

LEARNING MADE EASY



2nd Edition

Operations Management

for
dummies[®]
A Wiley Brand



Make sense of
complex topics

Apply new digital
transformation technologies

Understand key concepts in
operations management

Mary Ann Anderson
Edward Anderson, PhD
Geoffrey Parker, PhD



Operations Management

2nd Edition

by Mary Ann Anderson,
Edward Anderson, PhD,
and Geoffrey Parker, PhD

for
dummies[®]
A Wiley Brand

Operations Management For Dummies®, 2nd Edition

Published by: **John Wiley & Sons, Inc.**, 111 River Street, Hoboken, NJ 07030-5774, www.wiley.com

Copyright © 2022 by John Wiley & Sons, Inc., Hoboken, New Jersey

Published simultaneously in Canada

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without the prior written permission of the Publisher. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at www.wiley.com/go/permissions.

Trademarks: Wiley, For Dummies, the Dummies Man logo, Dummies.com, Making Everything Easier, and related trade dress are trademarks or registered trademarks of John Wiley & Sons, Inc. and may not be used without written permission. All other trademarks are the property of their respective owners. John Wiley & Sons, Inc. is not associated with any product or vendor mentioned in this book.

<p>LIMIT OF LIABILITY/DISCLAIMER OF WARRANTY: WHILE THE PUBLISHER AND AUTHORS HAVE USED THEIR BEST EFFORTS IN PREPARING THIS WORK, THEY MAKE NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF THE CONTENTS OF THIS WORK AND SPECIFICALLY DISCLAIM ALL WARRANTIES,</p>

INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO WARRANTY MAY BE CREATED OR EXTENDED BY SALES REPRESENTATIVES, WRITTEN SALES MATERIALS OR PROMOTIONAL STATEMENTS FOR THIS WORK. THE FACT THAT AN ORGANIZATION, WEBSITE, OR PRODUCT IS REFERRED TO IN THIS WORK AS A CITATION AND/OR POTENTIAL SOURCE OF FURTHER INFORMATION DOES NOT MEAN THAT THE PUBLISHER AND AUTHORS ENDORSE THE INFORMATION OR SERVICES THE ORGANIZATION, WEBSITE, OR PRODUCT MAY PROVIDE OR RECOMMENDATIONS IT MAY MAKE. THIS WORK IS SOLD WITH THE UNDERSTANDING THAT THE PUBLISHER IS NOT ENGAGED IN RENDERING PROFESSIONAL SERVICES. THE ADVICE AND STRATEGIES CONTAINED HEREIN MAY NOT BE SUITABLE FOR YOUR SITUATION. YOU SHOULD CONSULT WITH A SPECIALIST WHERE APPROPRIATE. FURTHER, READERS SHOULD BE AWARE THAT WEBSITES LISTED IN THIS WORK MAY HAVE CHANGED OR DISAPPEARED BETWEEN WHEN THIS WORK WAS WRITTEN AND WHEN IT IS READ. NEITHER THE PUBLISHER NOR AUTHORS SHALL BE LIABLE FOR ANY LOSS OF PROFIT OR ANY OTHER COMMERCIAL DAMAGES, INCLUDING BUT NOT LIMITED TO SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR OTHER DAMAGES.

For general information on our other products and services, please contact our Customer Care Department within the U.S. at 877-762-2974, outside the U.S. at 317-572-3993, or fax 317-572-4002. For technical support, please visit <https://hub.wiley.com/community/support/dummies>.

Wiley publishes in a variety of print and electronic formats and by print-on-demand. Some material included with standard print versions of this book may not be included in e-books or in print-on-demand. If this book refers to media such as a CD or DVD that is not included in the version you purchased, you may download this material at <http://booksupport.wiley.com>. For more information about Wiley products, visit www.wiley.com.

Library of Congress Control Number: 2021948845

ISBN 978-1-119-84310-8 (pbk); ISBN 978-1-119-84311-5 (ebk); ISBN 978-1-119-84312-2 (ebk)

Operations Management For Dummies®

To view this book's Cheat Sheet, simply go to www.dummies.com and search for “Operations Management For Dummies Cheat Sheet” in the Search box.

