# Managerial Accounting

FOURTH EDITION

Mc Graw Hill Education

Whitecotton | Libby | Phillips

Fourth Edition

# Managerial ACCOUNTING

**STACEY WHITECOTTON**
Arizona State University

**ROBERT LIBBY**
Cornell University

**FRED PHILLIPS**
University of Saskatchewan

McGraw Hill Education

MANAGERIAL ACCOUNTING, FOURTH EDITION

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# Dedication

To Mark, Riley, and Carley! Thanks for your love, patience, and inspiration.
**STACEY WHITECOTTON**

Laura Libby and Brian Plummer, Oscar and Selma Libby.
**ROBERT LIBBY**

I dedicate this book to the best teachers I've ever had: my Mom and Dad, Barb, Harrison, and Daniel.
**FRED PHILLIPS**

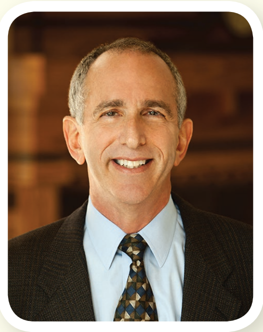
# Meet the Authors

## Stacey Whitecotton

Stacey Whitecotton is an associate professor of accounting in the W. P. Carey School of Business at Arizona State University. She received her PhD and Masters of Accounting from The University of Oklahoma and her Bachelors in Business Administration from Texas Tech University. Stacey teaches managerial accounting and has received numerous awards for outstanding teaching at the undergraduate and graduate level.

Stacey's research interests center around the use of decision aids to improve the decision-making behavior of financial analysts, managers, and auditors. Her research has been published in *The Accounting Review, Organizational Behavior and Human Decision Processes, Behavioral Research in Accounting, Auditing: A Journal of Practice and Theory,* and *The Journal of Behavioral Decision Making.*

Stacey and her husband Mark enjoy traveling and the many outdoor activities Arizona has to offer with their two children, Riley and Carley.



## Robert Libby

Robert Libby is the David A. Thomas Professor of Accounting and Accounting Area Coordinator at Cornell University, where he teaches the introductory financial accounting course. He previously taught at the University of Illinois, Pennsylvania State University, the University of Texas at Austin, the University of Chicago, and the University of Michigan. He received his BS from Pennsylvania State University, where he was selected as the 2018 Outstanding Accounting Alumnus, and his MAS and PhD from the University of Illinois; he also completed the CPA exam (Illinois).

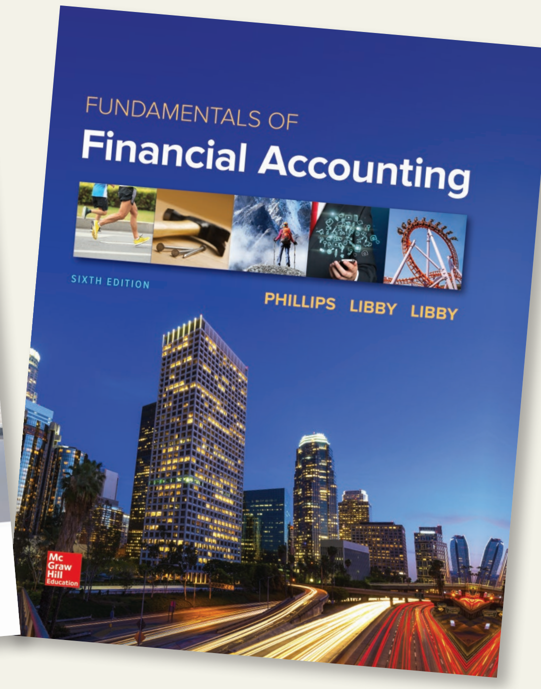
Bob was selected as the AAA Outstanding Educator in 2000 and received the AAA Outstanding Service Award in 2006 and the AAA Notable Contributions to the Literature Award in 1985 and 1996. He has received the Core Faculty Teaching Award multiple times at Cornell. Bob is a widely published author and researcher specializing in behavioral accounting. He has published numerous articles in *The Accounting Review; Journal of Accounting Research; Accounting, Organizations, and Society;* and other accounting journals. He has held a variety of offices, including vice president, in the American Accounting Association, and he is a member of the American Institute of CPAs.

## Fred Phillips

Fred Phillips is a professor at the University of Saskatchewan, where he has taught introductory financial accounting for more than 20 years. He also has taught introductory accounting at the University of Texas at Austin and the University of Manitoba. He previously worked as an audit manager at KPMG. Fred holds an undergraduate business degree in accounting, and earned a PhD in accounting from the University of Texas at Austin. He is a non-practicing CPA, CA (in Canada).

Fred's main career interest is accounting education. He has been recognized with more than 30 awards, as chosen by his students and peers. His peer-reviewed publications include education-focused research and instructional cases in *Issues in Accounting Education,* as well as professional judgment studies in the *Journal of Accounting Research* and *Organizational Behavior and Human Decision Processes,* among others. He is a current member of the Teaching, Curriculum, & Learning and Two-Year College sections of the American Accounting Association. In his spare time, Fred is a Tennis Canada official, calling lines at ATP, WTA, and ITF matches.

# Preparing Students for Success in Business


**From the award-winning, market-leading Libby/Phillips author team** comes a modern, relevant, and engaging textbook for today's managerial accounting student. Whitecotton/Libby/Phillips *Managerial Accounting* brings lively and engaging coverage of managerial accounting topics and decision-making focus to the managerial accounting course. Pair *Managerial Accounting* with Phillips/Libby/Libby *Fundamentals of Financial Accounting,* 6e, to provide a truly comprehensive solution to your students.


McGraw-Hill Education/Jill Braaten, photographer

Chapters 5 & 6 Focus Company: Starbucks Coffee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Chapters 7 Focus Company: IKEA


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Chapters 10 & 11 Focus Company: Apple

# *Managerial Accounting* by Whitecotton/Libby/Phillips

This text prepares students for success in business by incorporating four key components that will motivate and guide them through managerial accounting and beyond:

### 1 Managerial accounting builds student interest

Managerial accounting instructors face significant challenges; how to engage students in the managerial accounting course, how to keep them motivated throughout the course, and how to teach them accounting in a way that connects conceptual understanding to the real world. ***Managerial Accounting* engages and motivates students by presenting accounting in the context of recognizable companies such as Starbucks, Toyota, Levi Strauss & Company, and Apple,** and then integrates those companies throughout the chapter discussions.

### 2 Managerial accounting fosters decision making and analytical skills

Most students taking managerial accounting will not become accounting majors and accountants; instead, they will use accounting information in their professional lives to make business decisions. ***Managerial Accounting* shows students how managers use accounting information to make business decisions in companies they know from their everyday lives.** This approach helps students develop the analytical and critical thinking skills they will need to succeed in their future careers.

### 3 Managerial accounting helps students become better problem solvers

**Students' problem solving skills are put to the test through robust end of chapter content.** Additionally, Demonstration Cases and Skills Development Cases provide students with an opportunity to practice their comprehension and understanding of the material.

### 4 Managerial accounting uses technology to enhance student learning

Today's students have diverse learning styles and numerous commitments. They want technology supplements that will help them study more efficiently and effectively. **McGraw-Hill Connect, which includes adaptive and interactive study features such as SmartBook, Concept Overview Videos, Auto-Graded Excel Simulations, and Guided Examples, as well as a repository of additional resources tied directly to *Managerial Accounting*,** will improve students' engagement in and out of class, help them maximize their study time, and make their learning experience more enjoyable.

"*I would describe Whitecotton as the **best introductory managerial textbook that I have used,** because of its writing style, its inclusion of only relevant material, its choice of focus companies that students easily relate to, and the common sense manner in which the material is explained*

*—Laura Ilcisin, University of Nebraska at Omaha*

*This is one of the **best textbooks for the introductory managerial accounting course.** The book covers all of the relevant topics for this course and is extremely well organized. Each chapter begins with solid learning objectives linked to the text and uses a focus company, which relates to the students, to illustrate the concepts of the chapter.*"

*—Ronald O. Reed, University of Northern Colorado*

# Engaging Features and Relevant Pedagogy

> *One of the **greatest strengths** of Whitecotton is the **focus companies.** The utilization of these companies allows students to connect managerial accounting concepts to real-world enterprises.*
>
> *—Tal Kroll, Ozarks Technical Community College*

> *This is a freshly written managerial accounting textbook. It addresses a complete range of managerial accounting topics critical to today's business environment. The language is as easy to understand as the discussion is in depth. **I would definitely recommend [this book] to my colleagues** as a good choice for the course.*
>
> *—Ronald Zhao, Monmouth University*

***Managerial Accounting*** has a variety of features that complement the way you teach and the way today's students learn. From study tips and advice to guide students through difficult topics to clear and relevant examples, each chapter offers students the tools they need to succeed.

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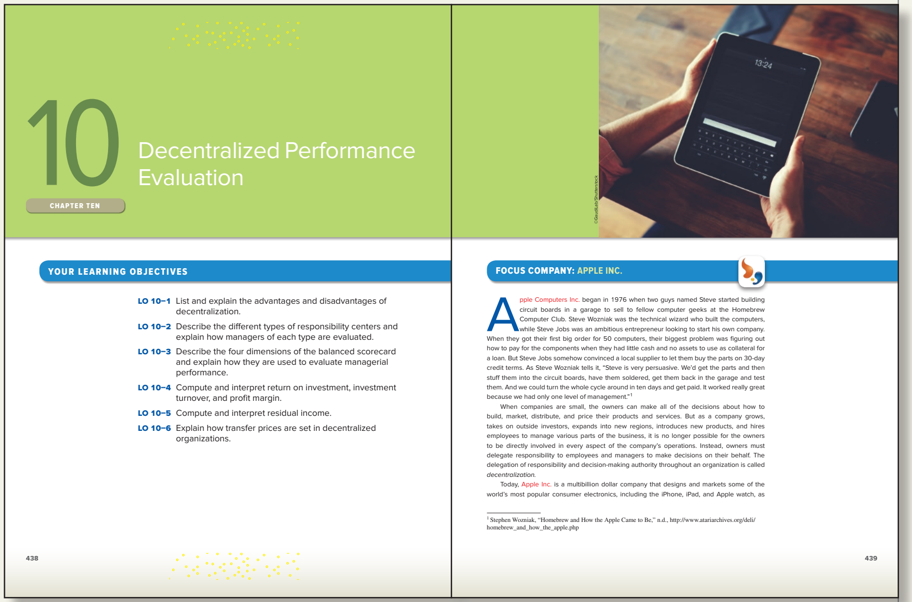
Chapter 4 Focus Company: Toyota

©SumanBhaumik/Shutterstock

Chapters 8 & 9 Focus Company: Levi Strauss & Co.

## Chapter Openers—Focus Companies

Each chapter of *Managerial Accounting* opens with an engaging scenario or story using a familiar company. The same focus company is used throughout the entire chapter so that students can see how the concepts and calculations apply to a real-world company they are already familiar with.



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CHAPTER TEN

Decentralized Performance Evaluation

YOUR LEARNING OBJECTIVES

LO 10–1 List and explain the advantages and disadvantages of decentralization.

LO 10–2 Describe the different types of responsibility centers and explain how managers of each type are evaluated.

LO 10–3 Describe the four dimensions of the balanced scorecard and explain how they are used to evaluate managerial performance.

LO 10–4 Compute and interpret return on investment, investment turnover, and profit margin.

LO 10–5 Compute and interpret residual income.

LO 10–6 Explain how transfer prices are set in decentralized organizations.

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FOCUS COMPANY: APPLE INC.

Apple Computers Inc. began in 1976 when two guys named Steve started building circuit boards in a garage to sell to fellow computer geeks at the Homebrew Computer Club. Steve Wozniak was the technical wizard who built the computers, while Steve Jobs was an ambitious entrepreneur looking to start his own company. When they got their first big order for 50 computers, their biggest problem was figuring out how to pay for the components when they had little cash and no assets to use as collateral for a loan. But Steve Jobs somehow convinced a local supplier to let them buy the parts on 30-day credit terms. As Steve Wozniak tells it, "Steve is very persuasive. We'd get the parts and then stuff them into the circuit boards, have them soldered, get them back in the garage and test them. And we could turn the whole cycle around in ten days and get paid. It worked really great because we had only one level of management."[1]

When companies are small, the owners can make all of the decisions about how to build, market, distribute, and price their products and services. But as a company grows, takes on outside investors, expands into new regions, introduces new products, and hires employees to manage various parts of the business, it is no longer possible for the owners to be directly involved in every aspect of the company's operations. Instead, owners must delegate responsibility to employees and managers to make decisions on their behalf. The delegation of responsibility and decision-making authority throughout an organization is called *decentralization.*

Today, Apple Inc. is a multibillion dollar company that designs and markets some of the world's most popular consumer electronics, including the iPhone, iPad, and Apple watch, as

[1] Stephen Wozniak, "Homebrew and How the Apple Came to Be," n.d., http://www.atariarchives.org/deli/homebrew_and_how_the_apple.php

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# Bring Managerial Accounting Content to Life

## How's It Going? Self-Study Practice

Research shows that students learn best when they actively engage in the learning process. Self-Study Practice quizzes ask students to pause at critical points throughout each chapter to ensure they understand the material presented before moving ahead.

How's it going? Self-Study Practice

1. Which of the following statements best describes the difference between financial accounting and managerial accounting?
   a. Managerial accounting targets external stakeholders while financial accounting targets individuals within the company.
   b. Financial accounting relies more on subjective, future-oriented information than managerial accounting does.
   c. A major focus of managerial accounting is the preparation of the income statement, while a major focus of financial accounting is the preparation of the budget.
   d. Managerial accounting tends to focus on relevant, subjective, and future-oriented information while financial accounting relies primarily on objective, reliable, and historical information.
2. Which of the following statement(s) regarding the key management functions is true?
   a. Planning involves setting long-term objectives and the short-term tactics necessary to achieve those objectives.
   b. Implementing involves comparing actual results to planned objectives and making adjustments as necessary.
   c. Controlling includes all of the operational decisions made to implement the plan.
   d. All of the statements are true.

