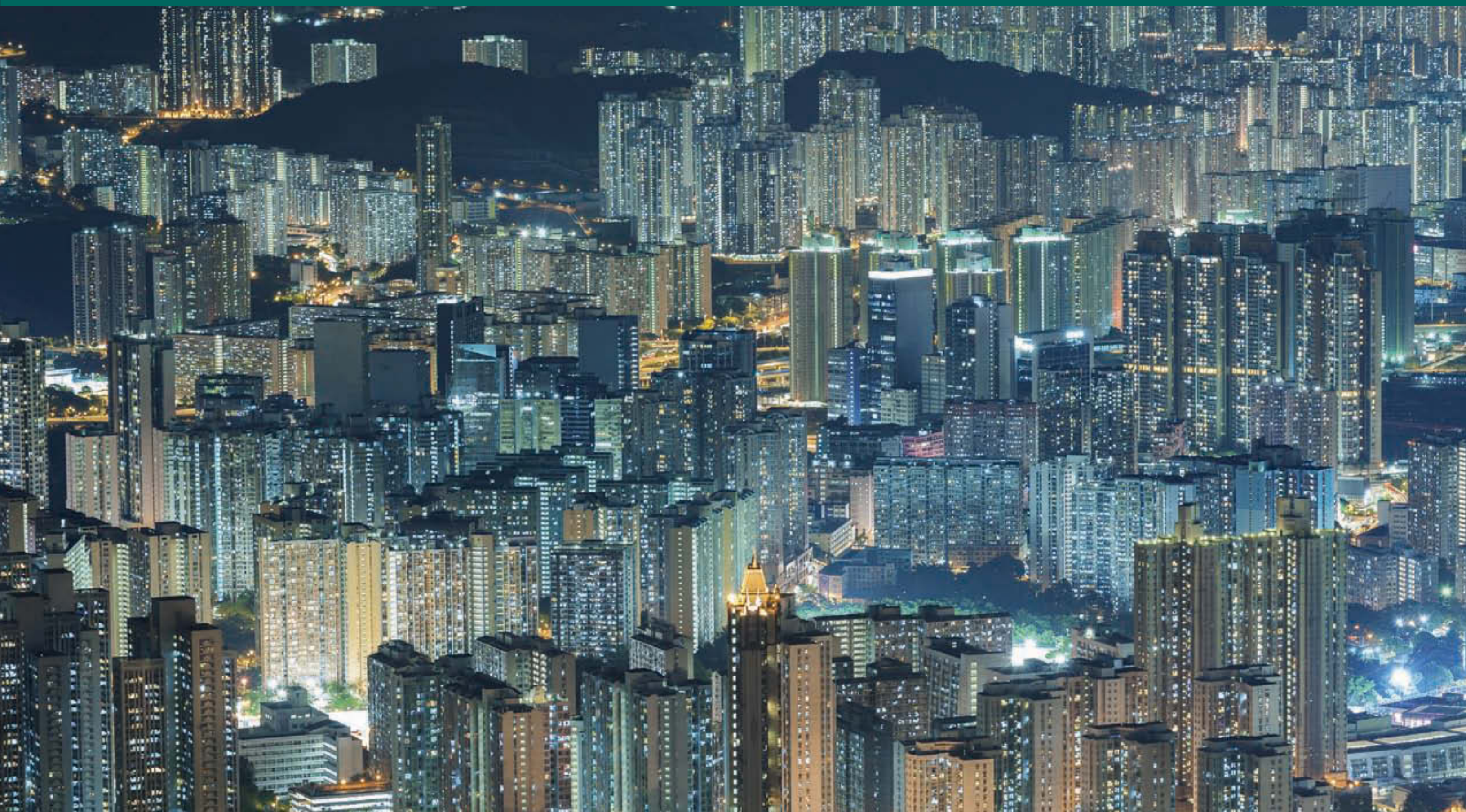
WEYGANDT | KIMMEL | KIESO

Managerial Accounting

Tools for Business Decision Making

Seventh Edition



