集中于职能领域而不是运作领域。教师在寻找一本简明扼要的书，它应包含应有的基本理论和技术，却没有教科书中常见的犹如百科全书一般的大量信息。本书也适合于 MBA，因为它管理视角独特，并全面覆盖了流程管理。MBA 学员需要理解企业流程的内在联系，这使得运作与企业的其他职能领域密不可分。他们需要理解企业的各个部门，而不仅仅是运作部门，必须对流程进行设计和管理，并且处理好质量、技术和员工方面的问题。本书还适合于本科生，因为它具有教学用书的特征（清晰的解释，许多技术循序渐进的例子，大量已经解决的问题和课后作业等等），而这正是本科生需要的。

　　本书是最新的教科书·《运作管理》（第 6 版）主要内容的简编版，保留了其必不可缺的内容。我们把最新版的部分内容补到学生用 CD 光盘和我们的网站上。同时，我们逐段进行了精心的修改，以求剔除不属于这本最新"原理"书的内容。每章都强化为一个较小的学习单元。这么做的目的是提供课堂上以及课堂之外的形式多样的学习机会：体验练习、案例、影像工具、讨论题、运作管理（OM）开发活动、视频讨论以及网络活动。

　　本书有三个主要学习的目标。我们的第一个目标是帮助学生在当今激烈竞争和全球化的环境中成为高效的管理者。他们可以洞察整个组织的管理活动和运作部门怎样去适应组织的需要。第二，我们希望帮助学生发现运作管理领域的奥妙和神奇。我们通过大量企业的生动案例来激励他们，提供加强决策和数据收集的新的技术方法，同时包括运用现实案例来对重要问题进行开放式讨论。第三，我们将标题置于适当的语言环境，希望学生理解管理者对于流程应做些什么，意识到运作管理包括许多交叉功能的联系，并且学习到管理者用以更好地进行运作决策的工具。

结　　构

　　本书的结构安排是从战略选择到战术决策。

　　第 1 章"运作竞争"，合并了《运作管理》（第 6 版）的第 1 章和第 2 章，同时设定本书的风格。我们把组织视为许多流程的混合体，并表明操作原则和技术更适合其管理和分析。不考虑学生的专业背景，我们将贯穿全书的这种方法呈现在学生的面前。本章还建立了运作战略的基本原则。

　　第 2 章"流程管理"，对流程管理进行了更深入的考察，同时说明关键流程的选择是如何做出的。本章提供了改进流程的方法，包括充分利用一些软件包。本章强调了服务流程管理的资料。为了加以改进，我们删除了工作设计部分和相关的案例，同时将 King Soopers 面包房的照片转存到学生用 CD 光

盘中。

第3章"项目流程管理",包含了项目管理方面重要的管理要素。这些要素随着第2章中关于项目流程的介绍逐一展开,提供了这门课程的许多内容。学生需要理解项目管理的含义。对本章的删减包括将库尔斯球场棒球露天运动场项目的照片放在学生用 CD 光盘中。

第4章"技术管理",经过深思熟虑,依然保留了关于电子商务(包括 B2B 和 B2C)、互联网以及企业资源规划(ERP)方面的重要发展。更多的前沿话题,例如研发阶段,我们从本书中删除了。同时,本章关于技术管理的内容、案例以及视频资料的介绍,引出了选择和应用新技术的挑战。

第5章"质量",合并了《运作管理》(第6版)两章内容,将 TQM 的概念和统计过程控制技术放在一起。同其他各章一样,讨论题、体验练习和案例放在学生用 CD 光盘中。

第6章"产能",考察了决策过程中的另一个重要方面。它包括了限制理论、规模经济和非规模经济、产能战略和产能规划的系统方法。我们介绍了大量有用的技术,例如决策树和模拟,以及对运作管理探测器的解释工具。章后的附录 6S 讨论了等候线。

第7章"选址与布局",合并了《运作管理》(第6版)两章内容,继续关注决策过程中需要的长期因素。管理者必须帮助决定在哪里建立新厂(包括全球运作),以及如何在工厂内部进行布局。关于这些决策的讨论包括了如何设计服务提供商和制造商的流程。案例包括全球热点的讨论、高级定位和布局技术以及平衡生产线的启发规则。