Table of Contents

[Cover](#)

[Title Page](#)

[Copyright](#)

[Introduction](#)

[About This Book](#)

[Conventions Used in This Book](#)

[Foolish Assumptions](#)

[Icons Used In This Book](#)

[Beyond the Book](#)

[Where to Go from Here](#)

[**Part 1: Getting Started with Operations Management**](#)

[**Chapter 1: Discovering the Fundamentals of Operations Management**](#)

[Defining Operations Management](#)

[Understanding the Process of Operations](#)

[Meeting the Challenges](#)

Chapter 2: Defining and Evaluating Processes

[Mapping Processes](#)

[Evaluating the Elements of a System](#)

Chapter 3: Designing Processes to Meet Goals

[Getting Started with Process Improvement](#)

[Planning Operations](#)

[Improving Processes According to a Goal](#)

[Managing Bottlenecks](#)

Chapter 4: Dealing with Shared Resources, Batches, and Rework

[Sharing Resources](#)

[Batching Parts and Setting Up Operations](#)

[Handling Poor Quality](#)

Chapter 5: Designing Your Process to Match Your Product or Service

[Considering Costs, Standardization, Volume, and Flexibility](#)

[Improving Face-to-Face and Back-Office Operations](#)

[Fulfilling Customer Demand: Making to Stock or Making to Order](#)

[Getting It to Your Customer](#)

[Designing for X: Designing Products with Operations in Mind](#)

Part 2: Managing Variability and Risk

Chapter 6: Forecasting Demand

[Getting Savvy about Forecasts](#)

[Building a Forecast to Predict Demand](#)

[Acknowledging the Error of Your Ways](#)

Chapter 7: Planning Capacity

[Considering Capacity](#)

[Balancing Capacity and Inventory](#)

[Addressing Wait Time for Services](#)

Chapter 8: Managing Inventory

[Dealing with the Business of Inventory](#)

[Managing Inventory](#)

[Getting Baseline Data on Performance](#)

[Reducing Inventory without Sacrificing Customer Service](#)

[Managing Inventory across the Supply Chain](#)

Chapter 9: Planning for Successful Operations

[Planning from the Top Down](#)

[Exploring the Components of an Aggregate Plan](#)

[Considering Materials](#)

[Planning for Services](#)

[Applying Information to the Entire Organization](#)

Part 3: Improving Operations

Chapter 10: Becoming Lean

[Evolving to Lean](#)

[Trimming the Fat](#)

[Producing Just in Time](#)

[Seeking the Silver Bullet](#)

Chapter 11: Proofing against Disruption

[Understanding Disruptions](#)

[Planning for Disruption](#)

[Investing in Relationships](#)

[Fattening the Supply Chain](#)

[Redesigning Your Product and Process](#)

[Protecting against Cyberhacking](#)

[Mixing and Matching Strategies](#)

Chapter 12: Managing Quality

[Deciding What Matters](#)

[Recognizing the Value of Quality](#)

[Addressing Quality](#)

[Designing for Quality](#)

[Measuring Quality](#)

Chapter 13: Creating a Quality Organization

[Reaching Beyond Traditional Improvement Programs](#)

[Adding to the Tool Box](#)

[Overcoming Obstacles](#)

Part 4: Managing the Supply Chain

Chapter 14: Understanding Supply Chain Basics

[Seeing the Structure of Supply Chains](#)

[Aligning the Supply Chain with Business Strategy](#)

[Exploring the Bullwhip Effect](#)

[Improving Supply Chain Management](#)

Chapter 15: Sourcing Strategically

[Seeing the Upsides and Downsides of Outsourcing](#)

[Getting Down to the Basics](#)

Chapter 16: Digitalizing the Supply Chain

[Navigating the Digital World](#)

[Mapping a Digital Strategy](#)

Chapter 17: Scaling throughout the Product Life Cycle

[Managing Operations Age-Appropriately](#)

[Swooning over the Baby](#)

[Surviving the Awkward Stage of Quick Growth](#)

[Getting Comfortable with Market Maturity](#)

[Preparing for the End](#)

[Emerging Anew](#)

[Managing Start-up Operations](#)

Part 5: Managing Projects

Chapter 18: Leading Successful Projects

[Defining Success](#)

[Figuring Out Why Projects Fail](#)

[Laying Out the Project Management Life Cycle](#)

[Leading a Project](#)

Chapter 19: Estimating and Scheduling Projects

[Estimating Time and Cost](#)

[Working with Uncertainty](#)

[Putting It All Together](#)

Chapter 20: Becoming Agile

[Escaping the Waterfall](#)

[Deciding on Agile](#)

[Gearing Up for Agile](#)

