SIXTH EDITION

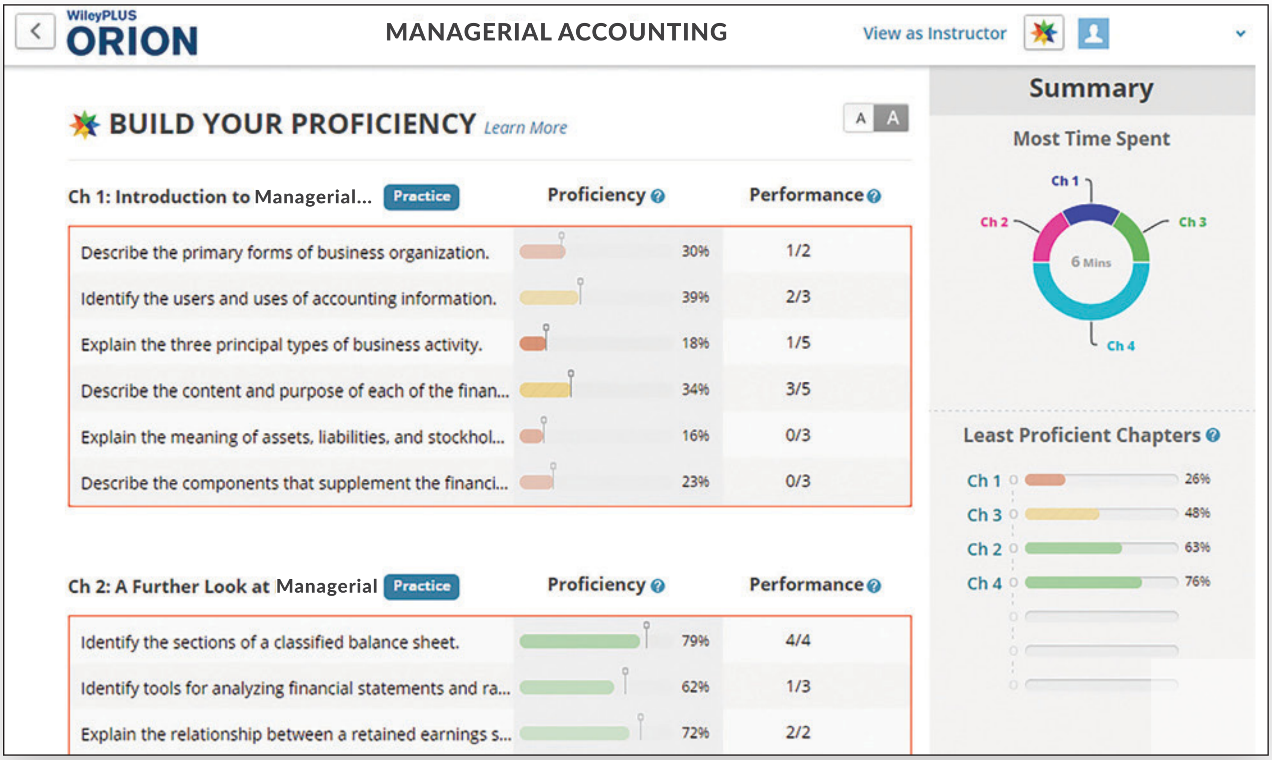
Managerial Accounting

James Jiambalvo

WILEY

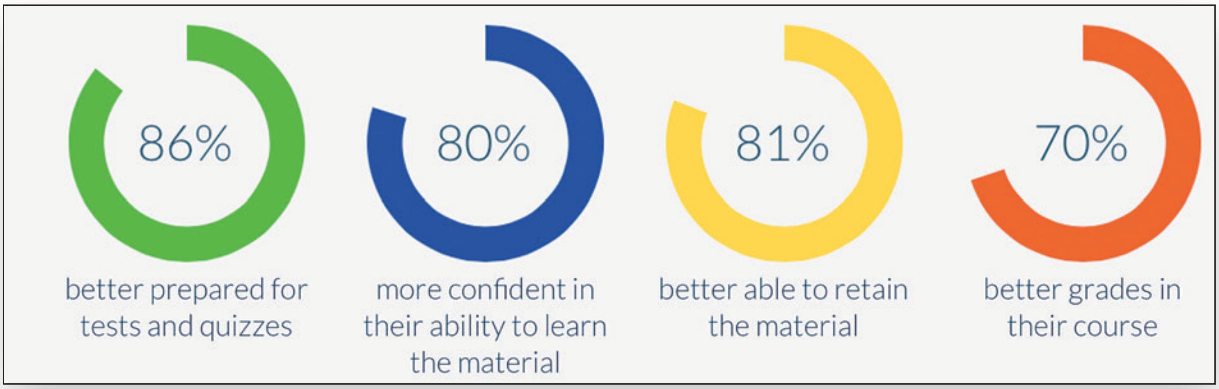
WileyPLUS with ORION

Quickly identify areas of strength and weakness before the first exam, and use the information to build a learning path to success.



A little time with ORION goes a long way.

Based on usage data, students who engage in ORION adaptive practice—just a few minutes per week—get better outcomes. In fact, students who used ORION five or more times over the course of a semester reported the following results:



Managerial Accounting

A Note to Students...