第8章"供应链管理",是本书第二部分的开始。我们关注的焦点转变为执行计划和操作流程。本章包含许多供应链方面的新发展,例如电子采购(包括商品目录、交易和拍卖)、延期、渠道供应以及环保采购。本章说明了下述订单和完成订单的过程、互联网的影响以及供应链绩效考察的新标准。

第9章"预测",包括预测方法的所有类型。本章始于定性技术,并止于时间序列模型。运作管理探测器的三个解决者和四个监督者在理解和运用这些工具方面发挥了电脑的作用。本章包含了综合预测和集中预测方面的最新信息。开篇说明了预测在整个企业和供应链中的重要性。

第10章"库存管理",与《运作管理》(第6版)中的内容大体相同。不同之处在于,将讨论题、体验练习和案例放在学生用 CD 光盘中。由于运作管理浏览器助手的支持,我们删除了一些例子。

第11章"综合计划与调度",将《运作管理》(第6版)第14章和第17章第2部分合并。第17章第1部分关于运作调度的内容成为学生用 CD 光盘中的最新补充。这种方法可以使学生理解各个阶段产出计划的整体连续性和不同阶段的劳动力水平,正如在新西兰航空公司的服务调度资料中阐述的那样。

第12章"资源计划",包括了制造领域和服务部分。后面的部分主要说明金融资产、人力资源、设备和存货等资源。

第13章"精益系统",是本书的结论。除删去一些例子和将最后的内容放在学生用 CD 光盘中之外,本章内容与《运作管理》(第6版)基本一致。和其他各章一样,CD 光盘和网站资源的总结放在章末。

本书特点

以下是我们对运作管理这个不断变化的领域的主要概括。这些变化是基于教授和学生们的大量反

馈。所有这些变化都支持全书的逻辑性。

- **最新性**。本书共 13 章，还有一个附录（等候线）。CD 光盘中的 11 个附录是对本书基本内容的补充，例如体验练习、案例等等，构成了一个完整的体系。

- **适合教学的结构**。本书保持了《运作管理》（第 6 版）的丰富性和适合教学的特点，这不仅表现在该书本身，而且表现在学生用 CD 光盘和网站上。本书具有丰富的内容、清晰的阐释、大量技术循序渐进的案例、已经解决的问题以及大量的课外练习。学生可以掌握解决问题的框架，并且可以练习使用有效的决策工具。

- **生动性**。激发学生的学习热情和将运作管理从概念转变为实践，这是一本好教科书的重要特征。我们保留了一些常见并经过时间检验的内容，使得学生可以更好地理解真实的商业问题，并且使他们成为课堂之外的积极参与者。例如，运作管理浏览器助手、章末的案例以及体验练习使学生可以真正运用从书本和课堂学到的概念和理论。在本书网站上提供的多样化活动超越了教材和课堂的学习界限。

- **凌驾于企业之上**。每章都开始和结束于该章主题如何运用的讨论，这对整个企业的专业化至关重要。在每一章，我们都把运作管理与会计、金融、人力资源、营销和管理信息系统联系在一起。

- **流程的核心作用**。我们关注流程——所有组织运作的基本要素。所有内容都是关于流程的！这个统一主题为学生在章节与讨论之间架起了联系的桥梁，而不管其专业背景以及职业经历如何。这是运作管理这门课程中最经常出现的概念，因为学生要理解企业流程中所有重要的活动，而不仅仅是一个职能领域。

- **均衡观点**。我们认为运作管理的教材需要包括生动的战略话题，同时也需要包括帮助进行决策的分析工具。它并不是简单的"概念"或者"数字"，而是二者的结合。我们同时在书中平等对待制造领域和服务领域，并且对服务上的流程特别加注了 S 标记。