[Sprinting through the Project](#)

[Avoiding Common Agile Mistakes](#)

Chapter 21: Responding to Risks That Threaten Your Project

[Tracking Project Progress](#)

[Planning Ahead with Risk Registers](#)

[Responding Productively to Risk](#)

Part 6: The Part of Tens

Chapter 22: Ten Pivotal Operations Management Developments

[Logistics](#)

[Division of Labor](#)

[Interchangeable Parts](#)

[Scientific Management and Mass Production](#)

[Statistical Quality Control](#)

[Lean Manufacturing](#)

[Scientific Project Planning](#)

[Supply Chain Management](#)

[Computerized Supply Chain Coordination](#)

[Electronic Commerce](#)

Chapter 23: Ten Mistakes That New Operations Managers Make

[Beginning an Improvement Journey without Knowing your Process](#)

[Creating Overly Complex Processes](#)

[Missing the Real Bottleneck](#)

[Managing Based on Utilization](#)

[Not Standardizing](#)

[Automating Bad Processes](#)

[Misdefining Quality](#)

[Improving Process through “Big Bangs” rather than Continuous Improvement](#)

[Not Doing Enough Project Planning Upfront](#)

[Not Focusing on the Customer](#)

Chapter 24: Ten Traits of World-Class Operations

[Knowing Thyself](#)

[Possessing Profound Knowledge of the Customer](#)

[Focusing Intensely on Quality](#)

[Adapting to Change](#)

[Getting Better All the Time](#)

[Appreciating Employees](#)

[Paying Constant Attention to Product Offerings](#)

[Using Relevant Process Metrics](#)

[Balancing Respect and Expectations for the Supply Chain](#)

[Avoiding Unnecessary Complexity](#)

Index

About the Authors

Connect with Dummies

End User License Agreement

List of Tables

Chapter 3

[TABLE 3-1 Comparison of Process Configurations](#)

Chapter 4

[TABLE 4-1 Thruput and Utilization as Batch Size Increases](#)

[TABLE 4-2 Summary of Thruput for Different Batch Sizes](#)

Chapter 10

[TABLE 10-1 Implementing Customer Interface with Push and Pull](#)

Chapter 12

[TABLE 12-1 Process Approach to Quality](#)

[TABLE 12-2 Standard Control Chart Values](#)

Chapter 13

[TABLE 13-1 Final Product Quality](#)

[TABLE 13-2 Design of Experiments](#)

[TABLE 13-3 Decision Matrix](#)

Chapter 17

[TABLE 17-1 Comparison of Product Life Stages](#)

Chapter 19

[TABLE 19-1 Description of Activities for an Outdoor Sitting Area Project](#)

List of Illustrations

Chapter 1

[FIGURE 1-1: The business model drives operations, and operations drive the busi...](#)

Chapter 2

[FIGURE 2-1: Transformation activity is hidden in a black-box process.](#)

[FIGURE 2-2: Example of a simple process map.](#)

[FIGURE 2-3: System bottleneck.](#)

Chapter 3

[FIGURE 3-1: Example of a serial process.](#)

[FIGURE 3-2: Unlike operations in parallel.](#)

[FIGURE 3-3: Like operations in parallel.](#)

[FIGURE 3-4: Passport application process.](#)

[FIGURE 3-5: Reducing customer flow time.](#)

[FIGURE 3-6: Increasing capacity by adding a resource to the bottleneck.](#)

[FIGURE 3-7: Balancing the process.](#)

[FIGURE 3-8: Flexible resources.](#)

[FIGURE 3-9: Balancing the process to meet demand.](#)

[FIGURE 3-10: Hidden bottleneck.](#)

Chapter 4

[FIGURE 4-1: Resources performing multiple operations.](#)

[FIGURE 4-2: Optimizing batch size.](#)

[FIGURE 4-3 Effect of batch size on process metrics.](#)

[FIGURE 4-4: Effect of batch size on resource capacity.](#)

[FIGURE 4-5: Transfer batch process.](#)

[FIGURE 4-6: Producing multiple product types.](#)

[FIGURE 4-7: Process with setup times.](#)

[FIGURE 4-8: Relationship of batch size to thruput.](#)

[FIGURE 4-9: Managing rework.](#)

Chapter 5

[FIGURE 5-1: The product process matrix.](#)

[FIGURE 5-2: The service process matrix.](#)