*After you have finished, check your answers against the solutions in the margin.*

*The best way to know whether you are reading the chapter carefully enough is to see how well you do on a short exercise. Therefore, at important points throughout each chapter, you will find an exercise that will reinforce the concepts you have just learned and provide feedback on how well you learned them. We urge you not to skip these practices. When you are finished, check your answers against the solution below in the margin.*

Solution to Self-Study Practice
1. d
2. a

as a wholesaler and then expanded into the retail market. Other well-known retailers include Walmart, Macy's, Bed Bath & Beyond, and Safeway.

- **Service companies** provide a service to customers or clients. A few well-known service providers are Hilton Hotels, Southwest Airlines, Expedia.com, and Federal Express. Many small businesses provide services to consumers and other businesses, including hair salons, law firms, architects, and home repair specialists.

## Coach's Tips

Every student needs encouragement and Coach's Tips are just one of the ways *Managerial Accounting* fulfills that need. Coach's Tips appear throughout the text offering tips, advice, and suggestions about how to learn the key concepts.

## Spotlight Features

Each chapter includes Spotlight features focusing on important concepts, such as decision making or ethics. These features are designed to further engage students and provide instructors with material for in-class discussion. **New** to this edition are **Big Data and Analytics** features that highlight how big data and analytics can affect how managers make decisions.

SPOTLIGHT ON **Sustainability**

While sustainability is most often associated with environmental initiatives, the triple bottom line should measure performance in three areas: economic (profit), environment (planet), and society (people). The third pillar (people) is often overlooked, but a truly sustainable business strategy should make social issues a priority as well.

Toyota's sustainability strategy also includes measures of social impact, including the well-being of its employees and the surrounding communities in which the company operates. Toyota's people-focused sustainability initiatives include the following goals:

- Ensuring employee safety and well-being, including workplace safety and physical and mental health programs.
- Development of human resources through education, on-the-job-training, and programs to develop and promote local personnel.
- Fostering an environment of diversity and inclusion by increasing opportunities for women in the workforce and programs to help employees achieve an appropriate work/life balance.
- Creating a positive work environment, including programs to increase employee loyalty and a culture of teamwork through communication and friendly competition.

Toyota keeps track of various metrics to gauge performance toward all of these goals, just as they track measures of economic performance and environmental impact. These measures are reported in Toyota's annual corporate social responsibility (CSR) report and on the company website. Refer to Skills Development Case 4–5 for more details on how Toyota measures performance in all areas of sustainability (economic, environmental, and social).

www.toyota-global.com/sustainability/society/employees/#approach03

- **Spotlight on Decision Making**—Good decision making is essential in business, whether you are preparing, using, or analyzing accounting information. Spotlight on Decision Making features use real-world examples to illustrate the relevance of accounting to decision making.
- **Spotlight on Ethics**—Making ethical business decisions is more crucial than ever. Spotlight on Ethics features convey the importance of acting responsibly in business.
- **Spotlight on Service**—The majority of today's students will graduate prepared to take a job in the country's ever-growing service sector. Spotlight on Service features describe how key managerial accounting topics are applied in service settings.
- **Spotlight on Sustainability**—Sustainability is a growing area of concern for businesses. Spotlight on Sustainability features describe how and why managers in modern organizations make decisions based on more than economic results, including measures of environmental performance and societal impact.
- **Spotlight on Big Data Analytics**—A topic that is becoming increasingly important to managers and accountants is the use of big data and analytics to help managers make more informed business decisions. At opportune places throughout this text we will highlight how managers in our focus company or other real-world organizations use big data and analytics to make managerial decisions.

# Review and Practice Material Build a

Each chapter of *Managerial Accounting* is followed by an extensive variety of end-of-chapter material that examines and integrates concepts presented in the chapter.

> ***The text is very well written and makes many of the difficult concepts accessible to students. . . . The end of chapter material is also written at several levels and allows the instructor to mix and match learning objectives and difficulty levels to create challenging but informative assignments.***
>
> *—Kristian Mortenson, Oregon State University*

## Demonstration Case

End-of-chapter review material begins with a demonstration case that provides another self-study opportunity for students. The demonstration case is practice material that mimics what students will see in the homework. The accompanying solution allows students to check their understanding of the material before completing and submitting homework for a grade. It can also serve as a study tool for exams.

**REVIEW THE CHAPTER**

DEMONSTRATION CASE

Barnaby's Bicycle Company manufactures high-quality mountain bikes. The company's managerial accountant has come to you for help. She needs to classify and identify each of the following costs before she can calculate the cost to produce each mountain bike.

Classify each of the costs listed in the chart below into three categories based on the following questions:

1. Can this cost be directly and conveniently traced to each bicycle that is manufactured, or is doing so either not possible or not worth the effort?
2. Is this cost related to manufacturing the bicycles? If so, what type of cost is it? Or is it a nonmanufacturing or period expense?
3. Will the total cost vary with the number of bicycles manufactured and sold, or will it remain the same regardless of how many bikes are produced and sold?

184 CHAPTER 4 Activity-Based Costing and Cost Management

CHAPTER SUMMARY

LO 4–1 **Assign indirect costs to products or services using a single volume-based cost driver.**

- A traditional cost system assigns indirect (overhead) costs to products or services using a volume-based measure, such as the number of direct labor hours, machine hours, or units produced. This system, while simple, assumes that all indirect costs are driven by volume and ignores other factors, such as the complexity of the production process and other non-volume drivers of cost.
- Unlike traditional cost systems that rely strictly on volume-based allocation measures, activity-based costing (ABC) systems include measures that capture something other than the sheer volume of units produced or customers served.

## Chapter Summary by Learning Objectives

Each chapter concludes with an end-of-chapter summary that revisits the learning objectives from the beginning of the chapter.

## Key Terms

Each chapter includes a list of the key terms introduced in the chapter and page references for those terms. Full definitions for all key terms are found in the back of the text.

76 CHAPTER 2 Job Order Costing

KEY TERMS

| | | |
|---|---|---|
| **Actual Manufacturing Overhead** p. 61 | **Direct Labor Time Ticket** p. 54 | **Predetermined Overhead Rate** p. 55 |
| **Allocation Base** p. 55 | **Finished Goods Inventory** p. 58 | **Process Costing** p. 50 |
| **Applied Manufacturing Overhead** p. 58 | **Indirect Materials** p. 58 | **Raw Materials Inventory** p. 58 |
| **Cost Driver** p. 55 | **Job Cost Sheet** p. 53, 55 | **Source Document** p. 53 |
| **Cost of Goods Completed** p. 63, 66 | **Job Order Costing** p. 51 | **Underapplied Overhead** p. 64 |
| **Cost of Goods Manufactured** p. 63 | **Materials Requisition Form** p. 54 | **Work in Process Inventory** p. 58 |
| **Cost of Goods Sold** p. 58 | **Overapplied Overhead** p. 64 | |

# **Strong Foundation** for Future Success

PRACTICE MATERIAL

QUESTIONS

1. Briefly describe the differences between job order and process costing. Give an example of a type of company that would use each one.
2. Briefly explain the underlying logic of a process costing system and its assignment of costs to products.
3. Explain the differences between Raw Materials Inventory, Work in Process Inventory, and Finished Goods Inventory accounts.
4. Explain the flow of costs in a process costing system, including the type of accounts used and the respective financial statement on which the cost appears.
5. What are the five steps in preparing a weighted-average production report?
6. Why is a production report important to a company?
7. What is the difference between conversion cost and manufacturing overhead?
8. What two methods can be used to prepare a process costing production report? What is the key difference between them?
9. How is the number of physical units reconciled to prepare a production report?
10. Why must a company calculate equivalent units when using process costing?
11. How can a unit be 100 percent complete with respect to materials but only partially complete in terms of conversion effort?
12. How do the weighted-average and the FIFO methods treat beginning inventory?
13. Is the weighted-average method or FIFO method usually more accurate? Why?
14. What are the steps in preparing a FIFO production report? Are they different from the steps to prepare a weighted-average production report?
15. When are the weighted-average and FIFO methods likely to arrive at different estimates of product cost?
16. What does a credit to the Work in Process Inventory account represent?
17. What triggers the cost of manufacturing to be transferred from the balance sheet to the income statement?

MULTIPLE CHOICE

1. Which of the following is most likely to use a process costing system?
   a. A company that builds and installs custom cabinetry.
   b. A company that makes one style of office chair.
   c. A janitorial service.
   d. A paving company.
4. If Wilson Corp. has 450 units that are estimated to be 60 percent complete, how many equivalent units are there?
   a. 270. c. 210.
   b. 100. d. 450.
5. Masterson Company has calculated a cost per unit of $4.00

## Questions

Each chapter includes 10—20 questions that ask students to explain and discuss terms and concepts from the chapter. These open-ended questions provide a great jumping off point for class discussion.

## Multiple-Choice Questions

Each chapter includes 10 multiple-choice questions that let students practice basic concepts. Solutions for all questions are provided in the back of the text.

## Mini-Exercises

Mini-exercises in each chapter illustrate and ask students to apply learning objectives from the chapter to a simple scenario.

78 CHAPTER 2 Job Order Costing

connect Find More Learning Solutions on Connect.

MINI-EXERCISES

LO 2–1 **M2–1 Identifying Companies That Use Job Order versus Process Costing**

Indicate whether each of the following companies is likely to use job order (J) or process costing (P).

____ 1. Golf ball manufacturer.
____ 2. Landscaping business.
____ 3. Tile manufacturer.
____ 4. Auto repair shop.
____ 5. Pet food manufacturer.
____ 6. Light bulb manufacturer.
____ 7. Water bottling company.
____ 8. Appliance repair business.
____ 9. DVD manufacturer.
____ 10. Music video production company.

LO 2–2 **M2–2 Identifying Source Document Information**

For each of the following items, indicate whether it would appear on a materials requisition form (MRF), a direct labor time ticket (DLTT), and/or a job cost sheet (JCS). Note: An item may appear on more than one document.

____ 1. Employee name.
____ 2. Quantity of direct materials used.
____ 3. Total dollar value of direct materials.

EXERCISES

**E2–1 Posting Direct Materials, Direct Labor, and Applied Overhead to T-Accounts, Calculating Ending Balances** LO 2–2, 2–3, 2–4

Oak Creek Furniture Factory (OCFF), a custom furniture manufacturer, uses job order costing to track the cost of each customer order. On March 1, OCFF had two jobs in process with the following costs:

| Work in Process | Balance on 3/1 |
|---|---|
| Job 33 | $ 7,500 |
| Job 34 | 6,000 |
| | $13,500 |

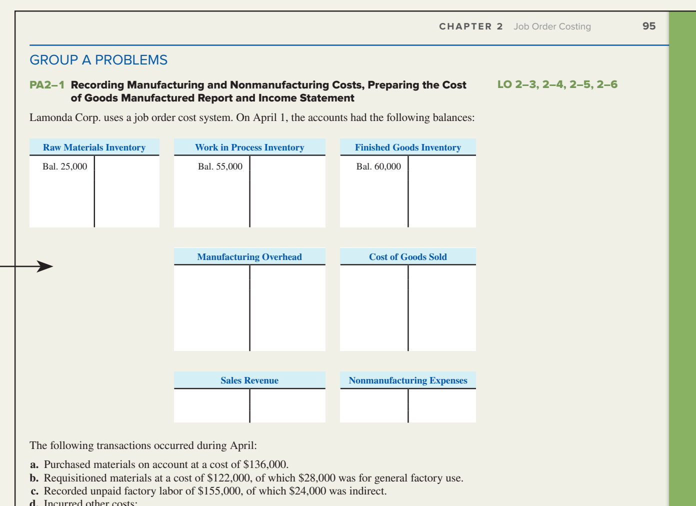
## Exercises

Exercises illustrate and ask students to apply single and multiple learning objectives from the chapter. Animated, narrated Guided Examples that walk through a similar exercise in a step-by-step fashion are available for select exercises when enabled by instructors in Connect.

> ***The Whitecotton/Libby/Phillips text is a well-written book . . . The text uses companies that students are familiar with to illustrate managerial accounting concepts. It provides a variety of end-of-chapter questions as well as check-points throughout the chapters for students to use to gauge their level of understanding.***
>
> *—Holly Sudano, Florida State University*

## Problems (Groups A and B)

Each chapter includes two problem sets to help students develop decision-making skills. One set can be used in class and the other can be assigned for homework.



CHAPTER 2 Job Order Costing 95

GROUP A PROBLEMS

**PA2–1 Recording Manufacturing and Nonmanufacturing Costs, Preparing the Cost of Goods Manufactured Report and Income Statement** LO 2–3, 2–4, 2–5, 2–6

Lamonda Corp. uses a job order cost system. On April 1, the accounts had the following balances:

| Raw Materials Inventory | Work in Process Inventory | Finished Goods Inventory |
|---|---|---|
| Bal. 25,000 | Bal. 55,000 | Bal. 60,000 |

Manufacturing Overhead

Cost of Goods Sold

Sales Revenue

Nonmanufacturing Expenses

The following transactions occurred during April:

**a.** Purchased materials on account at a cost of $136,000.
**b.** Requisitioned materials at a cost of $122,000, of which $28,000 was for general factory use.
**c.** Recorded unpaid factory labor of $155,000, of which $24,000 was indirect.
**d.** Incurred other costs:

## Level-Up Questions

In each chapter, particularly challenging questions, designated by the level-up icon, require students to combine multiple concepts to advance to the next level of accounting knowledge.