Dear Students of Managerial Accounting,

Managerial Accounting is concerned with using information to effectively plan and control operations and make good business decisions. The overall objective of this book is to provide you with the concepts and tools needed in planning, control, and decision making. I've taught Managerial Accounting for many years, and my former students, many of whom are in senior executive positions, tell me that they've used these concepts and tools throughout their business careers. So, trust me. Work hard in this course, and you will reap major benefits!

In approaching the course, realize that you need to take personal responsibility for your success. Of course your instructor will help you understand the material, but you're the one who must make time to read the material before class and complete all assigned problems and cases. I recommend that you take a three-step approach to the study of each chapter in *Managerial Accounting*:

- First, skim the chapter for a quick overview.
- Second, read the chapter carefully, and pay particular attention to the illustrations. When you're finished, make sure you understand each of the learning objectives.
- Third, enhance and test your knowledge using the materials within *WileyPLUS*.

If at all possible, you should also form a study group with one or two of your classmates. You'll learn a lot from each other, and going over the homework together may actually be fun!

With my best wishes for success,

Jim Jiambalvo

Jim Jiambalvo
Dean and Kirby L. Cramer
Chair in Business Administration
Michael G. Foster School of Business
University of Washington

Sixth Edition

Managerial Accounting

James Jiambalvo

University of Washington

WILEY

To my wife, Cheryl

Vice President & Director	George Hoffman
Executive Editor	Michael McDonald
Associate Development Editor	Rebecca Costantini
Senior Content Manager	Dorothy Sinclair
Production Editor and Media Specialist	Elena Santa Maria
Marketing Manager	Lauren Harrell
Product Design Manager	Allison Morris
Senior Product Designer	Greg Chaput
Design Director	Harry Nolan
Cover and Interior Designer	Maureen Eide
Senior Photo Editor	Mary Ann Price
Cover Photo	Malerapaso/Getty Images, Inc.

This book was set in 10/12 Minion Pro Regular by Aptara, Inc. and printed and bound by Quad Graphics/Versailles. The cover was printed by Quad Graphics/Versailles.

Tape measure icon credit: Image Source/Getty Images

This book is printed on acid free paper.

Founded in 1807, John Wiley & Sons, Inc. has been a valued source of knowledge and understanding for more than 200 years, helping people around the world meet their needs and fulfill their aspirations. Our company is built on a foundation of principles that include responsibility to the communities we serve and where we live and work. In 2008, we launched a Corporate Citizenship Initiative, a global effort to address the environmental, social, economic, and ethical challenges we face in our business. Among the issues we are addressing are carbon impact, paper specifications and procurement, ethical conduct within our business and among our vendors, and community and charitable support. For more information, please visit our website: www.wiley.com/go/citizenship.

BRV: 978-1-119-15801-1
EVAL: 978-1-119-24810-1

The inside back cover will contain printing identification and country of origin if omitted from this page.
In addition, if the ISBN on the back cover differs from the ISBN on this page, the one on the back cover is correct.

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

About the Author

JAMES JIAMBALVO, Dean of the Michael G. Foster School of Business at the University of Washington and Kirby L. Cramer Chair in Business Administration, joined the accounting faculty at Foster after receiving a Ph.D. in accounting from The Ohio State University. A CPA, he has audit experience with the firm of Haskins and Sells (now Deloitte & Touche), and has served on the national academic advisory board of Deloitte & Touche LLP. Dean Jiambalvo has served as chairman of the University of Washington Accounting Department and previously held the PricewaterhouseCoopers and Alumni Endowed Professorship.

Dean Jiambalvo's research has been published in top accounting journals, including *The Accounting Review, Contemporary Accounting Research,* the *Journal of Accounting and Economics*, and the *Journal of Accounting Research*. He is a former associate editor of *The Accounting Review* and has served on the editorial boards of *The Accounting Review, Contemporary Accounting Research,* and the *Journal of Management Accounting Research*.

Dean Jiambalvo has received the Notable Contribution to the Auditing Literature Award, the Burlington Northern Foundation Faculty Achievement Award, the Andrew V. Smith Faculty Development Award, and the Lex N. Gamble Award for Excellence in the Field of E-Commerce. He has also been recognized for his teaching of managerial accounting with the MBA Professor of the Year and Professor of the Quarter awards. He has taught numerous executive education courses, including courses for Alcoa, Boeing, Microsoft, Tyson, and other major firms. He currently serves on the board of Saltchuk Resources.

WHAT'S NEW?

WileyPLUS with ORION

WileyPLUS with ORION is an adaptive study and practice tool that helps students build proficiency in course topics. Over 3,500 new questions are available for practice and review.

Updated Design and Content

A redesigned interior and new learning objective structure help students practice their understanding of concepts before they progress to different topics in other learning objectives. This provides a more organized learning experience.

WileyPLUS Solution Walkthrough Videos

Newly created solution walkthrough videos are available within the eText and as homework assistance. Approximately 50 videos are newly available to the Sixth Edition. The videos serve as guides through homework problems and solutions and review chapter-level concepts.

Additional *WileyPLUS* Practice

Students have more opportunities within *WileyPLUS* to practice questions that are similar to the end-of-chapter content before completing homework.

Revised Excel Templates

New Excel templates offer "What if?" scenarios to help students apply their understanding of Excel and chapter concepts from different perspectives.

Links to Practice

New Links to Practice throughout the textbook have an even stronger focus on engaging, real-world issues.