- **CD 光盘资源**。这个学生用 CD 光盘免费提供本书的新内容，非常方便。资源包括运作管理浏览器、教材附录以及其他重要的附录。
  - OM 浏览器——这是一个特别为这本教材设计的软件。它有点像 Excel 工作表格的形式。一个显著的特征就是包括 66 个针对书中难点分析方法的辅助练习。这个软件还包括 40 个解决方案，提供在练习中经常会出现的问题的有效的解决方法。
  - 辅助练习——OM 浏览器助手包含有大量的练习。
  - 教材附录——11 个独立的附录：决策制定、财务分析、产出率测量、学习曲线分析、计算机集成制造、验收抽样、模拟、特殊库存模型、线性规划、作业计划和主生产计划。
  - 其他资源——小结、讨论题、案例、体验练习、照片以及两个写作练习——都是在每章后提供的。
  - **互联网资源**。每章后都会出现一个网络链接，在这个互动网址上会提供关于本章的大量工具以及练习。资源包括网络活动、网络工具和辅助练习。网络已经成为商业成功最关键的工具。学生可以通过在线活动去培养研究能力并且加强他们对运作管理概念的理解。

- 学习测验——包括判断正误、多向选择以及可以在线测试的讨论题，或者可以让学生对其掌握概念和方法的情况给予反馈。
- 新闻——针对每章的最新资料。
- 模拟——具有模拟能力的流程模型。
- 网络活动——每章中不同公司是如何解决决策问题的。
- 体验练习。7个体验学习模型为：Min-Yo Garment 公司（第1章），SPC 自动售货机（第5章），"比萨大亨"案例（第7章），Sonic Distribwtors（第8章），Yankee Fork and hoe 公司案例（第9章），快速电子供应（第10章）和 Memorial 医院（第11章）。这些经典案例是在课堂上要求每名学生积极参与的。每个案例都经过课堂的检验证明，是非常有用的学习工具。尤其是快速电子供应案例，它是本书中的新案例。
- 交叉功能案例——本书中有两个新的交叉功能案例。这些特别练习揭示了所有的功能领域必须统一在一个成功模式下的重要性。布朗斯威克物流公司说明了通过 Excel 电子表格进行经营绩效考核会带来多种多样的运作决策问题。可以在第1章介绍经营绩效运作决策的重要性，或在第8章说明分销渠道和供应链案例的重要性。第二个案例是 R.U. Reddie 公司的，它将定位决策中的运作与现金流中的财务考虑和内部相联系。
- 虚拟之旅——不同公司的真实案例分析，配合每章特定的内容和管理话题。

- **灵活性**。对于那些需要灵活性以扩展或者丰富课程的人们，学生用 CD 光盘提供了许多内容，包括 OM 浏览器、案例、大量的附录、体验练习等等。本书的灵活性使得教师可以根据学生的特别需要设计课程。
- **案例**。每章至少有一个案例（学生用 CD 光盘上），可以作为课堂上的练习，也可以作为每章的重要问题，鼓励学生运用本章的内容去大胆地解决问题。多数案例可以作为学生的课堂练习，不需要事前的准备。
- **每章开始的引文**。每章的开始都伴随着某个公司如何解决特定流程问题的例子，而这正是本章要讨论的问题。例如第5章"质量"，同时也说明了视频系列如何与课本内容相联系。
- **管理实践**。书中的案例揭示了运作管理在不同公司的实践活动。插入的最新例子在服务企业和制造企业间取得均衡，它们代表了公司如何成功或不成功地解决所面临的特定流程问题。
- **范例**。贯穿于每章的大量范例是本书一个明显的特点，它们是为了帮助学生理解书中所讲到的大量资料。每个范例都以"决策点"结束，它关注管理者的决策执行。无论何时提出新技术，我们都会有一个范例帮助学生去理解。通常，OM 浏览器助手会强化这个范例。
- **已经解决的问题**。在每章的末尾，都会有解决本章提出问题的技术和详细的方法。这些已经解决的问题强化了基本概念，并且可以作为学生解决类似问题的模型。
- **照片**。四个彩色的、两页的照片放在学生用 CD 光盘中，展现 lower Florida Key 医院（第1章）、查帕拉尔钢铁公司（第1章）、King Soopers 面包店（第2章）和库尔斯露天棒球运动场（第3章）的布局情况。
- **图像捕捉**。修改后的本书依然包括许多图像捕捉技术，如 OM 浏览器、微软 Project 以及 Smart-