## Sustainability Questions

In select chapters, questions, designated by the sustainability leaf icon, require students to apply the chapter concepts in a sustainability-related context so that they will understand how the managerial accounting system can be expanded to focus managers' attention on more than economic results, including the impact of their decisions on the environment and society.

## Skills Development Cases

Select chapters offer a case that direct students to a web-based video about a real product or service. Students use the concepts they learned throughout the chapter to answer questions about the video, bringing the concepts to live. These cases help students develop critical thinking and communication skills, and allow for group discussions and projects.

# **What's New** in the Fourth Edition?

In response to feedback and guidance from numerous managerial accounting faculty, the authors have made many important changes to the third edition of *Managerial Accounting,* including the following:

- Integrated new focus companies, including a house-flipping example (HGTV) and Levi Strauss & Co.
- Increased coverage of sustainability accounting and how the importance of three factors (people, profit, and planet) affect the triple bottom line, including adding a new Spotlight on Sustainability feature in select chapters.
- New Spotlight on Big Data and Analytics highlights topics relating to big data, data visualization, and data and business analytics.
- Edited each chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Added new mini-exercises and exercises to each chapter, including matching problems that cover key terms and definitions. This was based on instructor feedback that they want simple and short exercises to assign to students before they cover the material in class.
- New to Connect in the 4th edition, Concept Overview Videos teach each chapter's core learning objectives and concepts through an engaging multimedia presentation. These learning tools bring the text content to life through video, audio, and checkpoint questions that are graded for accuracy – ensuring students complete and fully comprehend the material. Concept Overview Videos harness the full power of technology to truly engage and appeal to all learning styles. COVs are ideal in all class formats—online, face-to-face or hybrid.

## CHAPTER 1: INTRODUCTION TO MANAGERIAL ACCOUNTING

Focus Company: California Pizza Kitchen

- Updated statistics on the role of service and merchandising jobs, including a new exhibit which shows the dramatic trend in employment over the past 40 years. Added a section explaining why students need to know about manufacturing firms even if they are much more likely to go to work in a service or merchandising setting.
- Added a discussion of big data analytics, including definitions and examples of "big data" and the three different types of analytics.
- Added four **new** mini-exercises and three **new** exercises covering basic concepts in managerial accounting.
- Added a **new** skills development case describing how managers at California Pizza Kitchen used analytical techniques to better understand their consumption of energy expenses so that they could reduce spending and enhance their sustainability goals.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 2: JOB ORDER COSTING

New Focus Company: HGTV

- Updated the chapter focus company to be a house-flipping business, similar to the many TV shows students may be familiar with from HGTV.
- Simplified the exhibits showing the flow of manufacturing costs in job order costing to enhance students learning.
- Added five **new** mini-exercises and three **new** exercises covering basic concepts in job order costing.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 3: PROCESS COSTING

Focus Company: Fetzer Vinyards

- **New** Spotlight on Sustainability describing how Fetzer recently used **big data analytics** to track one of their key sustainability metrics and achieve an aggressive goal to reduce water consumption by 15 percent from 2015 to 2020.
- Added a numerical example to illustrate how subsequent departments would account for transferred-in costs in process costing.
- Added four **new** mini-exercises and three **new** exercises covering basic concepts in process costing.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 4: ACTIVITY-BASED COSTING AND COST MANAGEMENT

Focus Company: Toyota Motor Company

- Added six **new** mini-exercises and two new exercises, including four that apply activity based costing concepts to a **service setting.**

- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.
- Updated the skills development case describing Toyota's key sustainability metrics.

## CHAPTER 5: COST BEHAVIOR

Focus Company: Starbucks

- Added definition and examples of discretionary and committed fixed costs.
- Simplified the supplement on variable versus absorption costing to enhance student understanding and learning of this challenigng topic.
- Added three **new** mini-exercises and three **new** exercises covering basic concepts in cost behavior.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 6: COST-VOLUME-PROFIT ANALYSIS

Focus Company: Starbucks

- **New** Spotlight on Big Data Analytics describing how managers at Starbucks use big data analytics to improve the customer experience.
- Added three **new** mini-exercises and two **new** exercises covering basic concepts in cost-volume-profit anlaysis.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 7: INCREMENTAL ANALYSIS FOR SHORT-TERM DECISION MAKING

Focus Company: IKEA

- **New** Spotlight on Decision Making illustrating how incremental analysis relates to the current debate about whether the U.S. Postal Service is making or losing money by delivering products for Amazon and other high-volume sellers.
- Added two **new** mini-exercises, six **new** exercises, and two **new** problems covering incremental analysis.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 8: BUDGETARY PLANNING

New Focus Company: Levi Strauss & Co.

- Updated all chapter examples and exhibits illustrating how to prepare the master budget for a hypothetical division of Levi Strauss & Co.
- **New** Spotlight on Big Data Analytics describing how managers at Levi Strauss used technology and analytics to improve the customer experience, manage inventory, and improve operating efficiency.
- Added six **new** mini-exercises and three **new** exercises covering basic concepts in budgeting.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 9: STANDARD COSTING AND VARIANCES

New Focus Company: Levi Strauss & Co.

- Updated all chapter examples and exhibits illustrating how to compute variances for a hypothetical division of Levi Strauss & Co.
- Added discussion of the differences between actual, normal and standard cost systems.
- Simplified the chapter supplement by covering journal entries for direct materials and direct labor variances only.
- Added two **new** mini-exercises and two **new** exercises covering basic concepts in variance analysis.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 10: DECENTRALIZED PERFORMANCE EVALUATION

Focus Company: Apple

- Updated Apple data, including operating information, business strategy and financial results.
- Updated transfer pricing example to reflect the estimated contribution margin and incremental profit earned on the transfer and sale of an Apple watch.
- Added one **new** mini-exercise and one **new** exercise covering basic concepts in performance evaluation.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 11: CAPITAL BUDGETING

Focus Company: Apple

- **New** introductory example describing how Edmunds.com uses the payback method to analyze the economic benefits of investing in a hybrid vehicle.
- Added one **new** mini-exercise and two **new** exercises covering basic concepts in capital budgeting.
- Edited chapter to improve exposition and to clarify problem areas based on reviewer and student feedback.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 12: STATEMENT OF CASH FLOWS

Focus Company: Under Armour Inc.

- Updated focus company illustrations.
- Reviewed and updated end-of-chapter material and solutions.

## CHAPTER 13: MEASURING AND EVALUATING FINANCIAL PERFORMANCE

Focus Company: Lowe's

- Updated focus company analyses.
- Revised Exhibit 13.5 and related discussion to reflect changes made to all other chapters.
- Updated discussion to reflect FASB's going concern standards update.
- Reviewed and updated end-of-chapter material and solutions.

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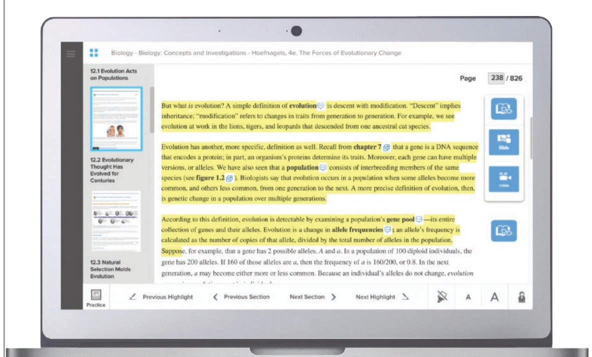

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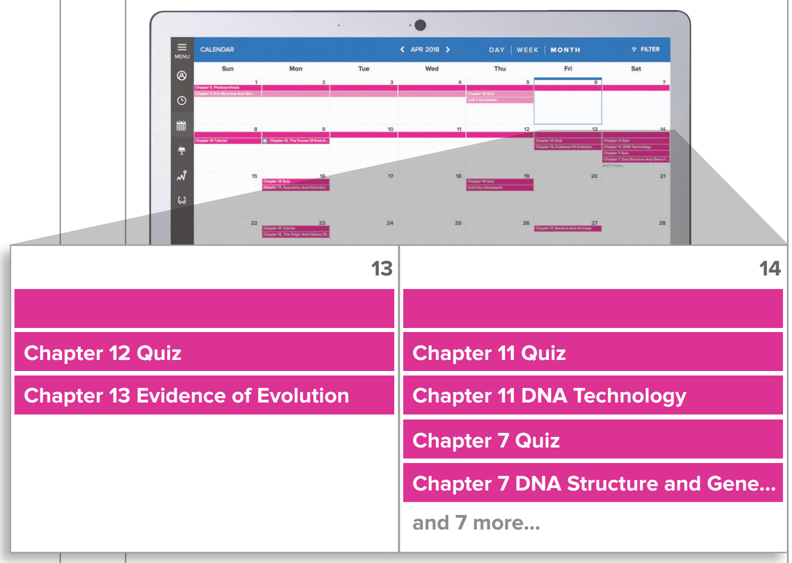


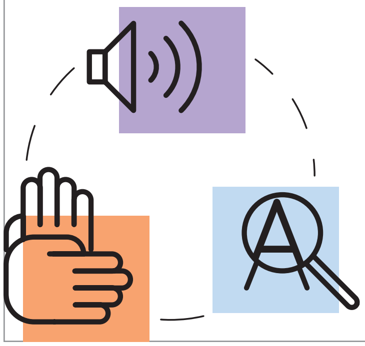

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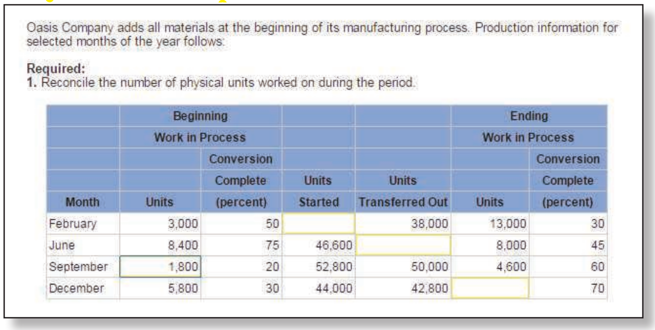
# Connect Accounting



Oasis Company adds all materials at the beginning of its manufacturing process. Production information for selected months of the year follows:

**Required:**
**1.** Reconcile the number of physical units worked on during the period.

| | Beginning Work in Process | | | | Ending Work in Process | |
|---|---|---|---|---|---|---|
| Month | Units | Conversion Complete (percent) | Units Started | Units Transferred Out | Units | Conversion Complete (percent) |
| February | 3,000 | 50 | | 38,000 | 13,000 | 30 |
| June | 8,400 | 75 | 46,600 | | 8,000 | 45 |
| September | 1,800 | 20 | 52,800 | 50,000 | 4,600 | 60 |
| December | 5,800 | 30 | 44,000 | 42,800 | | 70 |

Connect helps students learn more efficiently by providing feedback and practice material when they need it, where they need it. Connect grades homework automatically and gives immediate feedback on any questions students may have missed.

End-of-chapter questions in Connect include:

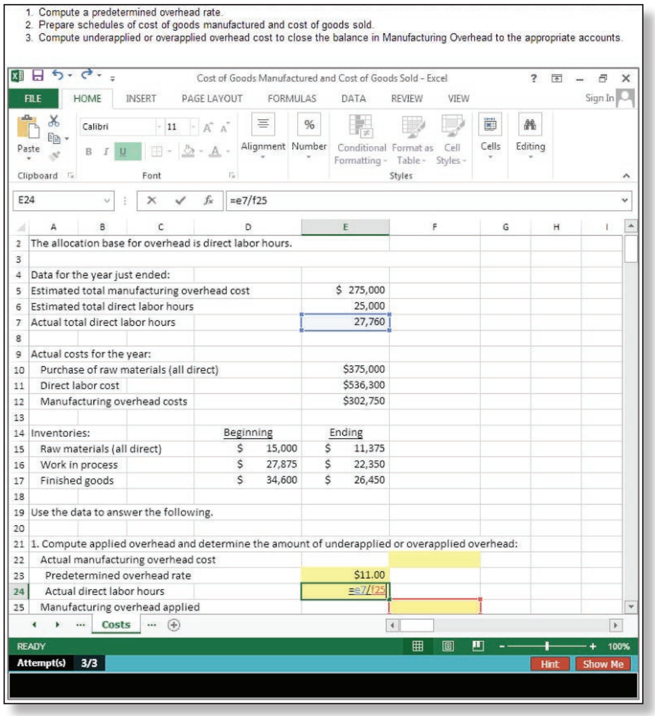
- Mini-Exercises
- Exercises
- Group A Problems

## Concept Overview Videos

New for this edition, the Concept Overview Videos cover each learning objective through narrated, animated presentations. Formerly Interactive Presentation, each Concept Overview Video has been enhanced for improved accessibility, and includes both the visual animations and transcript to accommodate all types of learners. The Concept Overview Videos also pause frequently to check for comprehension with assignable, auto-graded Knowledge Check questions.

## Excel Simulations

Simulated Excel questions, assignable within Connect, allow students to practice their Excel skills—such as basic formulas and formatting—within the content of financial accounting. These questions feature animated, narrated Help and Show Me tutorials (when enabled), as well as automatic feedback and grading for both students and professors.



1. Compute a predetermined overhead rate.
2. Prepare schedules of cost of goods manufactured and cost of goods sold.
3. Compute underapplied or overapplied overhead cost to close the balance in Manufacturing Overhead to the appropriate accounts.