Preface

This book is intended to drive home the fundamental ideas of managerial accounting and motivate students to actually *want* to study the subject. As you will see, the text has a number of unique features that help accomplish these goals. Based on my teaching experience and from what we have heard from professors using the previous editions, we believe students and professors want a textbook that:

- Recognizes that most students will become managers, not accountants
- Focuses attention on decision making
- Stresses the fact that "You Get What You Measure"
- Motivates students to learn managerial accounting by connecting concepts and techniques to the real world
- Recognizes the growing importance of service businesses
- Is clear, concise (can be covered in one semester), and current
- Provides students with ample opportunities to test their knowledge.

Here's how the sixth edition of *Managerial Accounting* reflects these desires.

Recognizes that most students will become managers, not accountants. Most students of introductory managerial accounting will pursue careers as managers, not accountants. Future managers most likely will not need to know the FIFO approach to process costing or how to calculate four overhead variances—so these and other less essential topics are not covered.

Focuses more attention on decision making. Instructors want their students to be able to solve the types of problems that real managers face. This requires that more emphasis be placed on decision making skills. Accordingly, three of the chapters (Chapters 7, 8, and 10) focus specifically on decision making. Additionally, decision making, and the use of incremental analysis, are discussed in the first chapter and integrated throughout the book. By the time students get to Chapter 7 (The Use of Cost Information in Management Decision Making), they will already have a good understanding of costs that are relevant in making a decision. After reading Chapter 7, working homework problems and discussing the material in class, students will have a greater understanding of decision making!

Stresses the fact that "You Get What You Measure" Senior managers know that performance measures greatly affect how subordinates focus their time and attention. Thus, the subject of performance measurement is of great practical importance. In this book, every chapter makes reference to the critical idea that *You get what you measure*. Chapter 12 has an extensive discussion of performance measures.

Motivates students to learn managerial accounting by connecting concepts and techniques to the real world. Business people often say that they wish they had known how important managerial accounting would have been to their success on the job—they would have studied the subject harder in school! Here, every effort is made to convince students that managerial accounting is of critical importance in the real world. *Link to*

Practice boxes relate the text material to real companies. Additionally, each chapter has cases developed with feedback from managers who attested to their realism and relevance. An often-heard comment: "We had that exact situation at my company!"

Recognizes the growing importance of service businesses. In the last 20 years, employment has shifted from manufacturing to the service sector. Now, more than 75% of all jobs are in the service economy. With this in mind, numerous examples of service companies are in the chapter and end-of-chapter materials.

Clear, concise (can be covered in one semester), and current. According to students and faculty who used the previous editions, a major and much appreciated strength of the text is the clear and concise writing style. Discussions are to the point, ideas are illustrated, and examples are presented to make the ideas concrete. The entire text can be comfortably covered in one semester. Coverage is also up-to-date, including: Theory of Constraints, Economic Value Added, The Balanced Scorecard, Strategy Maps, Activity-Based Costing and Activity-Based Management, Why Budget-Based Compensation Can Encourage Padding and Income-Shifting, etc.

Provides students with ample oppourtunities to test their knowledge. In each chapter, students are presented with a feature called *Test Your Knowledge*. At the end of each chapter, there are two comprehensive review problems as well as several multiple choice problems with solutions. These features allow students to assess their understading of the material as they read through the chapter as well as after they have finished reading the entire chapter. The features also set students up for success in completing end-of-chapter assignments.

WILEYPLUS RESOURCES

WileyPLUS is an innovative, research-based online environment for effective teaching and learning. *WileyPLUS* builds students' confidence because it takes the guesswork out of studying by providing students with a clear roadmap: what to do, how to do it, if they did it right. Students will take more initiative, so you'll have greater impact on their achievement in the classroom and beyond.

Instructor Resources

Solutions Manual

The Solutions Manual provides detailed solutions for all end-of-chapter questions, exercises, problems, and cases.

Test Bank

The Test Bank consists of over 2,000 examination questions and exercises accompanied by solutions. Question types include true-false, multiple choice, completion, exercises, and short-answer.

Instructor's Manual

The Instructor's Manual is a comprehensive resource guide designed to assist professors in preparing lectures and assignments. The manual includes chapter reviews, lecture outlines, assignment classification tables, teaching illustrations, and quizzing exercises.

PowerPoint™ Presentations

PowerPoint™ Presentations contain key concepts and images from the textbook.

Student Resources

Study Guide

The Study Guide is comprised of a chapter review with true-false question, multiple-choice exercises, and problems.

Excel Templates

The Excel Templates help students to complete select end-of-chapter exercises and problems identified by an icon in the margin of the textbook.

Acknowledgments

I am indebted to my academic colleagues and former students for enriching my understanding of managerial accounting. The team at Wiley provided expert help, guidance, and support throughout the publication process. In particular, Michael McDonald, executive editor, made a number of valuable suggestions for improving the sixth edition. Other Wiley staff who contributed to the text and media are: Rebecca Costantini, associate development editor; Allie Morris, product design manager; Greg Chaput, senior product designer; Elena Santa Maria, production editor; Maureen Eide, senior designer; Mary Anne Price, senior photo editor.

Other individuals whose input is greatly appreciated are indicated below.