Draw。书中运用这些工具分析富有意义的问题。参看第 2 章的 SmartDraw 流程图绘制程序、第 3 章中的微软 Project 以及第 11 章的 OM 浏览器。

- **公司统一资源网址**。统一资源网址包括引文中的公司和管理实践中的公司,使得学生可以进一步探索这些问题。
- **页边的注释**。本书中依然保留了许多页边的注释:
  - 管理者的问题——来自现实世界的声音高度强调所提出的关键概念。
  - 定义——粗体的简短定义可以作为简易参考。
  - 服务图标——显示服务应用的范围。
  - 辅导图标——OM 浏览器助手显示可以进一步辅导学生理解和运用这些例子。

增强的教学支持体系

- **教师解答手册**。为了保持时效性和消除错误,作者编写的教师解答手册为所有讨论题、思考题提供了完整的解答方法,并且对每个案例、体验练习和实用案例进行了注释。也可以运用电脑去说明所提供软件的不同性能。每个案例注释都包括一个简短的案例大意,一个关于运用该案例目的的描述,分析案例的建议和学生学习案例的目的,以及对学生分析讨论案例的详细建议。解答手册是提供给教师使用的,教师可以根据解答手册在在线课程中与学生交流。该解答手册的电子版可以通过教师的源光盘复制,也可以从网站下载。
- **教师材料手册**。詹姆斯·麦迪逊大学汤姆·伍德编写的教师材料手册,包括简单课程提纲、与课文相关补充材料的总结、每章内容和文后补充材料的注释以及称为"运用"的课堂练习。课堂运用练习的答案以幻灯片的形式提供。对于课后练习的数字部分,很多教师更愿意在学生有充分的时间自己解答后,再给出标准答案。教师材料手册的电子版可以通过教师的源光盘复制,也可以从网站下载。
- **试题手册**。由布拉德利大学罗斯·芬克编写的试题手册包括判断题、多选题、填空题、简答题和针对每章内容和课后补充材料的问答题。试题手册的电子版可以通过教师的源光盘复制。
- **情商测试**。出版的试题手册要和情商测试软件一起使用。这种电脑软件包使教师能够自行设计、保存和生成课堂测试程序。测试程序允许教师从测试题库中编辑、添加或者删除问题;编辑已有的图解或者设计新的图解;分析测试结果,以及设计考试成绩和学生情况的数据库。这种新的软件增加了更大的灵活性和适用性。它提供了组织和进行测试的多种选择,并具有调查和分类的特征。该软件可以通过教师的源光盘复制。
- **幻灯片演示**。一个内容广泛的幻灯片演示图片已由新西兰林肯大学的杰夫·海尔设计完成。这个直观的演示图片展示和说明了书中的关键概念。幻灯片的电子版本可以通过教师的源光盘复制,也可以从网站下载。
- **图像信息记录组件**。图像信息记录组件包括如下图像信息:Christchurch Parkroyal 的全面质量管理,King Soopers 面包店的流程选择,意大利镇第一银行的等候线,库存和指定用书,新西兰航空公司的服务调度,南塔基特饮料公司的项目管理以及 Prentice Hall 出版公司的信息技术管理。

这些图像资料极具教学价值，将简要的"点句"屏幕和管理者认为重要的问题合并在一起。

- **教师源光盘**。教师的源光盘包括完整的教师解答手册、试题手册、电脑测试题集、幻灯片演示图片和教师材料手册的电子版。所有这些材料都是以 Word 或者幻灯片的文件格式而不是以 Pdf 格式提供的，其目的是使教师能够根据学生的喜好自行改变部分材料。

  对应网站(www.prenhall.com/ritzman)：

  这个内容丰富的交互式网站是操作管理资源的重要开始，其特征是包括许多对学生和教师有益的材料：新闻标题、辅助练习、网络活动、虚拟之旅、教师游览补充链接、幻灯片演示，以及提供了包括判断、选择和问答在内的交互式学习指导。在教师资源板块，教师可以下载教师材料手册、教师解答手册以及所有新闻资料和网络练习的答案。