Cost of Goods Manufactured and Cost of Goods Sold - Excel

E24 =e7/f25

| | A–C | D | E | F |
|---|---|---|---|---|
| 2 | The allocation base for overhead is direct labor hours. | | | |
| 3 | | | | |
| 4 | Data for the year just ended: | | | |
| 5 | Estimated total manufacturing overhead cost | | $ 275,000 | |
| 6 | Estimated total direct labor hours | | 25,000 | |
| 7 | Actual total direct labor hours | | 27,760 | |
| 8 | | | | |
| 9 | Actual costs for the year: | | | |
| 10 | Purchase of raw materials (all direct) | | $375,000 | |
| 11 | Direct labor cost | | $536,300 | |
| 12 | Manufacturing overhead costs | | $302,750 | |
| 13 | | | | |
| 14 | Inventories: | Beginning | Ending | |
| 15 | Raw materials (all direct) | $ 15,000 | $ 11,375 | |
| 16 | Work in process | $ 27,875 | $ 22,350 | |
| 17 | Finished goods | $ 34,600 | $ 26,450 | |
| 18 | | | | |
| 19 | Use the data to answer the following. | | | |
| 20 | | | | |
| 21 | 1. Compute applied overhead and determine the amount of underapplied or overapplied overhead: | | | |
| 22 | Actual manufacturing overhead cost | | | |
| 23 | Predetermined overhead rate | | $11.00 | |
| 24 | Actual direct labor hours | | =e7/f25 | |
| 25 | Manufacturing overhead applied | | | |

Costs

READY

Attempt(s) 3/3 Hint Show Me



## Guided Examples

The Guided Examples in *Connect* provide a narrated, animated, step-by-step walkthrough of select exercises similar to those assigned. These short presentations can be turned on or off by instructors and provide reinforcement when students need it most.

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**Fred Phillips**

# BRIEF CONTENTS

# CONTENTS

Fourth Edition

# Managerial ACCOUNTING

1

CHAPTER ONE

# Introduction to Managerial Accounting

*At the beginning of each chapter, you'll see a list of learning objectives that identify the key topics you need to master. You can also use the list as an outline for taking notes as you read through the chapter.*

## YOUR LEARNING OBJECTIVES

**LO 1–1** Describe the key differences between financial accounting and managerial accounting.

**LO 1–2** Describe how managerial accounting is used in different types of organizations to support the key functions of management.

**LO 1–3** Describe the importance of ethics, sustainability, and decision analytics in managerial accounting.

**LO 1–4** Define and give examples of different types of costs:

- Out-of-pocket or opportunity costs
- Direct or indirect costs
- Variable or fixed costs
- Manufacturing or nonmanufacturing costs
- Product or period costs
- Relevant or irrelevant costs


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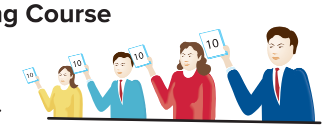
## FOCUS COMPANY: CALIFORNIA PIZZA KITCHEN

As you start what is probably your second accounting course, you may be wondering why you need to take yet another accounting class. Wasn't one course enough? Which of the following best describes your motivation for learning about managerial accounting?

### Top 10 Reasons to Take a Managerial Accounting Course



10. Accounting is truly interesting and exciting.
9. I always wanted to be an accountant when I grow up.
8. My advisor said I had to take it.
7. Accountants get good-paying jobs, even in the worst economy.
6. The accountant is always the hero in action movies.
5. I want to get rich and stay that way.
4. The rich guy always gets the girl in romance movies.
3. I want to start my own business and need to create a business plan.
2. Accounting will fulfill my foreign language requirement. (It's Greek to me.)
1. I'm enrolled in an accounting course???

Whatever your reason for taking this course, it will come in handy at some point in your future. This is true regardless of your intended career path, whether it is to start your own business, work for a large corporation, go into politics, work in health care, become a fashion designer, teach high school, work on a farm, or start a charitable foundation. Accounting is the language of business, and understanding it will help you make better business and personal decisions.

Throughout this book, you will see how managerial accounting is used by managers in real-world companies. Most of these companies sell a product or service that you encounter everyday, like a cup of Starbucks coffee, your iPhone, or the pizza you may have for lunch. Let's begin with a company that put a new spin on pizza with innovative flavors like BBQ chicken and Thai peanut sauce.

California Pizza Kitchen (CPK) was started in 1985 when two disillusioned attorneys, Larry Flax and Rick Rosenfield, decided to ditch their legal pads and open a restaurant in Beverly Hills, California. Their hearth-baked pizzas were an instant hit with an LA crowd seeking delicious and innovative food served in a casual but upscale setting. Since then, CPK has broadened its menu selection and expanded to more than 200 cities and 15 countries around the world. Today, you can enjoy one of CPK's delicious menu items in over 250 full-service restaurants; at CPK/ASAP "quick serve" stations in airports, universities, and sports arenas; or by purchasing a CPK pizza from the freezer of your local supermarket to bake at home.

As you read this chapter, try putting yourself in the shoes of one of the following managers:

- General manager responsible for the day-to-day operations of a CPK restaurant, including staffing, customer service, cost management, and compliance with Food and Drug Administration (FDA) regulations.
- Kitchen manager responsible for preparing delicious food while controlling the cost of ingredients and training the kitchen staff.
- Purchasing manager responsible for buying the freshest ingredients at the lowest possible cost, from both local and national suppliers.
- Regional manager responsible for the overall success of 25 CPK restaurants throughout the Pacific Northwest. Your annual performance evaluation is based on sales growth, profitability, and customer satisfaction.
- Senior executive responsible for expanding the CPK brand into new domestic and global markets.

Think about the types of decisions you would have to make in your chosen role and, most of all, the information you would need to make those decisions. Chances are that much of that information would come from the company's managerial accounting system.

## ORGANIZATION OF THE CHAPTER

**Role of managerial accounting in organizations**

- Comparison of financial and managerial accounting
- Functions of management
- Ethics, sustainability, and decision analytics

**Role of cost in managerial accounting**

- Cost terminology
- Direct versus indirect costs
- Variable versus fixed costs
- Manufacturing versus nonmanufacturing costs
- Product versus period costs
- Relevant versus irrelevant costs

*At the start of each chapter, you'll find an organizational graphic that provides a visual framework to show how the chapter concepts fit together.*

# Role of Managerial Accounting in Organizations

## COMPARISON OF FINANCIAL AND MANAGERIAL ACCOUNTING

**Learning Objective 1–1**
Describe the key differences between financial accounting and managerial accounting.

The primary goal of any accounting system is to capture, summarize, and report useful information to users so that they can make informed decisions. The key difference between financial accounting and managerial accounting is the intended user of the information. **Financial accounting** information is aimed at **external users**, or those outside the organization such as investors, creditors, and regulators. **Managerial accounting** information is aimed at **internal users**, or those working inside the organization, such as business owners, managers, and employees.

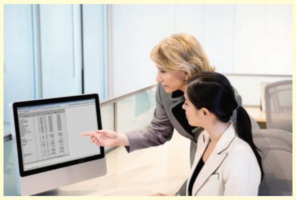
Because the intended users of the information are different, there are several other differences between financial and managerial accounting. Accountants prepare external financial statements according to generally accepted accounting principles (GAAP), which provide external users certain advantages in terms of their comparability and objectivity. However, internal managers often need more detailed information than those financial reports can capture. Managers need information that is timely and relevant to the specific decision at hand. Rather than knowing what happened last year or last quarter, managers need to know what is happening today and be able to predict what will happen tomorrow. See Exhibit 1–1 for a summary of the key differences between financial accounting and managerial accounting.

**COACH'S TIP**

Financial accounting is sometimes referred to as **external** reporting while managerial accounting is referred to as **internal** reporting. The difference is whether the intended users are inside or outside the company.

*Throughout this text, we will provide you with tips to highlight explanations of selected topics. Please read them carefully.*

**EXHIBIT 1–1** Differences between Financial and Managerial Accounting

| | Financial Accounting | Managerial Accounting |
|---|---|---|
| |  |  |
| **User perspective** | Used by external parties, such as investors, creditors, and regulators | Used by internal parties, such as managers and employees |
| **Types of reports** | Classified financial statements prepared according to GAAP | Various internal reports, such as budgets, performance evaluations, and cost reports |
| **Nature of information** | Objective, reliable, historical | Subjective, relevant, future oriented |
| **Frequency of reporting** | Prepared periodically (monthly, quarterly, annually) | Prepared as needed, perhaps day-to-day or even in real time |
| **Level of detail** | Information reported for the company as a whole | Information reported at the decision-making level (by product, region, customer, or other business segment) |

Left: ©Andersen Ross/Brand X/Corbis; Right: ©Robert Nicholas/Getty Images

To illustrate these differences, let's return to California Pizza Kitchen (CPK). Until 2011, CPK was a publicly traded company whose stock was traded on the NASDAQ stock exchange. The Securities and Exchange Commission (SEC) requires all publicly traded companies to file quarterly and annual reports that include an income statement, balance sheet, statement of cash flows, and disclosures about the accounting methods used to prepare the financial statements. These reports are publicly available to anyone with an interest in the company, including government regulators, financial analysts, and investors who are considering buying or selling stock in the company. The year-end financial statements of publicly traded companies must be audited by an independent accounting firm, such as Ernst and Young or KPMG, to determine whether the reports were prepared according to GAAP.

In 2011, CPK was acquired for $470 million by Golden Gate Capital, a private-equity firm that owns other well-known restaurant chains, such as On the Border. Because it is now privately owned, CPK is no longer required to report its financial results to the SEC and the public at large. The last time that CPK released financial results to the public was in April of 2011, shortly before being bought by Golden Gate Capital. Although the external financial statements provide a glimpse into the company's financial performance, they are probably not that relevant to most of CPK's managers and employees who are more concerned about the day-to-day operations of the business than the corporate financial statements. The results reported in the external financial statements are generally most relevant to the C-suite executives (CEO, CFO, etc.) who are directly responsible for the financial performance of the company and who must answer to the firm's shareholders and board of directors.

The managerial accounting system, in contrast, provides the more detailed information that managers "behind the scenes" need to do their jobs. This internally oriented information is not publicly available and is often proprietary in nature. Even so, we can gain some insight into the internal accounting system by considering statements made by managers in the press releases that often accompany the external financial statements. For example, in their final press release before the buyout, co-CEOs Rick Rosenfield and Larry Flax stated that they would improve future shareholder value by focusing on "menu-optimization," "cost management at both the restaurant and corporate level," "shifting the sales mix to higher margin items," "expanding international locations," and introducing new menu offerings that are "in line with health and wellness trends."[1] If you think about the vast array of information that managers would need to achieve these broad objectives, you can get a sense for the types of information the managerial accounting system must provide.

To better understand how managerial accounting is used, we must consider the various functions that managers perform and what types of information they need to do their jobs.

**Learning Objective 1–2**
Describe how managerial accounting is used in different types of organizations to support the key functions of management.

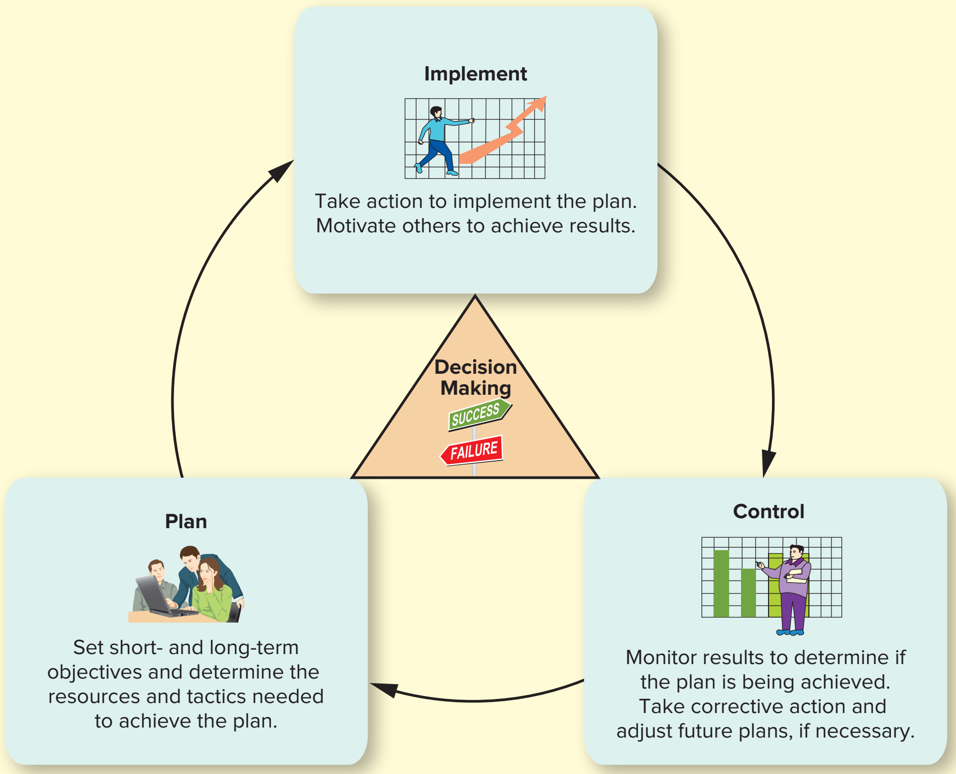
## FUNCTIONS OF MANAGEMENT

Regardless of the type and size of the organization they manage, all managers perform the same basic functions: Planning, Implementing, and Controlling. These functions are part of a continuous or ongoing cycle, called the Plan-Implement-Control cycle, as illustrated in Exhibit 1–2. Throughout this cycle, managers must make a variety of decisions, and the managerial accounting system must provide information to help them make those decisions.

- **Planning** is the future-oriented part of the management cycle. The first step in planning is to establish goals or objectives, along with the tactics that will be used to achieve those goals. Managers have to make a variety of "who, what, when, where, and how" decisions as they plan. For example: Who is my target customer? What product or service do they need and how much will they pay for it? Where and when will I provide the product and service? What resources will I need? Once managers know the answers to these questions, the next step is to create a **budget** that lays out the plan in monetary or financial terms. The budget helps managers organize their plan and ensure that they have the necessary resources to carry it out.
- **Implementing** means putting the plan into action. During the implementation phase, managers must lead, direct, and motivate others to achieve the objectives set in the

[1] Press Release May 5, 2011: "California Pizza Kitchen Announces Financial Results for the First Quarter of 2011."