Ancillary Authors, Proofers, and Accuracy Checkers for the Sixth Edition

LuAnn Bean, *Florida Institute of Technology*; Debby Bloom CMA, *CFM*; Bea Chiang, *The College of New Jersey*; Jill Misuraca, *University of Tampa*; Alice Sineath, *University of Maryland University College*; Diane Tanner, *University of North Florida*; Melanie Yon, *WileyPLUS* developer.

Reviewers

The development of this sixth edition of Managerial Accounting benefited greatly from the comments and suggestions of colleagues who teach managerial accounting. I would like to acknowledge the contributions made by the following individuals:

Stephen Asare, *University of Florida*; LuAnn Bean, *Florida Institute of Technology*; Brenda Bradford, *Missouri Baptist University*; Kurt Fanning, *Grand Valley State University*; Amanda Farmer, *University of Georgia, Athens*; Timothy Foley, *University at Albany*; George Gerner, *University at Albany*; John Giles, *North Carolina State University*; Michael Hammond, *Missouri State University*; Catherine Katagiri, *The College of Saint Rose*; Ethan Kinory, *Baruch College*; Curtis Ksenak, *Saint Joseph's College*; Gary Laycock, *Ivy Tech Community College*; Daniel McGeough, *Mt. San Antonio College*; Christopher McKittrick, *North Carolina State University*; James McKittrick, *University of Portland*; Michael Newman, *University of Houston*; Jorge Romero, *Towson University*; Anwar Salimi, *University of Laverne*; Jason Stanfield, *Purdue University, West Lafayette*; Michael Sweeney, *Hillsdale College*; Diane Tanner, *University of North Florida*; Robin Thomas, *North Carolina State University*; Kim Walker, *Johnson C. Smith University*

Prior Edition Reviewers

Ajay Adhikari, *American University;* Gilda Agacer, *Monmouth University;* Natalie Allen, *Texas A&M University;* Sekhar Anantharaman, *Indiana University of Pennsylvania;* Christie Anderson, *Whitworth College*; Walt Austin, *Mercer College*; Noah Barsky, *Villanova University;* Connie Belden, *Butler Community College*; William Blosel, *California University of Pennsylvania;* Cynthia Bolt, *The Citadel—The Military College of South Carolina*; Nat Briscoe, *Northwestern State University*; Wayne Bremser, *Villanova University;* Ann Brooks, *Central New Mexico Community College*; Carol Brown, *Oregon State University;* Leonor Cabrera, *San Mateo County Community College*; Betty Chavis, *California State University, Fullerton*; Richard Claire, *San Mateo County Community College*; Cheryl Crespi, *Central Connecticut State University;* Terry Dancer, *Arkansas State University*; Carleton Donchess, *Bridgewater State College*; Bob Everett, *Lewis and Clark Community College*; Anthony Fortner, *Carl Albert College*; Cynthia Greeson, *Ivy Tech Community College*; Rosalie Hallbauer, *Florida Memorial University;* Deborah Hanks, *Cardinal Stritch University;* Candice Heino, *Anoka-Ramsey Community College*; Dave Henderson, *College of Charleston*; Carol Hutchinson, *Asheville-Buncombe Technical Community College*; Ron Krug, *Allegony College of Maryland*; D. Jordan Lowe, *Arizona State University;* Steven Markoff, *Montclair State University;* Laurie McWhorter, *Mississippi State University;* Cathy Montesarchio, *Broward Community College*; Carmen Morgan, *Oregon Institute of Technology*; Al Oddo, *Niagara University;* Nick Powers, *Devry University—Chicago;* Denise C. Probert, *Viterbo College*; Dr. Anwar Y. Salimi, *California State University, Pomona*; Betty Saunders, *University of North Florida;* Charles Stanley, *Baylor University;* Sakaran Venkateswar, *Trinity University;* Jeffery Yost, *College of Charleston*; Christian E. Wurst Jr., *Temple University*

Contents

1

MANAGERIAL ACCOUNTING IN THE INFORMATION AGE 2

2

JOB-ORDER COSTING FOR MANUFACTURING AND SERVICE COMPANIES 36

3

PROCESS COSTING 86

4

COST-VOLUME-PROFIT ANALYSIS 122

5

VARIABLE COSTING 174

6

COST ALLOCATION AND ACTIVITY-BASED COSTING 204

7

THE USE OF COST INFORMATION IN MANAGEMENT DECISION MAKING 254

8

PRICING DECISIONS, CUSTOMER PROFITABILITY ANALYSIS, AND ACTIVITY-BASED PRICING 294

9

CAPITAL BUDGETING AND OTHER LONG-RUN DECISIONS 326

10

BUDGETARY PLANNING AND CONTROL 368

11

STANDARD COSTS AND VARIANCE ANALYSIS 414

12

DECENTRALIZATION AND PERFORMANCE EVALUATION 450

Chapters 13 & 14 Available in *WileyPLUS*

13
STATEMENT OF CASH FLOWS 496

14
ANALYZING FINANCIAL STATEMENTS: A MANAGERIAL PERSPECTIVE 530

List of Cases

Each chapter of *Managerial Accounting* includes one or more cases that:

- Promote critical thinking and decision making skills.
- Provide an opportunity for group work and/or written communication work.
- Integrate information from other business disciplines.

CHAPTER 1

1–1: LOCAL 635

A union is disputing "cost of meal" charges to hotel employees.