[FIGURE 5-3: Relationship of cost to volume.](#)

[FIGURE 5-4: Comparison of fixed and variable cost scenarios.](#)

Chapter 6

[FIGURE 6-1: Comparison of moving average forecasts.](#)

[FIGURE 6-2: Comparison of exponential smoothing forecasts.](#)

[FIGURE 6-3: Exponential smoothing with a trend.](#)

[FIGURE 6-4: Forecasting with seasonality.](#)

[FIGURE 6-5: Causal relationship.](#)

Chapter 7

[FIGURE 7-1: Relationship of demand and capacity.](#)

[FIGURE 7-2: Adding capacity.](#)

[FIGURE 7-3: Balancing supply and demand with inventory.](#)

[FIGURE 7-4: Tiramisu capacity and demand.](#)

[FIGURE 7-5: Inventory of tiramisu cakes.](#)

[FIGURE 7-6: Inventory of tiramisu cakes with increased capacity.](#)

[FIGURE 7-7: Relationship between utilization rate and flow time.](#)

[FIGURE 7-8: An example of a two-phase queuing system.](#)

[FIGURE 7-9: Applying Little's Law.](#)

[FIGURE 7-10: Merging lines.](#)

Chapter 8

[FIGURE 8-1: Continuous inventory review system.](#)

[FIGURE 8-2: Common service level \$z\$ values.](#)

[FIGURE 8-3: Comparison of inventory policies.](#)

[FIGURE 8-4: Manufacturing without postponement.](#)

[FIGURE 8-5: Manufacturing with postponement.](#)

[FIGURE 8-6: Supply chain inventory.](#)

[FIGURE 8-7: Optimizing supply chain inventory.](#)

[FIGURE 8-8: Service levels across the supply chain.](#)

Chapter 9

[FIGURE 9-1: The hierarchy of operations planning.](#)

[FIGURE 9-2: The planning process.](#)

[FIGURE 9-3: Disaggregating the plan.](#)

[FIGURE 9-4: Abbreviated automotive product structure.](#)

[FIGURE 9-5: MRP output.](#)

[FIGURE 9-6: Spanning the organization.](#)

Chapter 10

[FIGURE 10-1: Example of a push system.](#)

[FIGURE 10-2: Example of a pull system.](#)

[FIGURE 10-3: Implementing *kanban*.](#)

Chapter 12

[FIGURE 12-1: The plan-do-study-act cycle.](#)

[FIGURE 12-2: House of quality.](#)

[FIGURE 12-3: Cascading houses of quality.](#)

[FIGURE 12-4: Target practice.](#)

[FIGURE 12-5: Normal distribution with 3 sigmas.](#)

[FIGURE 12-6: Example of a mean control chart.](#)

[FIGURE 12-7: Relationship between control limits and specification limits.](#)

[FIGURE 12-8: Out-of-control process.](#)

Chapter 13

[FIGURE 13-1: Six Sigma quality.](#)

[FIGURE 13-2: The DMAIC process.](#)

[FIGURE 13-3: A Pareto chart.](#)

[FIGURE 13-4: A fishbone diagram.](#)

[FIGURE 13-5: A correlation chart.](#)

[FIGURE 13-6: A sample run chart.](#)

[FIGURE 13-7: A sample histogram.](#)

Chapter 14

[FIGURE 14-1: Supply chain network.](#)

[FIGURE 14-2: Choosing a supply chain strategy.](#)

[FIGURE 14-3: Supply chain variability escalation.](#)

[FIGURE 14-4: The machine tool supply chain.](#)

[FIGURE 14-5: The restaurant supply chain.](#)

[FIGURE 14-6: Simplified restaurant supply chain.](#)

[FIGURE 14-7: Cross-docking.](#)

Chapter 15

[FIGURE 15-1: A sourcing selection matrix.](#)

[FIGURE 15-2: Integrating the project by spanning the boundaries.](#)

Chapter 17

[FIGURE 17-1: Product life cycle curve.](#)

[FIGURE 17-2: Introducing new products into the market.](#)

Chapter 18

[FIGURE 18-1: The four project success factors.](#)

[FIGURE 18-2: The project life cycle.](#)

[FIGURE 18-3: Project effort increases and management influence wanes over the l...](#)

[FIGURE 18-4: Sample entries in a communications plan.](#)

[FIGURE 18-5: Example responsibility assignment matrix \(RAM\).](#)