**EXHIBIT 1–2** Plan-Implement-Control Cycle




planning stage. The decisions made during the implementation phase are sometimes called operational decisions. For example: Who should I purchase supplies from? When do I need them? How many employees should I hire? How much should I pay them? How do I train them? Again, the managerial accounting system should provide useful information to help managers answer these and other questions.

- **Controlling** is the final step in the management process. During the control phase, managers keep track of how they are doing and whether any actions must be taken to adjust the plan. The managerial accounting system plays a key role in helping managers measure and monitor the company's performance to see whether the planned objectives are being met. If not, managers may need to take corrective action to get back on track.

An easy way to think about the Plan-Implement-Control cycle is in terms of an air traffic control system. Before the flight, the pilot must file a flight **plan** that details when and where the plane will be flying. **Implementing** includes all of the actions the pilot takes to fly the plane. The pilot may fly the plane himself, or delegate it to a copilot. The **control** system includes the cockpit instruments the pilot uses to guide the plane, as well as the monitoring systems used by air traffic control. The goal of these control mechanisms is to make sure the plane does not deviate too far from the flight plan. When that happens, the system should provide a signal that the pilot needs to take corrective action.

To extend this analogy to the business world, managers are like pilots flying a plane and the managerial accounting system is the set of tools that help the pilot get the plane to its destination. The tools can be as simple as a report on a piece of paper, or as sophisticated as an information system that provides real-time data to managers on their handheld devices. These tools must provide timely, relevant, and accurate information to help managers do their jobs.

At California Pizza Kitchen, everyone from the kitchen manager to the CEO needs information to plan, implement, and control within their area of responsibility. Because the kitchen manager will be making very different decisions than the CEO, the managerial accounting system must provide information for both day-to-day operational decisions and long-term strategic decisions.

In its last publicly released annual report, CPK provided the following statement of its overall strategic plan:

> Our objective is to extend our leadership position in the restaurant and premium pizza market by selling innovative, high-quality pizzas . . . and related products and by providing exceptional customer service, thereby building a high degree of customer loyalty, brand awareness and superior returns for our stockholders. To reach these objectives, we plan to increase our market share by expanding our restaurant base in new and existing markets, leveraging our partnerships in nontraditional and retail channels and offering innovative menu items.[2]

As you can see, this high-level **plan** lays out the key factors that managers believe are important to the company's success—a high degree of customer loyalty, increased market share, and superior returns for stockholders. It also includes the tactics that managers will use to achieve these objectives—serve innovative food, provide excellent customer service, and expand into new and existing territories. One role of the managerial accounting system is to translate these goals into more specific and measurable objectives. For example, how will the company measure customer loyalty? What percentage increase in market share do managers want to achieve and in what time period? What is the target return on investment for shareholders?

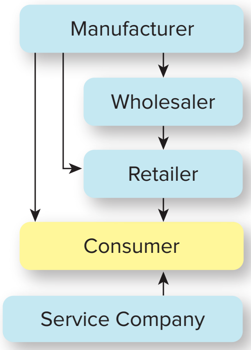
Once managers have determined the objectives they want to achieve, they begin to **implement** the plan by buying raw materials, hiring workers, negotiating with suppliers, advertising new menu items, and serving food to customers. They might also provide incentives to motivate workers to achieve specific objectives. For example, they might give restaurant managers bonuses or perks for meeting targeted sales goals for new menu items.

To **control** the business, managers monitor various metrics that are relevant to their area of responsibility. If these metrics fall below expectations, managers should take corrective action. In the last annual report, CPK managers noted that "we regularly review the sales mix of our menu items and replace lower selling items in each category with new menu items once or twice per year. Because of our ability to quickly adapt our menu, we believe that we are able to meet our customers' changing tastes and expectations."[3]

As you can see, the managerial functions of planning, implementing, and controlling are interconnected. One function leads to another, and managers use feedback from the process to improve future decision making. Throughout, managers must make a variety of decisions and they need relevant, up-to-date information, including cost estimates, competitor pricing, market demand, and consumer preferences. Much of this information comes from the managerial accounting system.

Before we move on, try the Self-Study Practice to make sure you understand the major differences between financial and managerial accounting and the key functions of management.

Selling Goods and Services to Customers




## Types of Organizations

Managerial accounting information is used by managers in all types of organizations: large and small, public and private, profit and nonprofit. Traditionally, businesses are classified into one of three categories:

- **Manufacturing firms** purchase raw materials from suppliers and convert them into finished products, such as Apple iPods, Harley-Davidson motorcycles, Levi Strauss jeans, and Ford cars and trucks.
- **Merchandising companies** sell the goods that manufacturers produce. Merchandisers that sell exclusively to other businesses are called **wholesalers.** Merchandisers that sell to the general public are called **retailers.** For example, Sam's Club started out

[2] California Pizza Kitchen, Inc., Annual Report for the fiscal year ended January 2, 2011, Form 10-K, United States Securities and Exchange Commission, filed March 17, 2011.

[3] Ibid.

## How's it going? Self-Study Practice

1. Which of the following statements best describes the difference between financial accounting and managerial accounting?
   a. Managerial accounting targets external stakeholders while financial accounting targets individuals within the company.
   b. Financial accounting relies more on subjective, future-oriented information than managerial accounting does.
   c. A major focus of managerial accounting is the preparation of the income statement, while a major focus of financial accounting is the preparation of the budget.
   d. Managerial accounting tends to focus on relevant, subjective, and future-oriented information while financial accounting relies primarily on objective, reliable, and historical information.
2. Which of the following statement(s) regarding the key management functions is true?
   a. Planning involves setting long-term objectives and the short-term tactics necessary to achieve those objectives.
   b. Implementing involves comparing actual results to planned objectives and making adjustments as necessary.
   c. Controlling includes all of the operational decisions made to implement the plan.
   d. All of the statements are true.

*After you have finished, check your answers against the solutions in the margin.*

*The best way to know whether you are reading the chapter carefully enough is to see how well you do on a short exercise. Therefore, at important points throughout each chapter, you will find an exercise that will reinforce the concepts you have just learned and provide feedback on how well you learned them. We urge you not to skip these practices. When you are finished, check your answers against the solution below in the margin.*

Solution to Self-Study Practice
1. d
2. a

as a wholesaler and then expanded into the retail market. Other well-known retailers include Walmart, Macy's, Bed Bath & Beyond, and Safeway.

- **Service companies** provide a service to customers or clients. A few well-known service providers are Hilton Hotels, Southwest Airlines, Expedia.com, and Federal Express. Many small businesses provide services to consumers and other businesses, including hair salons, law firms, architects, and home repair specialists.

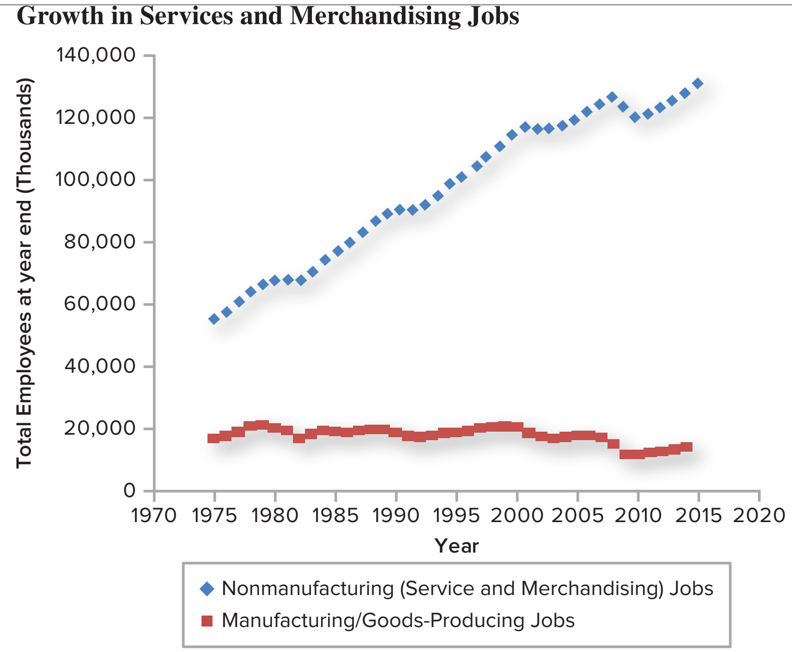
Increasingly, the lines between manufacturing, merchandising, and service companies are becoming less clear. Many businesses, including California Pizza Kitchen, do not fall neatly into a single category. Some would consider CPK to be a service firm because it serves food to customers. Others would consider it a manufacturing company because it purchases raw materials (ingredients) and converts them into a finished product (a meal). And what about the frozen CPK pizzas that you can buy in your local supermarket? Those products are manufactured by Nestlé, which pays CPK a royalty fee (percentage of sales revenue) to use its recipes and brand.

As we will see in later chapters, the focus of managerial accounting is somewhat different in manufacturing firms than in merchandising and service firms. In the past, managerial accountants focused much of their efforts on preparing reports to keep track of the costs of raw materials, labor, and other costs incurred to produce a physical product. Today, nonmanufacturing firms make up an increasingly large proportion of the marketplace. In 2017, the U.S. government estimated that 80.2 percent of the nation's gross domestic product (GDP) stemmed from service activities.[4] The following chart shows the trend in employment in goods-producing and service-providing industries over the past 40 years. As you can see, the number of employees working in service sector jobs has increased dramatically over the past 40 years, while the number of employees working in manufacturing jobs has remained relatively constant. Today, about 85 percent of the people employed in America work in nonmanufacturing fields such as health care, education, and retail, and the trend toward service industries is expected to continue.

[4] CIA, *The World Factbook*, https://www.cia.gov/library/publications/resources/the-world-factbook/geos/us.html.

**COACH'S TIP**

When you graduate, you are about four times more likely to go to work in a service or merchandising setting than a manufacturing company. Even so, you need to have a basic understanding of how managerial accounting works in manufacturing firms because you will most likely still work with manufacturing firms, perhaps as a buyer or other business partner. To make the manufacturing process more tangible, we will use examples of products that you encounter every day, so that you can more easily visualize how the products are made.




Data from U.S. Department of Labor, Bureau of Labor Statistics, Employment Database. http://www.bls.gov/data/#employment , accessed April 21, 2015.

Although nonmanufacturing firms make up an increasingly large percentage of our economy and workforce, many of our examples will be applied to companies that make a physical product, such as pizza, an automobile, or an Apple Watch. There are a few reasons why managerial accounting is often applied in a manufacturing setting:

1. It is easier for students to visualize a physical product and think about the various costs and activities that are required to make it. We intentionally chose products and companies that most students are familiar with so that you can immediately apply the concepts to something you understand and encounter on a daily basis.
2. Accounting in manufacturing firms is more complex than nonmanufacturing firms because the product goes through several stages of completion (raw materials, work-in-process, and finished goods) before it is finally sold. Some of the terminology that you will learn in the first few chapters of this book, such as the difference between manufacturing and nonmanufacturing costs, is only relevant to manufacturing firms.

While we start out discussing managerial accounting in manufacturing settings, virtually all of the concepts and tools can be applied in nonmanufacturing settings as well. Once you've mastered the manufacturing example, extending it to a service or merchandising setting should be relatively simple. Throughout the book, we will provide examples of how the concepts and techniques could be applied in service settings as well.

Finally, it is important to note that managerial accounting information is vital to nonprofit organizations, including hospitals, universities, and charitable organizations. Although these organizations do not exist strictly to earn profit for shareholders, their managers still need timely and relevant information to prepare budgets, manage resources, and make strategic and operational decisions.

## ETHICS, SUSTAINABILITY, AND DECISION ANALYTICS

**Learning Objective 1–3**
Describe the importance of ethics, sustainability, and decision analytics in managerial accounting.

### Ethics and the Sarbanes Oxley Act

All managers, regardless of the type of organization they work for, are responsible for creating and maintaining an ethical work environment, including the reporting of accounting information. **Ethics** refers to the standards of conduct for judging right from wrong, honest from dishonest, and fair from unfair. Although some accounting and business problems have clear right or wrong answers, many situations require accountants and managers to weigh the pros and cons of alternatives before making final decisions.

Often, there is no one right answer to ethical dilemmas and hard choices will need to be made. Do not tolerate acts of fraud, such as employees making up false expenses for reimbursement, punching in a time card belonging to a fellow employee who will be late for work, or copying someone's ideas and claiming them as your own. Also be aware that not all ethical dilemmas are clear-cut. Some situations will require you to weigh one moral principle (e.g., honesty) against another (e.g., loyalty).

When faced with an ethical dilemma, you should apply the following three-step process:

1. Identify who will be affected by the situation—both those who will appear to benefit (often the manager or employee) and those who will be harmed (other employees, the company's reputation, owners, creditors, and the public in general).
2. Identify and evaluate the alternative courses of action.
3. Choose the alternative that is the most ethical—and that you would be proud to have reported in the news.

Unfortunately, not everyone abides by these general guidelines. For example, the reputation of business managers and accountants was tarnished in the late 1990s and early 2000s due to high-profile scandals at companies like at Enron and WorldCom. In response to these scandals, Congress enacted the **Sarbanes-Oxley (SOX) Act of 2002**. Although SOX was primarily aimed at renewing investor confidence in the external financial reporting system, it has many implications for managers as well.

The Sarbanes-Oxley Act focuses on three factors that affect the accounting reporting environment: opportunity, incentives, and character.

**Opportunities for Error and Fraud** SOX attempts to reduce the **opportunity** for error and fraud. A requirement under SOX is that management must conduct a review of the company's internal control system and issue a report that indicates whether the controls are effective at preventing errors and fraud. This requirement places more responsibility on all managers (not just accountants) for the accuracy of the reporting system. For example, marketing managers are now responsible for making sure their staff members submit accurate sales and expense reports. SOX also places additional responsibilities on the boards of directors and external auditors to reduce the opportunity for errors and fraud.