1–2: BOSWELL PLUMBING PRODUCTS

A senior manager wants to know a product's cost. But the "cost" information needed depends on the decision the senior manager is facing.

CHAPTER 2

2–1: ETHICS CASE: BRIXTON SURGICAL DEVICES

To meet an aggressive earnings target, two senior executives are planning to increase production to "bury" fixed overhead costs in inventory.

2–2: YSL MARKETING RESEARCH

A marketing research firm is considering various costs when bidding on a job.

2–3: DUPAGE POWDER COATING

A company's product costs are being distorted by its approach to overhead allocation.

CHAPTER 3

3–1: TECH-TONIC SPORTS DRINK

A producer of a sports drink is considering alternative treatments for the cost of lost units.

3–2: JENSEN PVC

A company is considering lowering prices to increase sales and reduce unit costs by making better use of excess capacity.

CHAPTER 4

4–1: ROTHMUELLER MUSEUM

A curator at a museum is trying to estimate the financial impact of a planned exhibit.

4–2: MAYFIELD SOFTWARE, CUSTOMER TRAINING

The customer training facility of a software company is showing a loss. The manager needs to determine the number of classes that must be offered to break even.

4–3: KROG'S METALFAB, INC.

A company is estimating the lost profit related to fire damage so it can submit an insurance claim.

CHAPTER 5

5–1: MICROIMAGE TECHNOLOGY, INC.

A start-up company has a negative gross margin and it appears that "the more it sells, the more it loses." Use of variable costing reveals that this is not the case.

5–2: RAINRULER STAINS

A variable-costing income statement is used to show the financial impact of sales related to a new customer category.

CHAPTER 6

6–1: EASTSIDE MEDICAL TESTING

This case presents a service company example of ABC.

6–2: QuantumTM

This case shows how ABC affects product costs and considers the use of ABC information in decision making.

CHAPTER 7

7–1: PRIMUS CONSULTING GROUP

A consulting firm is considering a client offer of a fee that is less than standard rates.

7–2: FIVE STAR TOOLS

A tool manufacturer is faced with a production constraint, and needs to consider the financial impact of a plan to deal with the situation.

CHAPTER 8

8–1: PRESTON CONCRETE

The company is considering moving away from its cost-plus pricing approach when an increase in interest rates reduces housing starts and the demand for concrete.

8–2: GALLOWAY UNIVERSITY MEDICAL CENTER PHARMACY

A university hospital pharmacy is considering the profit implications of alternative approaches to encouraging prescription renewals from "out-of-area" patients.

CHAPTER 9

9–1: ETHICS CASE: JUNIPER PACKAGING SOLUTIONS

A plant manager is considering a plan to circumvent a freeze on capital expenditures.

9–2: SERGO GAMES

A game company is considering outsourcing manufacturing of CDs.

CHAPTER 10

10–1: ETHICS CASE: COLUMBUS PARK—WASTE TREATMENT FACILITY

The manager of a waste treatment facility is planning to pad costs in her budget because the city controller is likely to cut whatever budget is submitted.

10–2: ABRUZZI OLIVE OIL COMPANY
A small producer of olive oil is preparing production budgets to consider the impact of various sales levels. (Note that this case is best "solved" using a spreadsheet.)

CHAPTER 11

11–1: JACKSON SOUND
Work in process inventory is building up at Jackson Sound even though the company has a JIT system.

11–2: CHAMPION INDUSTRIES
A purchasing manager is considering a material that has a price higher than standard, but also a number of desirable properties.

CHAPTER 12

12–1: HOME VALUE STORES
A company that operates membership warehouse stores is evaluating using EVA.

12–2: WIN TECH MOTORS
Owners of a sports and luxury auto dealership are faced with negative EVA and must cut their investment in inventory.

For Cases in Chapters 13 and 14 go to www.wiley.com/college/jiambalvo

CHAPTER 13

13–1: WELLCOMP COMPUTERS
A computer company is considering the impact of a price reduction on cash flow.

CHAPTER 14

14–1: JORDAN-WILLIAMS, INCORPORATED
A publisher of college textbooks is evaluating the financial condition of a potential business partner.

1

MANAGERIAL ACCOUNTING IN THE INFORMATION AGE

What type of job will you hold in the future?

You may be a marketing manager for a consumer electronics firm, you may be the director of human resources for a biotech firm, or you may be the president of your own company. In these and other managerial positions you will have to plan operations, evaluate subordinates, and make a variety of decisions using accounting information. In some cases, you will find information from your firm's balance sheet, income statement, statement of retained earnings, and statement of cash flows to be useful. However, much of the information in these statements is more relevant to *external* users of accounting information, such as stockholders and creditors. In addition, you will need information prepared specifically for firm managers, the *internal* users of accounting information. This type of information is referred to as managerial accounting information.

If you are like most users of this book, you have already studied financial accounting. Financial accounting stresses accounting concepts and procedures that relate to preparing reports for external users of accounting information. In comparison, **managerial accounting** stresses accounting concepts and procedures that are relevant to preparing reports for internal users of accounting information. This book is devoted to the subject of managerial accounting, and this first chapter provides an overview of the role of managerial accounting in planning, control, and decision making. The chapter also defines important cost concepts and introduces key ideas that will be emphasized throughout the text. The chapter ends with a discussion of the information age and the impact of information technology on business, a framework for ethical decision making, and the role of the controller as the top management accountant. Note that you can enhance and test your knowledge of the chapter using Wiley's online resources and the self-assessment quiz at the end of the chapter. The end-of-chapter material also includes two solved review problems.