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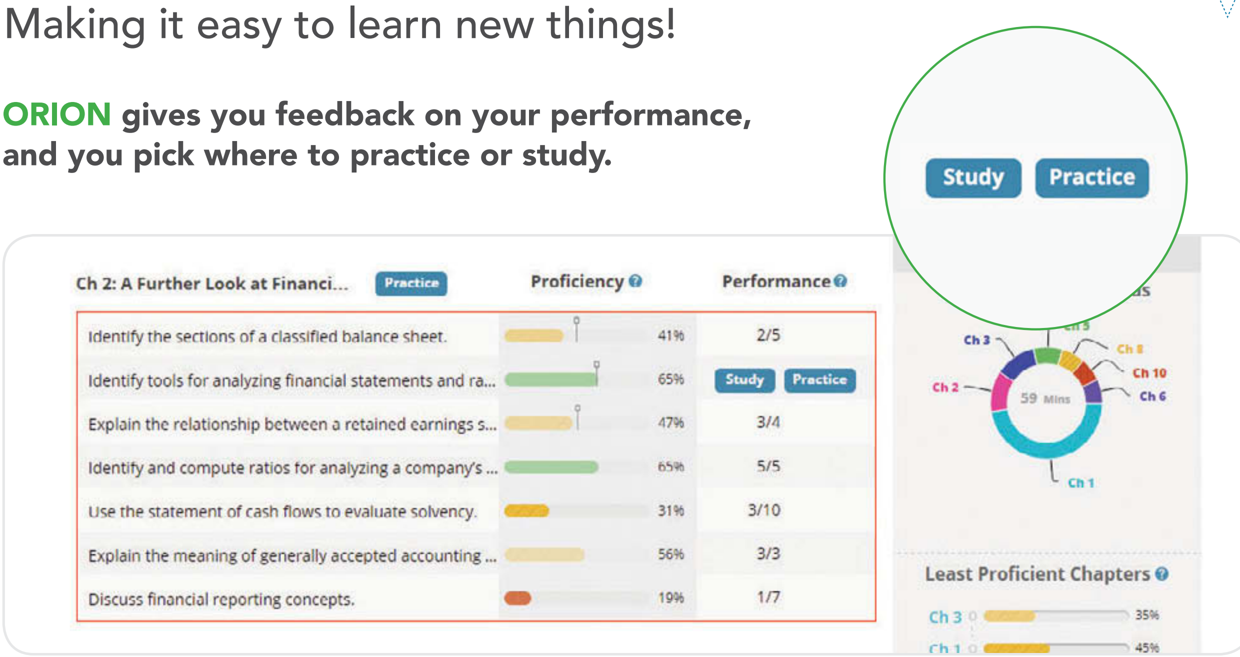

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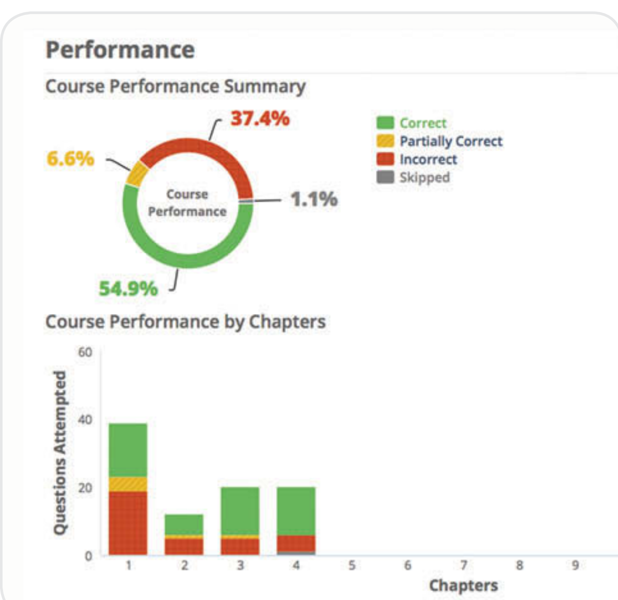