- **网络课程平台、黑板和课程指南**。Prentice Hall 出版公司现在通过网络课程平台、黑板和课程指南进行在线课程内容的课堂测试。教师能得到易于使用的设计模板、交流、测试和课堂管理工具。想要获取更多知识，可以与 Prentice Hall 出版公司的代表联系，或者登录网站www.prenhall.com/demo 快速浏览在线解决办法。

PREFACE

We wrote this book to address the growing demand in operations management for a brief book that still retains the rich set of pedagogical features. Most students who take this course, either at the undergraduate or graduate level, major in functional areas other than operations. Instructors are looking for a briefer book that conveys the essential ideas and techniques without the encyclopedic amount of information found in standard textbooks. The book is suitable for the MBA market because of its managerial perspective and strong coverage of process management. MBA students need to understand the interrelated processes of a firm, which connects operations with all other functional areas of an organization. They need to understand how each part of an organization, not just the operations function, must design and manage processes and deal with quality, technology, and staffing issues. The book is also suitable for undergraduates because it provides the pedagogical structure (clear explanations, step-by-step examples of quantitative techniques, numerous solved problems and homework problems, and the like) that undergraduates need.

Foundations of Operations Management provides a brief version of the up-to-date material in the 6th edition of our full-length textbook, *Operations Management,* and yet keeps much of the essential content. This streamlined version was created in part by transferring some content to the Student CD-ROM and to our Interactive Web site. We also did considerable pruning on a paragraph-by-paragraph basis to weed out material not needed for a streamlined "foundations" book. Chapters are consolidated as appropriate to create a smaller number of learning units. In so doing, we create opportunities in and out of the classroom for various forms of active learning: experiential exercises, cases, virtual tours, discussion questions, OM Explorer activities, video discussions, and Internet activities.

There are three main learning goals for this edition. Our first goal is to help students become effective managers in today's competitive, global environment. They discover the challenge of both managing 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 interesting examples at numerous 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 understand 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.

ORGANIZATION

We have organized the text so that it moves from strategic choices to tactical decisions.

Chapter 1, "Competing with Operations," merges Chapters 1 and 2 from *Operations Management,* 6th ed., and sets the tone of the text. We view organizations as composed of many processes, and show that operations principles and techniques are most suited for their management and analysis. This approach, which carries forward throughout the text, appeals to students regardless of their academic major. This chapter also establishes the basic principles of operations strategy.

Chapter 2, "Process Management," provides more insight on the management of processes and on how key process choices should be made. It provides a systematic

approach to improving processes, including taking advantage of several software packages. The material on service process management is reinforced. To streamline the chapter, we deleted the sections on job design considerations and the Extend simulation case, and shifted the Big Picture of King Soopers Bakery to the Student CD-ROM.

Chapter 3, "Managing Project Processes," has substantial managerial material regarding project management. The material follows the introduction to project processes in Chapter 2 and it provides some quantitative material earlier in the course. Understanding project management is needed by students regardless of their functional major. Slimming down this chapter included moving the Big Picture on the Coors Field Baseball Stadium Project to the Student CD-ROM.

Chapter 4, "Managing Technology," though considerably streamlined, still describes important developments on e-commerce (both B2B and B2C), the Internet, and enterprise resource planning (ERP). More advanced topics, such as the R&D stages, are eliminated from this brief book. Together, a chapter, case, and video on technology management explores the challenges of choosing and implementing new technology.

Chapter 5, "Quality," merges two chapters from *Operations Management,* 6th ed. It brings together TQM concepts with statistical process control techniques. As with other chapters, the discussion questions, experiential exercises, and cases are moved to the Student CD-ROM.

Chapter 6, "Capacity," examines another dimension of designing processes. It covers the Theory of Constraints, economies and diseconomies of scale, capacity strategies, and a systematic approach to capacity planning. We describe useful quantitative techniques, such as decision trees and simulation, and explain techniques in OM Explorer. Supplement 6S, provided at the end of the chapter, bolsters the discussion on waiting lines.

Chapter 7, "Location and Layout," merges two chapters from the 6th edition. It continues the focus on decisions that require long-term commitments about the process. Managers must help determine 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. Examples of streamlining include dropping the discussion of global hot spots, the advanced location and layout techniques, and the line-balancing heuristic rules.