Monkey Business Images/Shutterstock

LEARNING OBJECTIVES

1. Explain the primary goal of managerial accounting and distinguish between financial and managerial accounting.
2. Define cost terms used in planning, control, and decision making.
3. Explain the two key ideas in managerial accounting.
4. Discuss the impact of information technology on business processes and the interactions companies have with suppliers and customers.
5. Describe a framework for ethical decision making and discuss the duties of the controller.

LEARNING OBJECTIVE 1

Explain the primary goal of managerial accounting and distinguish between financial and managerial accounting.

GOAL OF MANAGERIAL ACCOUNTING

Virtually all managers need to plan and control their operations and make a variety of decisions. The goal of managerial accounting is to provide the information they need for **planning, control**, and **decision making**. If *your* goal is to be an effective manager, a thorough understanding of managerial accounting is essential.

Planning

Planning is a key activity for all companies. A plan communicates a company's goals to employees aiding coordination of various functions, such as sales and production. A plan also specifies the resources needed to achieve company goals.

Budgets for Planning. The financial plans prepared by managerial accountants are referred to as **budgets**. A wide variety of budgets may be prepared. For example, a *profit budget* indicates planned income, a *cash-flow budget* indicates planned cash inflows and outflows, and a *production budget* indicates the planned quantity of production and the expected costs.

Consider the production cost budget for the Surge Performance Beverage Company. In the coming year, the company plans to produce 5,000,000 12-ounce bottles of beverage. This amount is based on forecasted sales. To produce this volume, the company estimates it will spend $1,500,000 on bottles, $400,000 on ingredients, $150,000 on water, and pay workers at its bottling plant $300,000. It also expects to pay $60,000 for rent, incur $80,000 of depreciation of equipment, and pay $100,000 for other miscellaneous costs. The production cost budget presented in Illustration 1-1 summarizes this information. This budget informs the managers of Surge about how many bottles the company intends to produce and what the necessary resources will cost.

Control

Control of organizations is achieved by evaluating the performance of *managers* and the *operations* for which they are responsible. The distinction between evaluating managers and evaluating the operations they control is important. Managers are evaluated to determine how their performance should be rewarded or punished, which in turn motivates them to perform at a high level. Based on an evaluation indicating good performance, a manager might receive a substantial bonus. An evaluation indicating a manager performed poorly might lead to the manager being fired. In part because evaluations of managers are typically tied to compensation and promotion opportunities, managers work hard to ensure that they will receive favorable evaluations. (Of course, managers

ILLUSTRATION 1-1

Production cost budget

SURGE PERFORMANCE BEVERAGE COMPANY

Budgeted Production Costs
For the Year Ended December 31, 2017

Budgeted Production	**5,000,000 Bottles**
Cost of bottles	$1,500,000
Ingredient cost	400,000
Water	150,000
Labor cost	300,000
Rent	60,000
Depreciation	80,000
Other	100,000
Total budgeted production cost	$2,590,000

may also work hard because they love their jobs, receive respect from coworkers, or value the sense of accomplishment from a job well done!)

Operations are evaluated to provide information as to whether they should be changed or not (i.e., expanded, contracted, or modified in some way). An evaluation of an operation can be negative even when the evaluation of the manager responsible for the operation is basically positive. For example, the manager of one of the two bottling plants at Surge Performance Beverage Company may do a good job of controlling costs and meeting deadlines, given that the plant is old and out-of-date. Still, senior management may decide to close the plant because, given the outdated equipment in the plant, it is not an efficient operation. In this scenario, the manager receives a positive evaluation whereas the operation receives a negative evaluation.

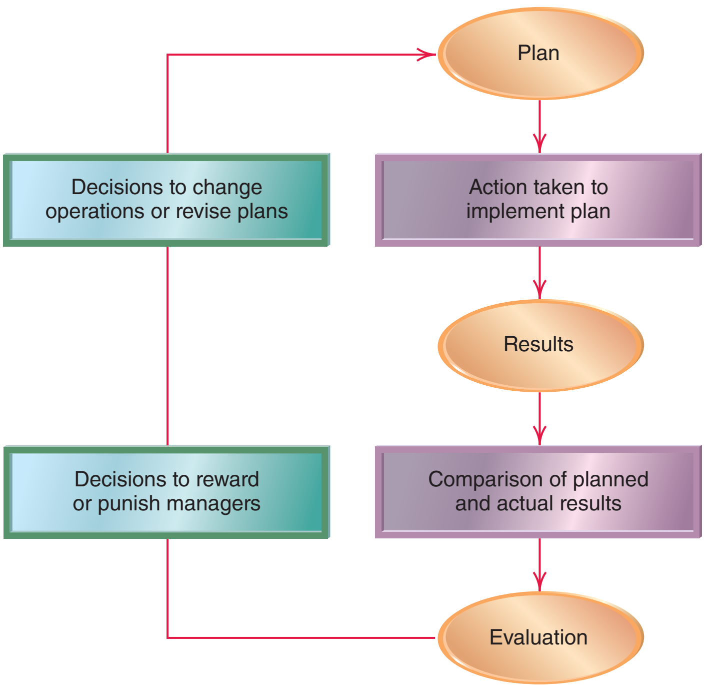
Company plans often play an important role in the control process. Managers can compare actual results with planned results and decide whether corrective action is necessary. If actual results differ from the plan, the plan may not have been followed properly; the plan may have not have been well thought out; or changing circumstances may have made the plan out-of-date.