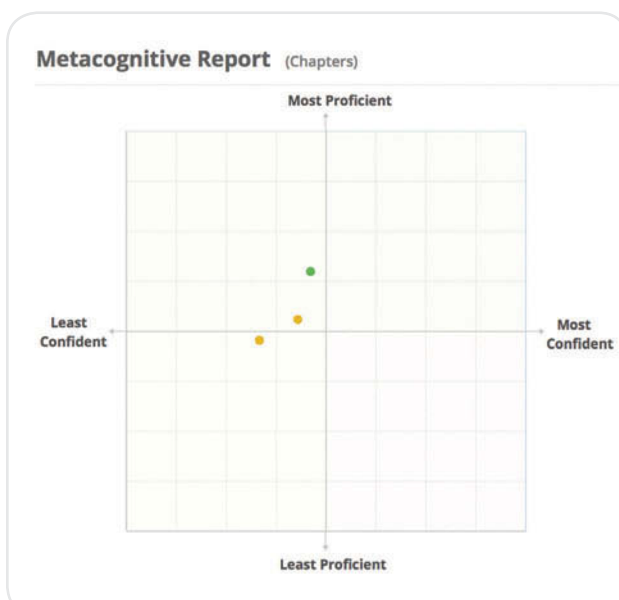

weygandt
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team for success

International Student Version

MANAGERIAL ACCOUNTING

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SEVENTH EDITION

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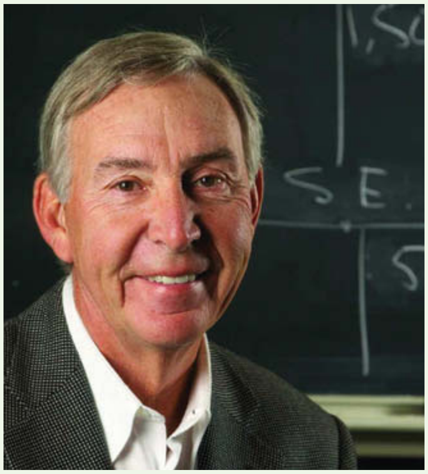

Jerry Weygandt

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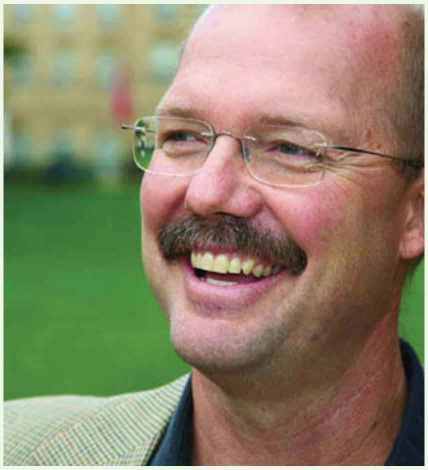

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Don Kieso

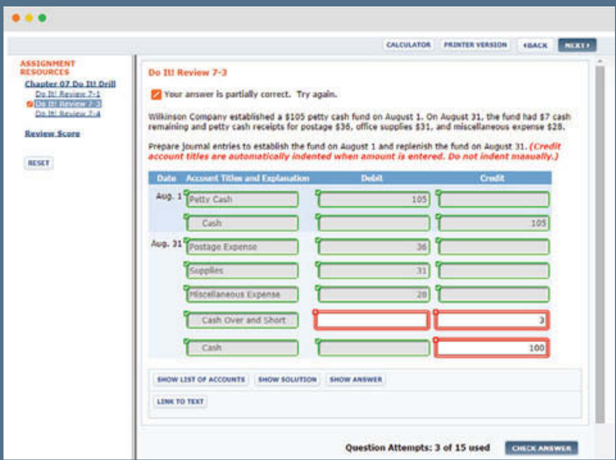
DONALD E. KIESO, PhD, CPA, received his bachelor's degree from Aurora University and his doctorate in accounting from the University of Illinois. He has served as chairman of the Department of Accountancy and is currently the KPMG Emeritus Professor of Accountancy at Northern Illinois University. He has public accounting experience with Price Waterhouse & Co. (San Francisco and Chicago) and Arthur Andersen & Co. (Chicago) and research experience with the Research Division of the American Institute of Certified Public Accountants (New York). He has done post doctorate work as a Visiting Scholar at the University of California at Berkeley and is a recipient of NIU's Teaching Excellence Award and four Golden Apple Teaching Awards. Professor Kieso is the author of other accounting and business books and is a member of the American Accounting Association, the American Institute of Certified Public Accountants, and the Illinois CPA Society. He has served as a member of the Board of Directors of the Illinois CPA Society, then AACSB's Accounting Accreditation Committees, the State of Illinois Comptroller's Commission, as Secretary-Treasurer of the Federation of Schools of Accountancy, and as Secretary-Treasurer of the American Accounting Association. Professor Kieso is currently serving on the Board of Trustees and Executive Committee of Aurora University, as a member of the Board of Directors of Kishwaukee Community Hospital, and as Treasurer and Director of Valley West Community Hospital. From 1989 to 1993 he served as a charter member of the national Accounting Education Change Commission. He is the recipient of the Outstanding Accounting Educator Award from the Illinois CPA Society, the FSA's Joseph A. Silvoso Award of Merit, the NIU Foundation's Humanitarian Award for Service to Higher Education, a Distinguished Service Award from the Illinois CPA Society, and in 2003 an honorary doctorate from Aurora University.