Chapter 8, "Supply-Chain Management," begins the second half of the book. The focus moves to executing the plans and operating the process once designed. It brings out many of the newer developments occurring with supply chains, such as e-purchasing (including catalog hubs, exchanges, and auctions), postponement, channel assembly, and green purchasing. It addresses order entry and order fulfillment processes, the impact of the Internet, and new measures of supply-chain performance.

Chapter 9, "Forecasting," spans the full range of forecasting approaches. It begins with qualitative techniques and concludes with time series models. Three solvers and four tutors in OM Explorer provide computer power to understand and implement these models. The chapter has the latest information on combination forecasts and focus forecasting. The opening vignette demonstrates how important forecasts are throughout the organization and supply chain.

Chapter 10, "Inventory Management," remains much the same as in the 6th edition. Streamlining began by moving the discussion questions, experiential exercise, and case to the Student CD-ROM. Some examples were also cut, in favor of support by the OM Explorer tutors.

Chapter 11, "Aggregate Planning and Scheduling," brings together Chapters 14 and the second half of Chapter 17 from the 6th edition. The first part of Chapter 17 on operations scheduling becomes a new supplement on the Student CD-ROM. This approach allows the student to understand the whole continuum of planning levels of

output and workforce levels over time, as illustrated by the *Service Scheduling at Air New Zealand* video.

Chapter 12, "Resource Planning," covers manufacturing and also has a section on services. This latter section addresses resources such as financial assets, human resources, equipment, and inventories.

Chapter 13, "Lean Systems," concludes the book. It is much like the 6th edition, except that some examples are deleted and some end-of-chapter materials are moved to the Student CD-ROM. As with the other chapters, the CD-ROM and Interactive Web site resources are summarized at the end of the chapter.

SPECIAL FEATURES OF BOOK

Following are highlights of our 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.

- **Streamlined.** We trimmed the textbook to just 13 chapters and one supplement (Waiting lines). CD-ROM Resources support the basic text with 11 other supplements, experiential exercises, cases, and the like. A complete set of support materials is provided.

- **Pedagogical Structure.** Retains all of the colorful and instructive formatting of *Operations Management,* 6th ed.—not only in the textbook itself, but also in the Student CD-ROM and Interactive Web site. The book includes full-color art, clear explanations, step-by-step examples of quantitative techniques, solved problems, and numerous homework exercises. Students learn a framework for solving problems and experience the use of powerful decision-making tools.

- **Active Learning.** Motivating students to learn and apply OM concepts to processes is an important ingredient to a successful course. 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. The multiple activities available at the textbook's Interactive Web site expand learning beyond the textbook and the classroom.

- **Across the Organization.** Each chapter begins and ends with a discussion of how the topic of the chapter is important to professionals throughout the organization. In every chapter, cross-functional connections link operations management to accounting, finance, human resources, marketing, and management information systems.

- **Central Role of Processes.** We focus on processes—the fundamental unit of work in all organizations. It is all about processes! This unifying theme builds bridges between chapters and opens up the topics in operations to all students, regardless of their majors or career paths. It creates a better "buy-in" for a course in operations management, because students understand that processes underlie activities throughout the organization, not just in one functional area.

- **A Balanced Perspective.** We believe 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. We continue to provide a balanced treatment of

manufacturing and services throughout the text, and give special recognition to service provider processes with an *S* icon in the margin.

- **CD-ROM Resources.** This Student CD-ROM is packaged free with each new copy of the text. Resources include OM Explorer, textbook supplements, and other important supplements.

    - *OM Explorer*—A complete software decision support package designed *specifically for this text.* It has the look and feel of an Excel worksheet environment. One distinguishing feature is the inclusion of 66 tutors that provide coaching for all of the difficult analytical methods presented in the text. The package also contains 40 solvers, powerful routines to solve problems often encountered in practice.

    - *Tutor Exercises*—A variety of exercises on using the tutors in OM Explorer.