Illustration 1-2 presents the major steps in the planning and control process. Once a plan has been made, actions are taken to implement it. These actions lead to results that are compared with the original plan. Based on this evaluation, managers are rewarded (e.g., given substantial bonuses or promoted if performance is judged to be good) or punished (e.g., given only a small bonus, given no bonus, or even fired if performance is judged to be poor). Also, based on the evaluation process, operations may be changed. Changes may consist of expanding (e.g., adding a second shift), contracting (e.g., closing a production plant), or improving operations (e.g., training employees to do a better job answering customer product inquiries). Changes may also consist of revising an unrealistic plan.

Performance Reports for Control. The reports used to evaluate the performance of managers and the operations they control are referred to as **performance reports**. Although there is no generally accepted method of preparing a performance report, such reports frequently involve a comparison of current-period performance with performance in a prior period or with planned (budgeted) performance.

ILLUSTRATION 1-2

Planning and control process



Suppose, for example, that during 2017, Surge Performance Beverage Company actually produced 5,000,000 bottles and incurred these costs:

Cost of bottles	$1,650,000
Ingredient cost	450,000
Water	152,000
Labor cost	295,000
Rent	60,000
Depreciation	80,000
Other	101,000
Total actual production cost	$2,788,000

A performance report comparing these actual costs to the budgeted costs is presented in Illustration 1-3.

Typically, performance reports only suggest areas that should be investigated; they do not provide definitive information on performance. For example, the performance report presented in Illustration 1-3 indicates that something may be amiss in the control of bottle and ingredient cost. Actual costs are $150,000 more than planned for bottles and $50,000 more than planned for ingredients. There are many possible reasons why these costs are greater than the amounts budgeted. Perhaps the price of bottles or key ingredients increased, or perhaps bottles were damaged in the production process. Management must investigate these possibilities before taking appropriate corrective action.

Although performance reports may not provide definitive answers, they are still extremely useful. Managers can use them to flag areas that need closer attention and to avoid areas that are under control. It would not seem necessary, for example, to investigate labor, rent, depreciation, or other costs, because these costs are either equal to or relatively close to the planned level of cost. Typically, managers follow the principle of **management by exception** when using performance reports. This means that managers investigate departures from the plan that appear to be exceptional; they do not investigate minor departures from the plan.

Decision Making

As indicated in Illustration 1-2, decision making is an integral part of the planning and control process—decisions are made to reward or punish managers, and decisions are

ILLUSTRATION 1-3
Performance report

SURGE PERFORMANCE BEVERAGE COMPANY

Performance Report, Production Costs
For the Year December 31, 2017

	Actual	Budget	Difference (Actual Minus Budget)
Production (number of bottles)	5,000,000	5,000,000	-0-
Cost of bottles	$1,650,000	$1,500,000	$150,000*
Ingredient cost	450,000	400,000	50,000*
Water	152,000	150,000	2,000
Labor cost	295,000	300,000	(5,000)
Rent	60,000	60,000	-0-
Depreciation	80,000	80,000	-0-
Other	101,000	100,000	1,000
Total production cost	$2,788,000	$2,590,000	$ 198,000

*Red numbers indicate differences deemed deserving of investigation.

made to change operations or revise plans. Should a firm add a new product? Should it drop an existing product? Should it manufacture a component used in assembling its major product or contract with another company to produce the component? What price should a firm charge for a new product? These questions indicate just a few of the key decisions that confront companies. How well they make these decisions will determine future profitability and, possibly, the survival of the company. Recognizing the importance of making good decisions, we devote all of Chapters 7, 8, and 9 to the topic. Below you'll see that one of the two key ideas of managerial accounting relates to decision making and its focus on so-called incremental analysis. Finally, at the end of each chapter, there is a feature called Making Business Decisions. This feature will remind you of how the chapter material is linked to decision making, and it will summarize the knowledge and skills presented in the chapter that will help you make good decisions as a manager.

TEST YOUR **KNOWLEDGE**

With respect to managerial accounting, which of the following statements are valid?

a. Budgets are used for planning.
b. Performance reports are used for control.
c. A goal of managerial accounting is to provide information useful in decision making.
d. All of the above are valid statements.

Correct answer is d.

A Comparison of Managerial and Financial Accounting

As suggested in the opening of this chapter, there are important differences between managerial and financial accounting:

1. Managerial accounting is directed at internal rather than external users of accounting information.
2. Managerial accounting may deviate from generally accepted accounting principles (GAAP).
3. Managerial accounting may present more detailed information.
4. Managerial accounting may present more nonmonetary information.
5. Managerial accounting places more emphasis on the future.

Internal versus External Users. Financial accounting is aimed primarily at external users of accounting information, whereas managerial accounting is aimed primarily at internal users (i.e., company managers). External users include investors, creditors, and government agencies, which need information to make investment, lending, and regulatory decisions. Their information needs differ from those of internal users, who need information for planning, control, and decision making.