**Incentives for Committing Fraud** SOX attempts to counteract the **incentive** to commit fraud by providing stiff penalties, such as monetary fines and jail time. For example, violators must repay any money obtained via fraud and can be assessed additional fines of up to $5 million. Executives cannot avoid these penalties by declaring personal bankruptcy, which explains why a former sales director at Computer Associates will be giving 15 percent of every paycheck he earns for the rest of his life to a fraud restitution fund. SOX also increased the maximum jail sentence for fraudulent reporting to 20 years. Total jail time can add up to

*Most chapters include Spotlight features focusing on decision making, ethics, and sustainability. These features are designed to illustrate the relevance of accounting in real-world decision making.*

**SPOTLIGHT ON Ethics**

## Accounting Scandals

Typically, fear of personal failure and greed drives accounting scandals. Initially, some people may appear to benefit from fraudulent reporting. In the long run, however, fraud harms most individuals and organizations. When it is uncovered, the corporation's stock price drops dramatically. In the case involving MicroStrategy, the stock price dropped 65 percent from $243 to $86 per share in a single day of trading. Creditors are also harmed by fraud. WorldCom's creditors recovered only 42 percent of what they were owed. They lost $36 billion. Innocent employees also are harmed by fraud. At Enron, 5,600 employees lost their jobs, and many lost all of their retirement savings. The auditing firm Arthur Andersen, which once employed 28,000 people, went out of business after becoming entangled in the WorldCom and Enron frauds.

even more than that because federal sentencing guidelines allow judges to declare consecutive jail terms for each violation.

**Character of Managers and Employees** Finally, SOX emphasizes the importance of the **character** of managers and employees. Admittedly, it is difficult for a law to make people act appropriately, but SOX introduces new rules that should help employees of good character make the right decision when confronted with ethical dilemmas. For example, audit committees are now required to create anonymous hotlines that allow employees to submit concerns they may have about suspicious accounting or auditing practices. SOX also gives federal employees whistle-blower protection to prevent retaliation by those charged with fraud.

Finally, to reinforce good character, public companies must adopt a code of ethics for senior financial officers. Unfortunately, simply adopting a code of ethics does not ensure that managers will act ethically. Most experts agree that ethics must be embedded in the organizational culture and that top managers who lead by example will drive ethical behavior in the organization.

According to a recent Statement on Management Accounting (SMA) released by the Institute of Management Accountants (IMA), companies with strong ethical cultures are rewarded with higher productivity, improved team dynamics, lower risks of fraud, streamlined processes, improved product quality, and higher customer satisfaction. But to achieve these rewards, companies must move beyond simply complying with laws such as SOX and create a culture that embeds ethics throughout the organization.

Before we move on, take a moment to complete the following Self-Study Practice to make sure you can identify factors that influence ethical behavior.

## How's it going? Self-Study Practice

Identify whether each of the following actions is most likely to increase (+) or decrease (–) the risk of error or fraud arising from opportunities (O), incentives (I), or an individual's character (C).

| | +/– | I/O/C |
|---|---|---|
| 1. Enron implemented a "rank-and-yank" practice that involved ranking the financial performance of each business unit and then firing managers in the lowest 20%. | _____ | _____ |
| 2. Microsoft Corporation invites anonymous or confidential submission of questionable accounting or auditing matters to msft.buscond@alertline.com. | _____ | _____ |
| 3. The H. J. Heinz Company's board of directors is one of the strongest boards in the United States, according to Institutional Shareholder Services. | _____ | _____ |

*After you have finished, check your answers against the solutions in the margin.*

Solution to Self-Study Practice

1. +/I (increased pressure to report stronger financial results)
2. –/C (less likelihood that unethical behavior will go unreported)
3. –/O (strong oversight by directors)

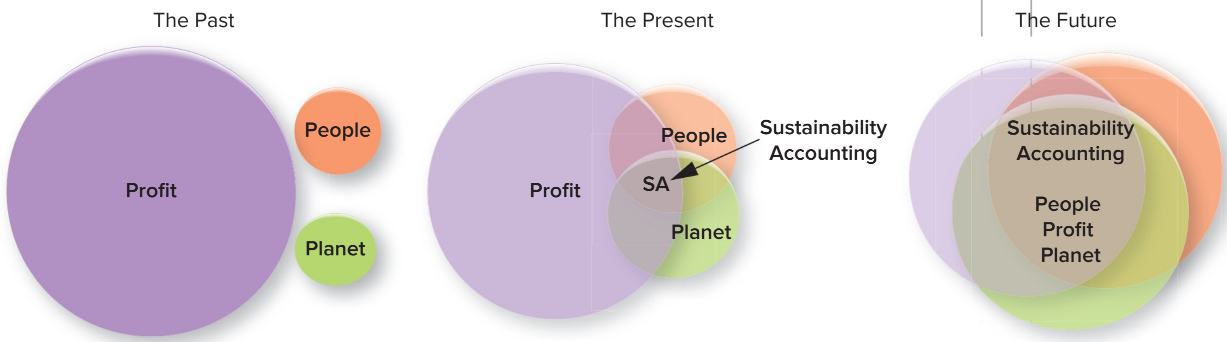
## Sustainability Accounting

Managerial accounting has traditionally focused on providing managers with the information they need to make decisions that create economic value or profit for shareholders. In today's changing world, managers are responsible for more than achieving financial results, and are accountable to many groups other than shareholders. Modern managers must balance the priorities and needs of many stakeholders, including employees, customers, suppliers, regulators, and society. **Sustainability accounting** is an emerging area of accounting that is aimed at providing managers with a broader set of information to meet the needs of multiple stakeholders, with the goal of ensuring the company's long-term survival in an uncertain and resource-constrained world.

The simplest definition of sustainability is the ability to last or survive for a long time. When applied to business, **sustainability** is the ability to meet the needs of today without sacrificing the ability of future generations to meet their own needs. To accomplish this goal, managers must consider three factors when making decisions: society, economy, and the environment. These three pillars of sustainability are called the **triple bottom line** and are often represented by **3 Ps: People, Profit, and Planet**.

Accountants can play a key role in helping organizations achieve their sustainability goals by measuring and managing triple bottom line performance. While traditional accounting systems focused almost exclusively on economic results (e.g., profit), sustainability accounting expands the focus to measure the impact of business decisions on social issues (people) and the environment (planet). Just as accountants have always measured and managed a firm's economic performance, today's accountants often measure and manage a firm's social impact and environmental performance as well.

The following diagram provides a historical perspective on the relative importance of the three factors that make up the triple bottom line.




In the past, accounting focused primarily on profitability measures such as net income (revenue – expenses), return on equity, and other measures of economic success. Social and environmental factors were not usually at the forefront of managers' decision making, and in many cases financial results were achieved at the expense of society (people) and the environment (planet).

Today, managers are beginning to recognize that a business strategy focused solely on achieving economic or financial results is not sustainable. In the long-run, a business cannot survive without people (e.g., customers, employees, and suppliers) and natural resources (e.g., water, clean air, and fuel). As a result, modern organizations are building sustainable business practices into their business strategies and including sustainability accounting methods such as the triple bottom line into their performance management systems. For example, most public companies now issue **corporate social responsibility (CSR)** reports that provide sustainability-related information, including measures of social and environmental impact.

While sustainability accounting is an emerging and critically important area in accounting, the reality is that most of today's businesses and managers are still driven *primarily* by economic results. For sustainability initiatives to really take shape and change the way a company does business, it must be linked to the company's overall corporate strategy and embedded in the day-to-day operations and culture of the company. As that happens, sustainability can become a more integrated part of the business model, and sustainability accounting measures such as the triple bottom line are likely to emerge as a more mainstream part of the reporting process.

Throughout this textbook, we will highlight some of the sustainability initiatives and reporting issues faced by managers in real-world companies and relate these initiatives to other topics in managerial accounting.

**COACH'S TIP**

Although some people equate sustainability with being environmentally friendly or "green," it is a much broader concept than that. A truly sustainable business strategy is one that simultaneously achieves economic results while creating benefits for society (e.g., reduce poverty, respect human rights, prevent disease) and the environment (e.g., limit climate change, reduce greenhouse gas emissions).

## Decision Analytics

A topic that is becoming increasingly important to managers and accountants is the use of big data and analytics to help managers make more informed business decisions. **Big data analytics** involves the use of analytical techniques to gain valuable insights from data that is so large or complex that it cannot be analyzed using traditional data bases and spreadsheets. So what makes data "BIG"?

- *Volume:* The sheer amount or volume of data can be overwhelming and exceed the capacity of many company's servers. For example, it is estimated that Walmart collects more than 2.5 petabytes (2.5 quadrillion bytes) of customer data per hour.[5]
- *Velocity:* The data arrives with great velocity or speed, including not just data on past events but also that which is created in real time, as events are occurring.
- *Variety:* The data comes in a variety of formats (e.g. text, numerics, images, audio, and video), and is generated from a variety of sources, devices, and sensors, including geographic, financial, and social media data.

If "BIG" data relates to the volume, velocity, and variety of data, what is analytics? **Analytics** is the process of discovering and communicating meaningful patterns and insights from data to find more intelligent ways of operating a business, managing resources, enhancing customer service, reducing operating costs, or pursuing other business opportunities. Although differences exist at a technical level, the terms *big data, business analytics,* and *business intelligence* are often used interchangeably to refer to the extraction of meaningful and actionable insights from big data so that managers can make more intelligent business decisions.

Three types of analytics are common:

- Descriptive analytics (showing what has happened). For example, UPS *describes* the operating efficiency of its delivery trucks by monitoring gas mileage.
- Predictive analytics (forecasting what is likely to happen). For example, UPS *predicts* future repairs and maintenance work by analyzing idling time and miles driven.
- Prescriptive analytics (recommending a course of action). For example, UPS uses customer location and real-time GPS data to *prescribe* the most efficient routes for delivering its packages.

Amazon.com is now experimenting with something it calls "anticipatory shipping" where it uses past purchases, website traffic, and geographic data to ship a product to a region before a customer even places the order. By shipping in advance, and later specifying the exact delivery location when an actual purchase occurs, Amazon hopes to be able to reduce both shipping time and shipping costs.

In addition to these business examples, big data analytics is proving useful in other fields such as health care and law enforcement. For example, by tracking search terms entered into Google by people in various regions of the United States, analysts can predict flu outbreaks faster than by monitoring hospital admission records. As another example, big data analysts cross-referenced public crime records with data from ride-sharing apps to discover that DUI arrests fell by 10 percent after Uber entered a major metropolitan market.

At opportune places throughout this book we will highlight how managers in our focus company or other real-world organizations use big data and analytics to make managerial decisions. Refer to Skills Development Case S1-5 at the end of this chapter for a real-world case study describing how managers at California Pizza Kitchen used analytical techniques to better understand their consumption of energy expenses so that they could reduce spending and enhance their sustainability goals.

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[5] Andrew McAfee and Erik Brynjolfsson, "Big Data: The Management Revolution," *Harvard Business Review,* October 2012.

# Role of Cost in Managerial Accounting

As described earlier in this chapter, the goal of managerial accounting is to provide managers with the information they need to plan, implement, and control within their area of responsibility. Much of the information that managers need to make decisions is based on cost data. For example, a restaurant manager at CPK might need to know how much it costs to prepare a new menu item to decide how much to charge for it. A kitchen manager might need to know the cost of a specific pizza component such as dough or sauce to decide whether to make it in-house or buy it from a supplier. Managers also need cost information to prepare daily, weekly, and monthly operating budgets. These budgets help managers ensure that they have the necessary resources to run the business and to control spending.

Cost information is important for accountants too. They use it to value inventory and determine the profitability of various products, regions, divisions, or other segments of the business. Although accountants and managers should consider things other than cost when making decisions, cost control remains a critical concern for most organizations, particularly in a tough economy or when profit margins are declining due to increased competition. In the next section, we describe alternative ways to categorize costs based on different criteria.

## COST TERMINOLOGY

**Learning Objective 1–4**
Define and give examples of different types of costs.

Throughout this textbook, we will use a lot of different labels to describe cost. It can be confusing at times because there are many different types of cost systems and ways to categorize cost. The most important thing to remember is that we will treat costs differently depending on how the information will be used. Will the cost information be used for financial reporting purposes? If so, we have to follow the rules of GAAP. Will it be used to determine the profitability of a product or service? If so, we need to understand the nature of the product or service to decide what costing method is appropriate. Will the cost data be used for decision making? If so, we need to consider how costs will behave or change depending on what decision alternatives the manager is considering. Will it be used to evaluate the performance of a manager? If so, we need to think about what costs are under the manager's direct control.

In this chapter, we introduce the terminology you will use to categorize or sort cost into different "buckets," including

- Direct or Indirect
- Variable or Fixed
- Manufacturing or Nonmanufacturing
- Product or Period
- Relevant or Irrelevant

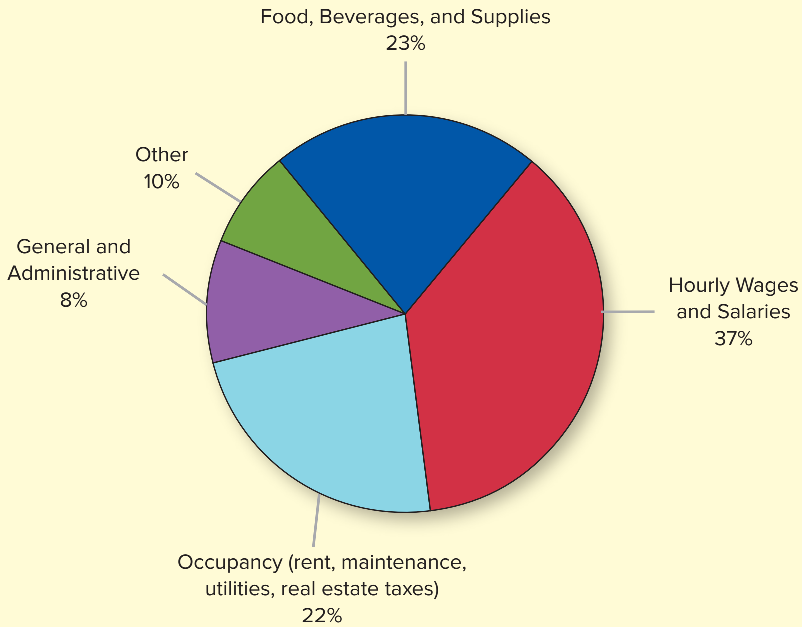
**COACH'S TIP**

The key thing to remember is that **different costs terms are used for different purposes.** Thus, a single cost can be classified in more than one way, depending on how the information will be used.