    - *Textbook Supplements*—Eleven self-contained supplements: Decision Making, Financial Analysis, Measuring Output Rates, Learning Curve Analysis, Computer-Integrated Manufacturing, Acceptance Sampling Plans, Simulation, Special Inventory Models, Linear Programming, Operations Scheduling, and Master Production Scheduling.

    - *Other Resources*—Equation summaries, discussion questions, cases, experiential exercises, the Big Pictures, and two written tours—all provided on a chapter-by-chapter basis.

- **Internet Resources.** This element appears at the end of each chapter and describes the many tools and activities at the Interactive Web site that are designed specifically for each chapter. Resources include Internet activities, Internet tours, and tutor exercises. 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.

    - *Study Guide Tests*—A compendium of true and false, multiple-choice, and essay questions that allows online testing, or gives students feedback on how well they have mastered the concepts and techniques in each chapter.

    - *In the News*—Current articles that apply to each chapter.

    - *Simulations*—Modeling processes with a simulation capability.

    - *Internet Activities*—How different companies handle decision areas covered in each chapter.

    - *Experiential Learning Exercises.* There are seven experiential learning modules: *Min-Yo Garment Company* (Chapter 1), *SPC with a Coin Catapult* (Chapter 5), *The Pizza Connection* case (Chapter 7), *Sonic Distributors* (Chapter 8), *Yankee Fork and Hoe Company* case (Chapter 9), *Swift Electronic Supply* (Chapter 10), and *Memorial Hospital* (Chapter 11). Each of these experiences is an in-class exercise that actively involves the students. Each has been thoroughly tested in class and proven to be a valuable learning tool. The *Swift Electronic Supply* exercise has been created especially for this new text.

    - *Cross-Functional Cases*—Two new cross-functional cases have been developed for this book. These unique learning experiences demonstrate how all function areas must be coordinated for a winning formula. The *Brunswick Distributing* Co. shows how various operating decisions relate to popular business performance measures through an Excel spreadsheet. It could be used in Chapter 1 to introduce the impact of operations decisions on business performance, or in Chapter 8 to support the importance of distribution

and supply chain issues. The second case is R. U. *Reddie for Location,* which links the operations considerations in a location decision with the financial considerations of cash flows and internal rate of return.

- *Virtual Tours*—Tours to actual sites at different companies, and applied to content and managerial issues of specific chapters.

- **Flexibility.** For those who want the flexibility to expand or enrich their course the Student CD-ROM includes OM Explorer, cases, quantitative supplements, experiential exercises, and more. The book's flexibility allows instructors to design courses that match the unique needs of the student body.

- **Cases.** All chapters have at least one case (on the Student CD-ROM) that can either serve as a basis for classroom instruction 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 process issues addressed in the chapter. See Chapter 5, "Quality," which also illustrates how the video series is linked to the text.

- **Managerial Practices.** Boxed inserts show operations management in action at various firms. Balanced between service and manufacturing organizations, these updated inserts present current examples of how companies—successfully or unsuccessfully—deal with certain process issues facing them.

- **Examples.** Numerous examples throughout each chapter are a popular feature and are designed to help students understand the quantitative material presented. Each one concludes with the "Decision Point," which focuses on the decision implications for managers. Whenever a new technique is presented, an example is immediately provided to walk the student through the solution. Often, a Tutor in the OM Explorer package reinforces the example.

- **Solved Problems.** At the end of each chapter, detailed solutions demonstrate how to solve problems with the techniques presented in each chapter. These solved problems reinforce basic concepts and serve as models for students to refer to when doing the problems that follow.

- **The Big Picture.** Four full-color, two-page spreads in the Student CD-ROM present the layouts of the Lower Florida Keys Hospital (Chapter 1), Chaparral Steel (Chapter 1), King Soopers Bakery (Chapter 2), and Coors Field baseball stadium (Chapter 3).

- **Screen Captures.** The streamlined book still includes many screen captures demonstrating the use of OM Explorer, Microsoft Project, and SmartDraw. The text integrates these packages into the analysis of meaningful problems. See Chapter 2 for SmartDraw, Chapter 3 for MicroSoft Project, and Chapter 11 for OM Explorer.

- **Company URLs.** The URLs are 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.