Chapter 19

[FIGURE 19-1: Example of a work breakdown structure \(WBS\) in table format to hol...](#)

[FIGURE 19-2: Paragraph \(or list\) version of a work breakdown structure \(WBS\) to...](#)

[FIGURE 19-3: Cost worksheet for an electronics development project.](#)

[FIGURE 19-4: Critical path diagram for an outside sitting area project.](#)

[FIGURE 19-5: Critical path diagram with timing data.](#)

[FIGURE 19-6: Critical path diagram showing a resource conflict.](#)

[FIGURE 19-7: Gantt chart for the volunteer project.](#)

[FIGURE 19-8: Historical timing and cost data for example project.](#)

[FIGURE 19-9: The z values for the most commonly encountered values of P.](#)

[FIGURE 19-10: Critical path diagram for example electronics project.](#)

Chapter 20

[FIGURE 20-1: Traditional Waterfall vs. Agile process.](#)

[FIGURE 20-2: Example sprint burndown chart.](#)

[FIGURE 20-3: An example sprint kanban board.](#)

[FIGURE 20-4: Example risk management board.](#)

[FIGURE 20-5: The Agile process in a nutshell.](#)

Chapter 21

[FIGURE 21-1: Example earned value analysis.](#)

[FIGURE 21-2: Project progress chart.](#)

[FIGURE 21-3: Project run chart.](#)

[FIGURE 21-4: Buffer penetration chart.](#)

[FIGURE 21-5: Risk response cycle.](#)

[FIGURE 21-6: Risk register for example Melville Island tar sands project.](#)

[FIGURE 21-7: Variance risk.](#)

[FIGURE 21-8: Response to variance risk.](#)

[FIGURE 21-9: Contingency risk.](#)

[FIGURE 21-10: Melville Island risk register with contingency risks.](#)

[FIGURE 21-11: The rework cycle.](#)

Introduction

We like to think of operations management as the neurological system of a healthy business. It coordinates the behavior and system functionality of living, breathing organizations to ensure that they continue to grow and thrive in the real world. The more complex the organization, the more vital it is for its operations management to be strong and in good working order.

Successful operations management leaders tend to be the well-organized and systematic types of the world. They fuss and arrange and then ponder and tweak. They see the wrinkles and iron them out to ensure that their companies make the most of what they've got. And many people think operations managers thrive on bringing order to chaos, but this shouldn't be the case! In this book we show you how to plan operations and implement those plans so that your company's operations run smoothly — chaos-free.

Maintaining order and efficiency is a fact of life — in business, families, personal relationships, and other human systems. And operations management is essentially the science of managing resources and behavior. But unfortunately, this important field of study is often explained in a way that makes it sound like an exercise in advanced math instead of a vital part of corporate governance and strategy development.

We wrote this book to help you get a handle on the fundamentals of operations management and to make your life more comfortable when dealing with operations. Whether you'll actually be managing operations or just want to understand what goes on in operations, this book is for you. If you plan on taking an operations

management course as part of your business major or MBA coursework, this book provides a foundation for your understanding. It will also be there for you when it's time to apply the concepts in real situations as you advance your career!

About This Book

Like all other *For Dummies* books, *Operations Management For Dummies* isn't a tutorial. It's a reference book that, we hope, provides you with as much information as you need on the fundamental concepts of operations management to succeed in your coursework and your entry-level tasks in the real world. Use this book as you need it. That is, don't feel pressured to read it cover to cover — although you'd no doubt be fascinated at every turn! You can jump right to the topics that are giving you nightmares, get the assurances you need, and be on your way with tips and insight that may not be available in your regular textbooks.

We've done our best to describe operations management concepts in a fun and lively way. We point out the most important theories, techniques, and ways of thinking about managing products, processes, services, supply chains, and projects without all the mind-numbing details, outdated examples, and complicated explanations that fill some other books on this topic. Here's a glimpse of the topics in this book:

- » Evaluating and measuring current performance
- » Designing processes to meet your objectives
- » Improving your processes
- » Estimating and predicting demand
- » Planning and managing capacity

- » Determining the right amount of inventory
- » Getting the right products to the right place at the right time
- » Selecting and managing suppliers
- » Getting the gist of Six Sigma and lean production
- » Planning and managing projects
- » Scaling operations for the life cycle of your product

Read the chapters in any order, and feel free to go straight to the subjects that interest you. You don't need to bother with a bunch of stuff that you already know — although you may wonder how well you really know it. There is, after all, always room for improvement, right?