Each of these classifications will be based on different criteria depending on how the information will be used. In later chapters, you will learn more about how to use this cost information for different managerial purposes, including product costing, cost management, decision making, planning and control, and performance evaluation. For now, you just need to recognize and define the terms.

To make these classifications more concrete, we will use California Pizza Kitchen's actual operating costs as an example. Exhibit 1–3 shows the breakdown of CPK's total operating costs as reported in their last publicly issued financial report. As you can see, CPK's operating costs are made up of wages and salaries (37 percent); food, beverages, and supplies (23 percent); occupancy costs such as rent, utilities, and property taxes (22 percent); general and administrative expenses (8 percent); and other miscellaneous expenses (10 percent). The "other" category includes the costs to open a new restaurant, such as rent during the construction period, hiring and training the initial workforce, buying the food used in training, and marketing costs.

**EXHIBIT 1–3** CPK Operating Costs




## DIRECT VERSUS INDIRECT COSTS

When managers use cost information, they typically want to know the cost of something specific. It could be a menu item (e.g., a 16-inch BBQ pizza), a particular ingredient (e.g., pizza dough), an activity (e.g., serving a customer), or a specific part of the business (e.g., a restaurant). We call these specific things *cost objects.* A **cost object** is any item we want to know the cost of. In your own personal life, you might want to know the cost of attending school for a semester, the cost to buy and operate a car, or the cost of a vacation you would like to take over spring break. Each of these items would be considered a cost object.

As an example, assume you want to know how much it is costing you to take this accounting course. In that case, the course (managerial accounting) is the cost object. How would you go about determining the cost of this course? You would probably start with the costs that are easily attributed to a specific course, such as the cost of tuition and books. Costs that **can be directly and easily traced** to the cost object are called **direct costs**. But there are other costs associated with your education that aren't directly related to one course. Examples include the cost of driving to and from campus, the cost of your computer, and the cost of the supplies you use in class. These costs are difficult to trace to a specific class if you are taking more than one class at a time. Even if you could keep track of the cost of the pencils and paper you use in a specific class, it probably isn't worth the effort to do so. Costs that **cannot be traced** to the cost object, or that are **not worth the effort** of tracing, are called **indirect costs**. When classifying a cost as direct or indirect, the question to ask is whether the cost can be directly and conveniently traced to the cost object. If the answer is yes, it is a direct cost. If it is no, it is an indirect cost.

At California Pizza Kitchen, costs can also be classified as direct or indirect. Recall that 23 percent of CPK's operating cost is for food, beverages, and supplies. Can all of these costs be traced to a specific cost object, such as a new menu item that managers are trying to price? The cost of ingredients used to make the menu item would generally be classified as a direct cost, so long as it is worth the effort to trace the cost. However, it may not be worth the effort to try to figure out the exact cost of every ingredient that goes into the menu item. If CPK doesn't see value in tracing these costs to the cost object, they would be classified as indirect costs instead.

**COACH'S TIP**

Whether a cost is direct or indirect depends on whether it is both **possible** and **convenient** to trace the cost to a cost object. Costs that *could* be traced but are not worth the effort to trace are also classified as **indirect costs.**

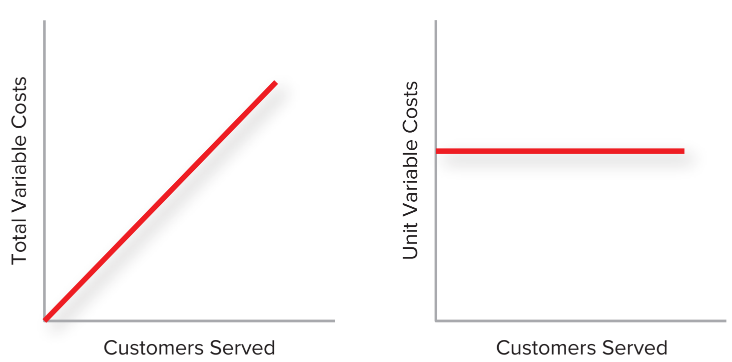
Labor costs, which make up 37 percent of CPK's annual operating costs, can also be categorized as either direct or indirect depending on whether they can be directly and conveniently traced to the product or service the company is delivering. Direct labor would include the cost of employees who are involved in preparing meals or serving customers, such as line cooks, bartenders, waiters, and waitresses. Indirect labor would include the kitchen manager and general restaurant manager because these individuals are generally responsible for supervising other employees rather than preparing and serving meals directly to customers.

What about the 22 percent that CPK spends on occupancy costs such as rent, maintenance, utilities, and property taxes? If we are trying to determine the cost of serving a specific customer (the cost object), costs such as rent and supervision would be considered indirect costs. However, if the manager is trying to determine the cost of operating a specific restaurant (the cost object), occupancy costs such as rent and utilities would be direct costs. CPK calls these costs "direct operating and occupancy costs" because they are associated with a specific restaurant. Costs incurred outside of the restaurant, such as general and administrative expenses and national advertising, would be considered indirect. Remember, whether a cost is considered direct or indirect depends on the cost object we are trying to trace it to.

## VARIABLE VERSUS FIXED COSTS

For internal decision making, managers often want to know how costs will change if something else changes, such as the number of units produced or the number of customers served. **Variable costs** are those that change, in total, in direct proportion to changes in activity levels. In describing its major operating costs, CPK's annual report states that "food, beverage, and paper supplies are variable and increase with sales volume."[6] In other words, as CPK prepares more meals and serves more customers, the total cost of food, beverages, and supplies will also increase.

As you can see from the following graph, although **total** variable costs vary with the number of customers served, the **per-unit** or **average** cost of food, beverages, and supplies will remain the same, regardless of the number of customers served. For example, if the number of customers served doubles, CPK will need to purchase more ingredients, such as pizza dough. But the amount of dough used to make each pizza doesn't change. (Note: for simplicity, this scenario ignores other factors that drive down unit variable costs, such as discounts for buying ingredients in bulk.)




**COACH'S TIP**

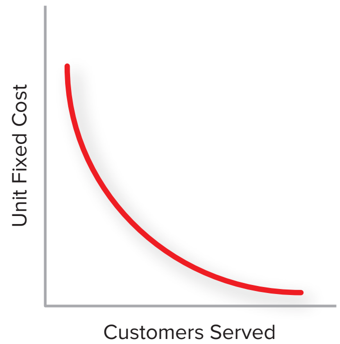
In deciding whether a cost is variable or fixed, be sure to think about whether the **total cost** will change. Looking at average or unit cost will reveal an entirely different pattern, which we examine more closely in Chapter 5.

**Fixed costs** are those that stay the same, in total, regardless of activity level. Examples of fixed costs for CPK include rent, manager salaries, depreciation, and property taxes. When we say that a cost is fixed, that doesn't mean it will never change; it simply means that the total cost won't change because we produce more units or serve more customers.

Although **total** fixed costs are constant, **average** or **per-unit** fixed costs vary inversely with the number of units produced or the number of customers served. That is because

[6]California Pizza Kitchen, Inc., Annual Report for the fiscal year ended January 2, 2011, Form 10-K, United States Securities and Exchange Commission, filed March 17, 2011.

spreading a constant amount over more units or customers drives down the average cost. For example, if the number of customers served doubles, total rent cost remains the same, but the average cost of rent **per customer** will decrease because we divide the total rent cost by a larger number of customers.


In most real-world businesses, costs do not behave in the perfectly predictable patterns described. For example, CPK's annual report states that "direct operating and occupancy costs generally increase with sales volume, but decline as a percentage of restaurant sales."[7] This tells us that direct operating and occupancy costs are not strictly variable or strictly fixed. Some costs, such as server wages and utilities, will increase with higher levels of sales, while other costs, such as management salaries and property taxes, will be incurred regardless of sales. These so-called *mixed costs* are discussed in more detail in Chapter 5.

SPOTLIGHT ON **Decision Making**

### Predicting Fixed and Variable Costs

Assume you are the treasurer of a student club at your university and you are on the planning committee for the end-of-year social event. The committee is in charge of finding a location; renting tables and chairs; and hiring a DJ, photographer, and caterer for the event. Your responsibility as treasurer is to set the budget for the event and make sure the committee stays within that budget.

Which costs would you expect to vary with the number of people attending? Which costs will be the same regardless of how many people attend the event? Why is it important for you to know the answers to these questions? When planning a social event, the cost of the venue, DJ, and photographer will be incurred regardless of how many people attend the event. The cost of catering (food and drinks), tables, and chairs will vary with the number of people who are expected to attend. You need to understand these relationships to prepare a budget for the event because the total cost will depend on the number of guests.

Managers must answer similar questions when making business decisions. They need to understand which costs will vary with the number of units produced or the number of customers served and which will be incurred regardless of these factors.

## MANUFACTURING VERSUS NONMANUFACTURING COSTS

For financial reporting purposes, costs must also be classified based on whether they relate to manufacturing or nonmanufacturing activities. This distinction applies only to companies that make a physical product, such as Dell (computers), Honda (cars and trucks), Harley-Davidson

[7]California Pizza Kitchen, Inc., Annual Report for the fiscal year ended January 2, 2011, Form 10-K, United States Securities and Exchange Commission, filed March 17, 2011.

(motorcycles), and Maytag (appliances). It does not apply to merchandisers or service companies that do not make a physical product.

Because CPK is not a traditional manufacturing company, let's consider the costs incurred by Nestlé to manufacture, distribute, and sell frozen pizzas under the CPK brand. To differentiate between manufacturing and nonmanufacturing costs, we need to consider whether the cost relates to manufacturing or **making** the frozen pizzas, as opposed to marketing, delivering, and selling them.

**Manufacturing costs** represent all of the costs associated with producing or manufacturing a physical product. They are generally classified into one of three categories:

- **Direct materials** include the major material inputs that can be directly and conveniently traced to each unit of product (the cost object). For a frozen pizza manufacturer, direct materials include the major ingredients (e.g., dough, sauce, cheese, and meat), as well as packaging materials (e.g., plastic and cardboard). Miscellaneous ingredients and materials (e.g., seasonings and glue for the cardboard box) that are not worth tracing to each individual unit would be considered indirect materials and included in manufacturing overhead.
- **Direct labor** refers to the "hands on" labor that can be directly and conveniently traced to the product, such as the wages of employees on the pizza production line and in the packaging department. It does not include employees who rarely touch the product as it is being produced, such as supervisors, maintenance workers, and factory engineers. The costs associated with those employees are considered indirect labor and counted as part of manufacturing overhead.
- **Manufacturing overhead** includes all manufacturing costs **other than direct materials and direct labor** incurred to produce a physical product. It includes all of the costs associated with *making* the product that cannot be traced to a specific unit, such as indirect materials, indirect labor, factory rent, factory insurance, and factory utilities. Manufacturing overhead does *not* include costs that happen outside of the factory walls (e.g., marketing, distribution, or sales), only those indirect costs that are related to manufacturing the product.

When added together, direct materials and direct labor are referred to as **prime costs**. For manual production processes, the direct materials and direct labor often represent the *primary* costs incurred to make the product. As manufacturing has become more automated and labor has shifted from direct labor (i.e., line-worker wages) to indirect labor (i.e., engineers and supervisors), manufacturing overhead has become a much larger percentage of total manufacturing cost.

Prime Cost =
Direct Materials
+
Direct Labor

Direct labor and manufacturing overhead are referred to collectively as **conversion costs**. These are the costs needed to *convert* direct materials into a finished product. For Nestlé, conversion costs include all costs incurred to convert raw ingredients into a finished product (pizza).

Conversion Cost =
Direct Labor
+
Manufacturing Overhead

Notice that direct labor is included in both prime costs (direct materials + direct labor) and in conversion costs (direct labor + manufacturing overhead). As such, you cannot add prime costs to conversion costs to determine the total manufacturing cost, because direct labor is included in both components. The sum of the three manufacturing costs (direct materials + direct labor + manufacturing overhead) gives us the total manufacturing cost. Alternatively, you could add prime cost to conversion costs and then subtract the direct labor to prevent it from being counted twice.

**Nonmanufacturing costs** are the costs associated with running the business and selling the product as opposed to manufacturing the product. They are generally classified into one of two groups:

- **Marketing or selling expenses** are incurred to get the final product to the customer. For Nestlé, they would include advertising, sales personnel, and the cost of distributing the frozen pizzas to grocery stores.

- **General and administrative expenses** are associated with running the overall business. They include general management salaries, rent and utilities for corporate headquarters, and corporate service functions such as the accounting, payroll, and legal departments. Nestlé would also place the salaries of those who manage the company's relationship with CPK under this category.

## PRODUCT VERSUS PERIOD COSTS

The difference between product costs and period costs determines **how and when** the cost will be matched up against revenue on the income statement. This distinction really has more to do with financial accounting (external reporting) than managerial accounting. However, it is important for manufacturing firms that hold significant amounts of inventory because it determines whether a cost is counted as inventory (an asset on the balance sheet) or as an expense on the income statement. Classifying a cost as product or period can affect the reported profitability of the company's products, customers, and divisions.