- **Margin Items.** A number of margin items are continued even in this brief book:
  - *Questions from Managers*—These voices from the real world highlight key concepts being presented.
  - *Definitions*—Short definitions of boldfaced terms are provided for easy reference.

- *Service Icon*—The icon indicates coverage of a service application.
- *Tutor Icons*—This icon will indicate where an OM Explorer tutor can be applied to better understand an example.

ENHANCED INSTRUCTIONAL SUPPORT SYSTEM

- **Instructor's Solutions Manual.** The *Instructor's Solutions Manual,* created by the authors, so as to keep it current and eliminate any errors, provides complete solutions to all discussion questions, problems, and notes for each case, experiential exercise, and cross-functional case. Selected computer screenshots 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. The Solutions Manual is intended for instructors who may in turn choose to share parts of it with students, possibly through an online course. An electronic version of the whole manual is available on the Instructor's Resource CD-ROM and is also available for download at the text's accompanying Companion Web site.

- **Instructor's Resource Manual.** The *Instructor's Resource Manual,* by Tom Wood of James Madison University, includes sample course outlines, a summary of the various ancillaries that go with the text, Annotated Chapter Outlines for each chapter and supplement, and in-class exercises called "Applications." Solutions to the in-class Applications are supplied as transparency masters. Due to the numerical aspects of the Applications, many instructors prefer to use overhead transparencies to show the solutions to Applications after students have had time to develop their own answers. An electronic version of the Instructor's Resource Manual is available on the Instructor's Resource CD-ROM and is also available for download at the text's accompanying Companion Web site.

- **Test Item File.** *The Test Item File,* by Ross Fink of Bradley University, contains true/false, multiple choice, fill-in-the-blank, short answer, and problem questions for each chapter and supplement. An electronic version of the Test Item File is available on the Instructor's Resource CD-ROM.

- **TestGEN-EQ.** The print test item file is designed for use with the TestGen-EQ test-generating software. This computerized package allows instructors to custom design, save, and generate classroom tests. The test program permits instructors to edit, add, or delete questions from the test banks; edit existing graphics and create new graphics; analyze test results; and organize a database of tests and student results. This new software allows for greater flexibility and ease of use. It provides many options for organizing and displaying tests, along with a search and sort feature. This software is available on the Instructor's Resource CD-ROM.

- **PowerPoint Presentations.** An extensive set of PowerPoint slides have been created by Jeff Heyl of Lincoln University in New Zealand. This impressive set of slides illuminates and builds upon key concepts in the text. The PowerPoint slides are available to adopters in electronic form on the Instructor's Resource CD-ROM and can also be downloaded at the text's accompanying Companion Web site.

- **Video Package.** The video package contains the following videos: *TQM at Christchurch Parkroyal, Process Choice at the King Soopers Bakery, Waiting Lines at First Bank Villa Italia, Inventory and Textbooks, Service Scheduling at Air New Zealand, Project Management at Nantucket Nectars,* and *Managing Information Technology at Prentice Hall.* The videos provide pedagogical value in that they incorporate summary "bullet point" screens and interviews with managers regarding significant issues.

- **Instructor's Resource CD-ROM.** The Instructor's Resource CD-ROM includes electronic files for the complete *Instructor's Solutions Manual,* the *Test Item File,* the computerized *Test Item File, PowerPoint presentations,* and *Instructor's Resource Manual.* Providing these materials as MS Word and PowerPoint files, rather than pdf files, allows the instructor to customize portions of the material and provide them to students as appropriate.

- **Companion Web site** (www.prenhall.com/ritzman):

  This content-rich, interactive Web site is a great starting point for operations management resources and features a range of student and instructor resources including: *In the News articles, Tutor Exercises, Internet Activities, Virtual Tours, additional Faculty Tours links, PowerPoint presentations,* and an *Interactive Study Guide* featuring true/false, multiple choice, and essay questions. In the faculty resources section instructors can download the *Instructor's Resource Manual, Instructor's Solutions Manual,* and answers to all of the *In the News* articles and Internet Exercises.

- **WebCT, Blackboard, 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 representative or go to http://www.prenhall.com/demo for a quick preview of our online solutions.

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