Personalized Practice

Based on cognitive science, **WileyPLUS with ORION** is a personalized, adaptive learning experience that gives students the practice they need to build proficiency on topics while using their study time most effectively. The adaptive engine is powered by hundreds of unique questions per chapter, giving students endless opportunities for practice throughout the course.

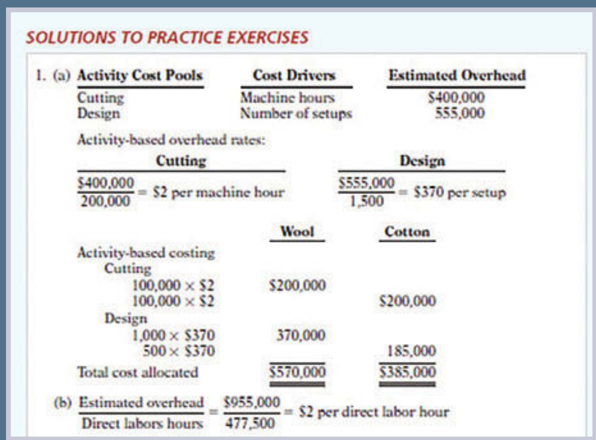
Review and Practice

A new section in the text and in **WileyPLUS** offers students more opportunities for self-guided practice.



In the text, the new Review and Practice section includes:

- Learning Objectives Review
- Glossary Review
- Practice Multiple-Choice Questions and Solutions
- Practice Exercises and Solutions
- Practice Problem and Solution



SOLUTIONS TO PRACTICE EXERCISES

1. (a)

Activity Cost Pools	Cost Drivers	Estimated Overhead
Cutting	Machine hours	$400,000
Design	Number of setups	555,000

Activity-based overhead rates:

Cutting: $\frac{\$400,000}{200,000} = \$2$ per machine hour

Design: $\frac{\$555,000}{1,500} = \$370$ per setup

	Wool	Cotton
Activity-based costing		
Cutting		
100,000 × $2	$200,000	
100,000 × $2		$200,000
Design		
1,000 × $370	370,000	
500 × $370		185,000
Total cost allocated	$570,000	$385,000

(b) $\frac{\text{Estimated overhead}}{\text{Direct labors hours}} = \frac{\$955,000}{477,500} = \$2$ per direct labor hour

In **WileyPLUS**, the new practice assignments include several Do ITs, Brief Exercises, Exercises, and Problems, giving students the opportunity to check their work or see the answer and solution after their final attempt.

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What's New?

WileyPLUS with ORION

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

Updated Content and Design

We scrutinized all chapter material to find new ways to engage students and help them learn accounting concepts. Up-to-date coverage and new discussions of important managerial accounting topics include Chapter 1, **sustainable business**, and Chapter 14, **sustainable income and statement of comprehensive income**. Homework problems were updated in all chapters.

A new learning objective structure helps students practice their understanding of concepts with DO IT! exercises: (all available on the Book Companion Site) before they move on to different topics in other learning objectives. Coupled with a new interior design and revised infographics, the new outcomes-oriented approach motivates students and helps them make the best use of their time.

WileyPLUS Videos

Over 150 videos are available in WileyPLUS. More than 80 of the videos are new to the Seventh Edition. The videos walk students through relevant homework problems and solutions, review important concepts, provide overviews of Excel skills, and explore topics in a real-world context.