As you work your way through this book, keep in mind that sidebars and Technical Stuff icons are skippable. Reading these bits will certainly add to your understanding and appreciation of the topic, but you won't miss anything crucial if you skip over them.

Conventions Used in This Book

Whenever you see a word in *italics*, I'm either introducing a new term or using it for emphasis. Likewise, all web addresses appear in monofont type.

Throughout the book, I include sidebars that contain information and anecdotes that expand on the topics discussed in the chapters. You'll easily spot the sidebars by their gray background color. The sidebars can be amusing and informative, but there's nothing in them that you have to read to understand the material in this

book. If you're pressed for time, skip over the sidebars. If you find the time to read them later, they'll still be there.

Foolish Assumptions

We're well aware of the fact that you're a one-of-a-kind person with countless unique attributes, but as we wrote this book, we had to make some assumptions about our readers. Here's what we assume about you:

- » You're smart, resourceful, and interested in how the world works.
- » You have a new interest in operations management. You may be currently taking an introductory operations management course as part of your business major or MBA studies and need help with some core concepts. Or you're planning to take an operations management course next semester, and you want to prepare by checking out some supplementary material.
- » You may have just been promoted into a position of operations management from another field (that has happened to all three of the authors), and you need to learn how to manage operations fast.
- » You may be focused on a different field of study and have an interest in what those OM folks do, or you may find yourself promoted into a management position and realize that operations are important to every field; time to get up to speed on OM principles.
- » You've had algebra and statistics and remember enough of the basics to get by with a few gentle reminders.

Icons Used In This Book

To make this reference book easier to read and simpler to use, we include some icons to help you home in on certain types of information.



REMEMBER Any time you see this icon, you know the information that follows is so important that it's worth recalling after you close this book — even if you don't remember anything else you read.



TECHNICAL STUFF This icon appears next to information that's interesting but not essential. Don't be afraid to skip these paragraphs.



TIP This light bulb points out advice that can save you time when establishing and analyzing processes.



WARNING This icon is here to prevent you from making fatal mistakes in your operations management work.

Beyond the Book

You can find more helpful information at <https://www.dummies.com>, where you can peruse this book's Cheat Sheet. To get this handy resource, go to the website and type *Operations Management For Dummies Cheat Sheet* in the Search box.

Where to Go from Here

This isn't a novel — although you may find as many twists and turns as there are in the best whodunit. But this book is set up so you can follow the information in any given section or chapter without reading it cover to cover. It's possible for you to know what's going on even if you skip around.

The book is divided into independent parts so that you can, for instance, read all about managing risk without having to read anything about project management. Take a look at the table of contents to see what topics we cover where.

If you're brand-new to operations management, we suggest starting with

[Part 1](#). In this part you can find everything you need to know about processes. Regardless of your field or career path, this part can help you understand processes that affect everything you do.

If your interest is primarily related to quality, then you may want to start in [Part 3](#), which focuses on quality management and improvement and highlights the popular Six Sigma methodology. If you've recently been assigned to a product development team, then [Part 4](#) is likely to be your favorite; find the basics you need to get a solid start on your new job.

If you're not sure where to start, no problem — that's exactly what this book is for. Be vintage about it: Start at the beginning and read through to the end. We expect that you'll gain useful knowledge from every page that you can use to ace your operations management course and advance your career.

Part 1

Getting Started with Operations Management

IN THIS PART ...

Get the lowdown on the fundamentals of operations management and understand why it's so essential to successful businesses.

Find out how to document and improve your business processes in order to gain a decisive advantage over your company's competitors.

Figure out what you want to accomplish and then determine whether you have the processes in place to meet that goal. If your processes need improvement, find out how to improve them in a structured and systematic way

Chapter 1

Discovering the Fundamentals of Operations Management

IN THIS CHAPTER

- » **Understanding the function and value of operations management**
 - » **Getting a handle on business models and processes**
 - » **Facing key challenges in operations management**
-

Operations — a set of methods that produce and deliver products and services in pursuit of specific goals — are the heartbeat of every kind of organization, from consumer electronic and hospital emergency wards to high finance and professional services. Well-designed operations enhance profitability. Poor operations, at best, equal ineffective processes and wasted resources. At worst, poor operations can drive a company out of business. Therefore, managing operations with competence is vital to meeting strategic goals and surviving financially.