For external reporting purposes, GAAP requires that all manufacturing costs be treated as **product costs**, or costs that are assigned to the product as it is being manufactured. Product costs are also called **inventoriable costs** because they are counted as inventory (an asset) until the product is sold. Remember that manufacturing costs include direct materials (e.g., major ingredients and packaging materials), direct labor (e.g., wages of employees who make the pizzas), and manufacturing overhead (e.g., supervisor salaries, miscellaneous ingredients, factory rent, and utilities, etc.). These costs must follow the flow of the product as it is being produced and are initially recorded in one of the following inventory accounts: Raw Materials Inventory, Work in Process Inventory, or Finished Goods Inventory. Once the product is finally sold, product costs are reported as Cost of Goods Sold and matched up against sales revenue on the income statement.

> **COACH'S TIP**
>
> The distinction between period and product costs is a matter of **when** the cost is matched against revenue on the income statement. Period costs are expensed as soon as they are incurred. Product costs are recorded initially as inventory and do not appear on the income statement until the product is sold.

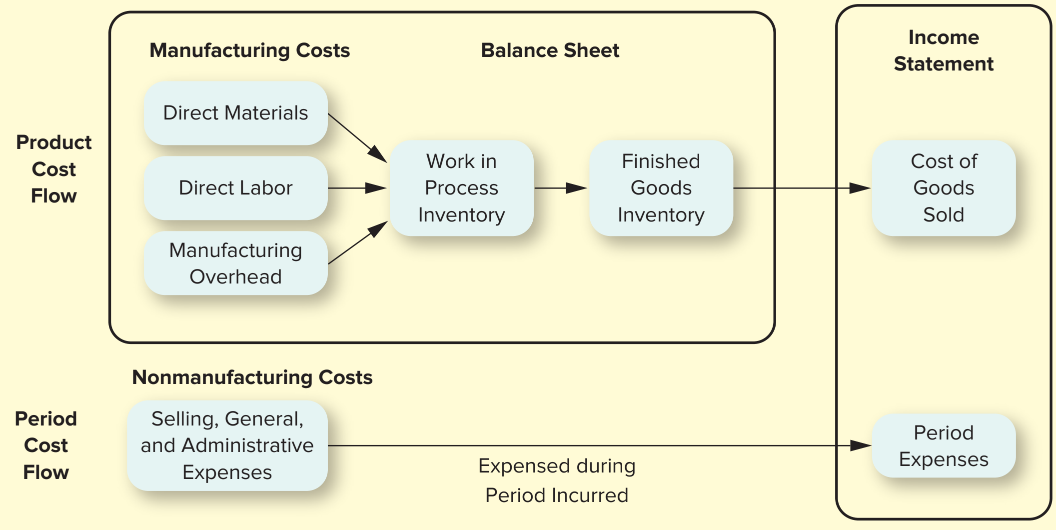
Nonmanufacturing costs are called **period costs** or period expenses because they are expensed during the period incurred. Unlike product costs that flow through several inventory accounts before being reported as Cost of Goods Sold, nonmanufacturing costs are expensed as soon as they are incurred. Examples of nonmanufacturing or period expenses include advertising, sales commissions, distribution expenses, and general and administrative salaries. Refer to Exhibit 1–4 for an illustration of the different treatment of product and period costs under GAAP.

Later chapters demonstrate how to account for the flow of manufacturing costs through the various inventory accounts before being reported as Cost of Goods Sold. For now, you simply need to recognize that manufacturing costs (product costs) will be treated differently than nonmanufacturing costs (period costs) for financial reporting purposes.

## RELEVANT VERSUS IRRELEVANT COSTS

For managerial accounting information to be useful for decision making, it must be **relevant** to the specific decision that managers are trying to make. In today's information age, managers have access to a tremendous amount of data, much of which is irrelevant to the decision at hand. In addition, managers sometimes fail to incorporate relevant information into their decisions because it is not easily captured by the accounting system. Determining what information is relevant to managerial decisions is one of the most important skills that you will learn in this course. A **relevant cost** has the potential to influence a decision; an **irrelevant cost** will not influence a decision. For a cost to be relevant, it must occur **in the future** and **differ** between the various alternatives the manager is considering. Costs that differ between decision alternatives are sometimes called incremental or **differential costs**. For example, a manager at CPK might be trying to decide whether to make or buy pizza dough, lease or purchase restaurant equipment, or keep or drop an unprofitable menu item. Different costs are relevant and irrelevant for each of these scenarios. For example, the cost of wheat or flour used to make pizza dough is relevant to the decision about whether to make or buy the dough,

**EXHIBIT 1–4** Product and Period Cost Flows




but is not relevant to the decision about whether to lease or purchase equipment. In addition, if a cost has already been incurred, the amount spent in the past is not relevant to what a manager decides to do in the future. So, if CPK has already purchased enough dough to last the rest of the month, the amount of money spent on the dough is irrelevant to the decision about whether to continue to buy pizza dough or to begin making it. The money has already been spent. Costs that have already been incurred are called **sunk costs**. Although **sunk costs are irrelevant** for decision making, it is often very difficult for managers to ignore what happened in the past and focus only on the future.

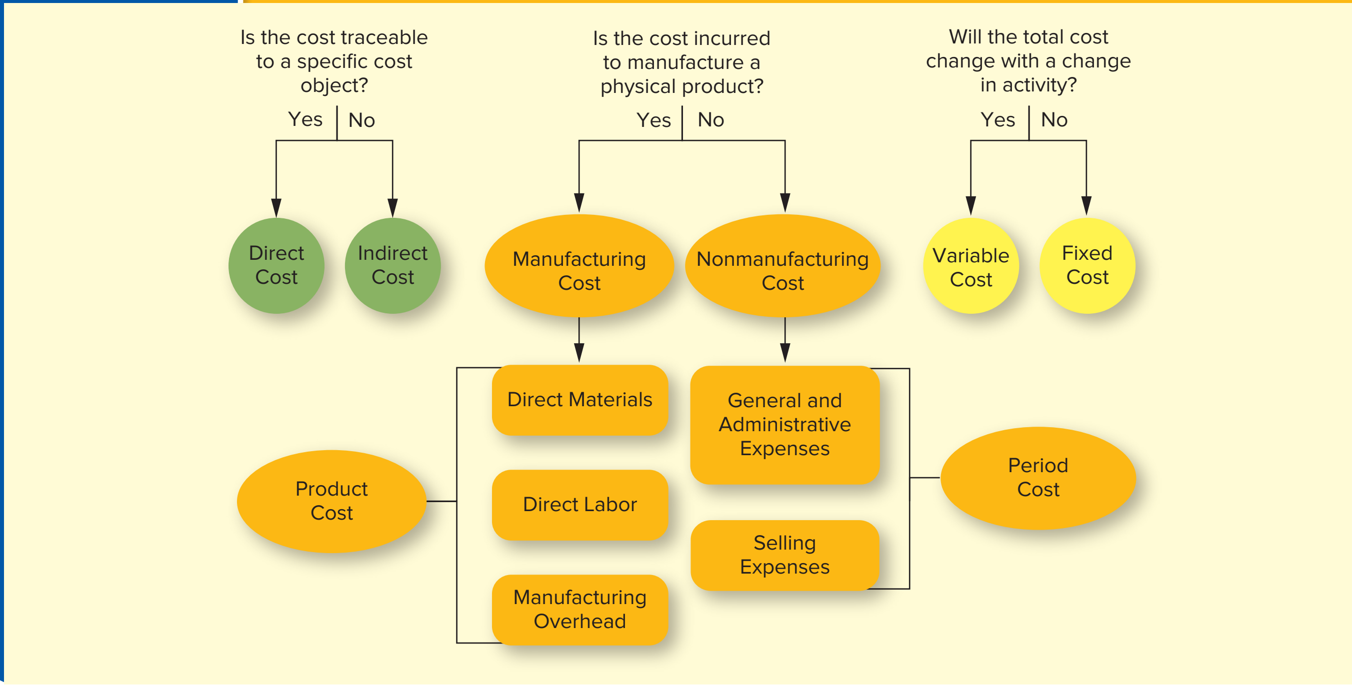
Another important distinction is the difference between an out-of-pocket costs and an opportunity cost. **Out-of-pocket costs** involve an actual cash payment. In your personal life, these are costs you pay "out of your pocket" for things such as food, clothing, and entertainment.

Unlike an out-of-pocket cost that involves an outlay of cash, an **opportunity cost** is the cost of **not** doing something. In other words, it is the forgone benefit (or lost opportunity) of the path not taken. Anytime you choose to do one thing instead of another because of limited time or money, you incur an opportunity cost. For example, if you are going to school full-time, you are giving up the opportunity to earn money by working full-time. The potential salary you could be making if you were not in school is an opportunity cost of pursuing your education.

Opportunity costs occur in business any time resources are constrained and managers must choose to do one thing at the expense of another. For example, a manager at CPK might be asked to close the restaurant to host a private event such as a corporate holiday party. By doing so, the company loses the opportunity to sell food and drinks to other customers. The managerial accounting system can help managers identify the opportunity cost based on the amount of profit that would normally be generated on a given night. If that opportunity cost is too high, managers might decide that they will only host private events on certain days or times of the week when business is slow.

Exhibit 1–5 provides a summary of the various ways to categorize or classify costs. Each classification requires you to ask a different question to determine how the information will be used in managerial accounting. We will reference this terminology throughout the book as we consider how managers use cost and other managerial accounting information to make decisions for their organization.

**EXHIBIT 1–5** Cost Classification System: Different Costs for Different Purposes




Before continuing, complete the following Self-Study Practice to see how well you understand the cost terminology.

## How's it going? Self-Study Practice

Match the appropriate description on the right to the terms on the left.

_____ 1. Product costs
_____ 2. Period costs
_____ 3. Manufacturing costs
_____ 4. Nonmanufacturing costs
_____ 5. Variable costs
_____ 6. Fixed costs
_____ 7. Direct costs
_____ 8. Indirect costs
_____ 9. Out-of-pocket costs
_____ 10. Opportunity cost
_____ 11. Sunk costs

A. Costs that remain the same in total regardless of activity level.
B. Costs that involve an outlay of cash for items such as rent, utilities, and salaries.
C. The benefit that you forgo when you select one alternative over another.
D. Costs that can be directly and conveniently traced to a specific cost object.
E. Costs that have already been incurred and thus are not relevant to future decisions.
F. Costs that are expensed in the period they are incurred.
G. Costs that are incurred while making a physical product, such as direct materials, direct labor, and manufacturing overhead.
H. Costs that cannot be directly or conveniently traced to a specific cost object.
I. Costs that change in total in direct proportion to a change in activity level.
J. Costs that are attached to the product as it is produced and included in inventory until the product is sold.
K. Costs that are not related to producing a product, such as selling and administrative costs.

*After you have finished, check your answers against the solutions in the margin.*

Solution to Self-Study Practice

1. J
2. F
3. G
4. K
5. I
6. A
7. D
8. H
9. B
10. C
11. E

## SUPPLEMENT 1A CAREERS THAT DEPEND ON ACCOUNTING KNOWLEDGE

Accounting knowledge can make the difference in your ability to land a dream job, whether you hope to work in production and operations management, human resources, finance, marketing, or another field. Exhibit 1S–1 displays nonaccounting jobs that could be available to you at the world's leading companies and explains how accounting knowledge can be vital to these positions.

**EXHIBIT 1S–1** Accounting Knowledge Can Benefit All Majors

**Production and Operations Management**

**Production Manager,** Nintendo: Figure out how to make a $250 3DS for $100.71.

**Outsourcing Specialist,** Apple: Coordinate more than 20 suppliers of parts for the next iPad, at the same total cost as legacy iPads.

**Human Resources**

**Compensation Analyst,** Google: Develop affordable, attractive global pay programs.

**Labor Relations Manager,** NBA Players' Union: Assist in salary renegotiations involving the $58 million salary cap and 57% revenue sharing guarantee.

**Accounting**

**Finance**

**Investment Analyst,** Goldman Sachs: Assess value of investing $50 million in Facebook.

**Financial Analyst,** Target Corporation: Help credit card segment reduce the number of days awaiting collections from customers.

**Marketing**

**Brand Manager,** H. J. Heinz Company: Set prices to achieve 5% annual sales growth.

**Customer Business Developer,** Procter & Gamble: Collaborate with accounting to enhance customer profits and cash flows.

*Sources:* http://techland.time.com/2011/03/29/the-incredibly-cheap-100-nintendo-3ds; http://blogs.forbes.com/johnray/2011/03/11/isuppli-teardown-of-the-ipad-2-investor-edition/; http://www.isuppli.com/Teardowns/News/Pages/iPad-2-Carries-Bill-of-Materials-of-$326-60-IHS-iSuppli-Teardown-Analysis-Shows.aspx; http://www.nytimes.com/2011/05/25/sports/basketball/players-accuse-nba-of-failing-to-bargain-in-good-faith.html?_r=1&ref=nationallaborrelationsboard.
Photo: ©Rubberball/Getty images

## REVIEW THE CHAPTER

### DEMONSTRATION CASE

Barnaby's Bicycle Company manufactures high-quality mountain bikes. The company's managerial accountant has come to you for help. She needs to classify and identify each of the following costs before she can calculate the cost to produce each mountain bike.

Classify each of the costs listed in the chart below into three categories based on the following questions:

1. Can this cost be directly and conveniently traced to each bicycle that is manufactured, or is doing so either not possible or not worth the effort?
2. Is this cost related to manufacturing the bicycles? If so, what type of cost is it? Or is it a nonmanufacturing or period expense?
3. Will the total cost vary with the number of bicycles manufactured and sold, or will it remain the same regardless of how many bikes are produced and sold?