Need to Use GAAP. Much of financial accounting information is required. The Securities and Exchange Commission (SEC) requires large, publicly traded companies to prepare reports in accordance with generally accepted accounting principles (GAAP). Even companies that are not under the jurisdiction of the SEC prepare financial accounting information in accordance with GAAP to satisfy creditors. Managerial accounting, however, is completely optional. It stresses information that is *useful* to internal managers for planning, control, and decision making. If a company believes that deviating from GAAP will provide more useful information to managers, GAAP need not be followed.

Detail of Information. Financial accounting presents information in a highly summarized form. Net income, for example, is presented for the company as a whole. To run a company, however, managers need more detailed information; for example, information about the cost of operating individual departments versus the cost of operating the company as a whole or sales broken out by product versus total company sales.

Emphasis on Nonmonetary Information. Both managerial and financial accounting reports generally contain monetary information (information expressed in dollars, such as revenue and expense). But managerial accounting reports often contain a substantial amount of additional nonmonetary information. The quantity of material consumed in production, the average time taken to process a customer service call, and the number of product defects are examples of important nonmonetary data that appear in managerial accounting reports.

Emphasis on the Future. Financial accounting is primarily concerned with presenting the results of past transactions. Managerial accounting, however, places considerable emphasis on the future. As indicated previously, one of the primary purposes of managerial accounting is planning. Thus, managerial accounting information often involves estimates of the costs and benefits of future transactions.

Similarities between Financial and Managerial Accounting

We should not overstate the differences between financial accounting and managerial accounting in terms of their respective user groups. Financial accounting reports are aimed *primarily* at external users, and managerial accounting reports are aimed *primarily* at internal users. However, managers also make significant use of financial accounting reports, and external users occasionally request financial information that is generally considered appropriate for internal users. For example, creditors may ask management to provide them with detailed cash-flow projections.

TEST YOUR **KNOWLEDGE**

Which of the following is **false?**

a. Compared to financial accounting, managerial accounting places more emphasis on generally accepted accounting principles (GAAP).

b. Compared to financial accounting, managerial accounting may present more nonmonetary information.

c. Compared to financial accounting, managerial accounting places more emphasis on the future.

d. Compared to financial accounting, managerial accounting may present more detailed information.

Correct answer is a.

LEARNING OBJECTIVE 2

Define cost terms used in planning, control, and decision making.

COST TERMS USED IN DISCUSSING PLANNING, CONTROL, AND DECISION MAKING

When managers discuss planning, control, and decision making, they frequently use the word *cost*. Unfortunately, what they mean by this word is often ambiguous. This section defines key cost terms so that you will have the accounting vocabulary necessary to begin discussing issues related to planning, control, and decision making. The treatment will be brief because we will return to these cost terms and examine them in detail in later chapters.

Variable and Fixed Costs

The classification of a cost as variable or fixed depends on how the cost changes in relation to changes in the level of business activity.

Variable Costs. Costs that increase or decrease in proportion to increases or decreases in the level of business activity are **variable costs**. Material and direct labor are generally considered to be variable costs because in many situations they fluctuate in proportion to changes in production (business activity). Suppose that for Surge Performance Beverage Company, the cost of bottles, ingredients, water, and labor are variable costs and in the prior month, when production was 400,000 bottles, costs were $120,000 for bottles, $32,000 for ingredients, $12,000 for water, and $24,000 for labor. How much variable cost should the company plan on for the current month if production is expected to increase by 20 percent, to 480,000 bottles? Since the variable costs change in proportion to changes in activity, if production increases by 20 percent, these costs should also increase by 20 percent. Thus, the cost of bottles should increase to $144,000, the cost of ingredients should increase to $38,400, the cost of water to $14,400, and the cost of labor to $28,800.

	PRIOR MONTH		CURRENT MONTH	
Production	400,000 Bottles	Per Unit	480,000 Bottles	Per Unit
Variable costs:				
Cost of bottles	$120,000	$0.30	$144,000	$0.30
Ingredient cost	32,000	0.08	38,400	0.08
Water	12,000	0.03	14,400	0.03
Labor cost	24,000	0.06	28,800	0.06
Total variable cost	$188,000	$0.47	$225,600	$0.47

Note that although the *total variable cost* increases from $188,000 to $225,600 when production changes from 400,000 to 480,000 units, the *variable cost per unit* does not change. It remains $0.47 per bottle. With variable cost of $0.47 per bottle, variable cost increases by $37,600 (i.e., $0.47 × 80,000) when production increases by 80,000 bottles.

Fixed Costs. Costs that remain constant when there are changes in the level of business activity are **fixed costs**. Depreciation and rent are costs that typically do not change with changes in business activity. Suppose that in the prior month, Surge Performance Beverage Company incurred $20,000 of fixed costs including $5,000 of rent, $6,667 of depreciation, and $8,333 of other miscellaneous fixed costs. If the company increases production to 480,000 bottles in the current month, the levels of rent, depreciation, and other fixed costs incurred should remain the same as when production was only 400,000 bottles. However, with fixed costs, the cost per unit does change when there are changes in production. When production increases, the constant amount of fixed cost is spread over a larger number of units. This drives down the fixed cost per unit. With an increase in production from 400,000 to 480,000 units, *total fixed costs* remains at $20,000. Note, however, that *fixed cost per unit* decreases from $0.0500 per unit to $0.0417 per unit.