In this chapter, we point out what's part of operations and what isn't. We also describe key concepts in the world of operations and tell you what you can do to improve operations in a business or any other type of organization.

Defining Operations Management

When most people think of operations management, if any picture comes to mind at all, an image of a large factory billowing smoke often emerges. And, yes, factories that billow smoke are indeed performing operations, but they're only a small subset of everything that's involved with operations management. Ultimately, operations determine the cost, quality, and timing of every interaction an organization has with the people it serves.

In this section, we tell you exactly what operations management is — and what it's not. Moreover, we point out why operations are such a critical part of an organization and why all departments must care about operations for an organization to be successful.

Getting beyond the smokestack

No job is so simple that it can't be done wrong.

—MESSAGE IN A CHINESE FORTUNE
COOKIE



REMEMBER *Operations management* is the development, execution, and maintenance of effective *processes* related to activities done over and over, or to one-time major projects, to achieve specific goals of the organization.

Operations management covers much more than smokestacks or manufacturing parts and products; it

also encompasses services and all sorts of projects and initiatives that groups of people undertake together. From restaurants and fast-food joints to medical services, art galleries, and law firms, operations management ensures that organizations minimize waste and optimize output and resource use for the benefit of customers as well as everyone else with skin in the game, or the *stakeholders*.



WARNING Doing something a little inefficiently one time is no big deal, but when you do something inefficiently over and over, hundreds or even millions of times per year, even little mistakes can add up to very expensive amounts of waste. Mistakes in an operation that result in defective products, even if they represent only 1 percent of total output, can alienate millions of customers. Similarly, if poorly designed operations result in habitually serving customers late, a company will eventually lose customers to better-functioning competitors.

In for-profit firms, operations management is concerned with the cost-effective operation and allocation of resources, including people, equipment, materials, and inventory — the stuff you use to provide goods or services for customers — to earn the big bucks and maximize your return on investment. Just look at the annual reports of big successful firms. Some, like Apple, take pride in their operational excellence. In the case of Apple, removing just pennies from the cost of one phone can mean millions of dollars to the bottom line.

In nonprofit organizations, managing resources is also vital. Here, operations management may be concerned

primarily with maximizing a specific metric, such as people served with their limited resources.

Seeing the relevance of operations management

Operations management is a fundamental part of any organization. In fact, Forbes magazine reported that about three quarters of all CEOs came from an operations background. Not all these CEOs studied operations in school; only some of them did. Many majored in finance, marketing, information systems, or engineering and ended up in operations at some point in their careers.

Even if you don't want to be a CEO or ever work in operations, you'll probably have to work with operations people during your career. So consider these facts about the impact of operations on various business functions:

- » **Engineering:** Engineers are notoriously great with numbers and focus. That doesn't always translate to being great with operations. Operations analysis is both quantitative and intuitive, and engineers without operations training can — and do! — waste millions of dollars when tasked to oversee operations. For maximum benefit, you need to evaluate the individual process in the context of the overall system of processes it connects to. So some operations knowledge can help engineers place their analysis of an individual process into an overall context of the operations system.
- » **Finance:** Corporate finance folks exercise oversight over budgets, so having some operations knowledge can help this team make good decisions. For instance, when an operations leader asks for money to *de-bottleneck* a process (check out [Chapter 3](#) for

information on bottlenecks), knowing what this means tells you the intent is to increase the capacity of an existing operation. This almost always makes more economic sense than building a new plant. It also makes it easier to evaluate costs and benefits of the investment. Otherwise, you may suspect it's like spending money to put paint on an old jalopy.

- » **Information technology (IT):** A big part of IT within some companies is to automate operations. Knowing the core principles of operations can help these folks build an operations superhighway instead of paving a cow path. Companies tend to easily accept the traditional way of doing things without question. There's a great temptation to simply automate an existing process with imbedded inefficiencies. Some knowledge of operations may help IT professionals to more effectively partner with operations management people to truly create competitive advantage by improving processes while they automate.
- » **Marketing:** When the marketing folks come up with a new product idea or promotions concept, they need to talk to operations to find out whether it can be produced profitably. If the answer is no — operations managers are sometimes a grumpy lot — persuading them to find a solution may be easier if marketing can speak the language of operations and understand their concerns.

Marketing and operations must also be in sync when planning promotional campaigns. For example, if the marketing campaign increases demand quickly, they may not have enough capacity to meet the demand, which can lead to unhappy customers.