Student Practice and Solutions

New practice opportunities with solutions are integrated throughout the textbook and WileyPLUS course. Each textbook chapter now provides students with a **Review and Practice** section that includes learning objective summaries and both practice exercises and problems with solutions. Also, each learning objective module in the textbook is followed by a DO IT! exercise with an accompanying solution which are available on the Book Companion Site.

In **WileyPLUS**, two brief exercises, two DO IT! exercises, two exercises, and a new problem are available for practice with each chapter. All of the questions are algorithmic, providing students with multiple opportunities for advanced practice.

Real World Context: Feature Stories and Comprehensive Problems

New feature stories frame chapter topics in a real-world company example. Also, the feature stories now closely correlate with the Using the Decision Tools problem at the end of each chapter and with the managerial accounting video series. In WileyPLUS, real-world Insight boxes now have questions that can be assigned as homework.

Excel

A continuing Excel tutorial is available on the Book Companion Site for students. New Excel skill videos help students understand Excel features they can apply in their accounting studies. New Excel "What If?" templates help students apply their understanding of Excel and consider the effects of changes in one value on a spreadsheet with other values on a spreadsheet.

More information about the Seventh Edition is available on the book's website at **www.wiley.com/college/weygandt**.

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(These resources are available online at *www.wiley.com/college/weygandt*)

Chapter 1 Managerial Accounting

Mike Cichanowski grew up on the Mississippi River in Winona, Minnesota. At a young age, he learned to paddle a canoe so he could explore the river. Before long, Mike began crafting his own canoes from bent wood and fiberglass in his dad's garage. Then, when his canoe-making shop outgrew the garage, he moved it into an old warehouse. When that was going to be torn down, Mike came to a critical juncture in his life. He took out a bank loan and built his own small shop, giving birth to the company Wenonah Canoe.

Wenonah Canoe soon became known as a pioneer in developing techniques to get the most out of new materials such as plastics, composites, and carbon fibers—maximizing strength while minimizing weight.

In the 1990s, as kayaking became popular, Mike made another critical decision when he acquired Current Designs, a premier Canadian kayak manufacturer. This venture allowed Wenonah to branch out with new product lines while providing Current Designs with much-needed capacity expansion and manufacturing expertise. Mike moved Current Designs' headquarters to Minnesota and made a big (and potentially risky) investment in a new production facility. Today, the company's 90 employees produce about 12,000 canoes and kayaks per year. These are sold across the country and around the world.

Mike will tell you that business success is "a three-legged stool." The first leg is the knowledge and commitment to make a great product. Wenonah's canoes and Current Designs' kayaks are widely regarded as among the very best. The second leg is the ability to sell your product. Mike's company started off making great canoes, but it took a little longer to figure out how to sell them. The third leg is not something that most of you would immediately associate with entrepreneurial success. It is what goes on behind the scenes—accounting. Good accounting information is absolutely critical to the countless decisions, big and small, that ensure the survival and growth of the company.

Bottom line: No matter how good your product is, and no matter how many units you sell, if you don't have a firm grip on your numbers, you are up a creek without a paddle.

Source: www.wenonah.com.

LEARNING OBJECTIVES

1. **Identify the features of managerial accounting and the functions of management.**
2. **Describe the classes of manufacturing costs and the differences between product and period costs.**
3. **Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer.**
4. **Discuss trends in managerial accounting.**

LEARNING OBJECTIVE 1 Identify the features of managerial accounting and the functions of management.

Managerial accounting provides economic and financial information for managers and other internal users. The skills that you learn in this course will be vital to your future success in business. You don't believe us? Let's look at some examples of some of the crucial activities of employees at Current Designs and where those activities are addressed in this textbook.

In order to know whether it is making a profit, Current Designs needs accurate information about the cost of each kayak (Chapters 2, 3, and 4). To be profitable, Current Designs adjusts the number of kayaks it produces in response to changes in economic conditions and consumer tastes. It needs to understand how changes in the number of kayaks it produces impact its production costs and profitability (Chapters 5 and 6). Further, Current Designs' managers often consider alternative courses of action. For example, should the company accept a special order from a customer, produce a particular kayak component internally or outsource it, or continue or discontinue a particular product line (Chapter 7)? Finally, one of the most important and most difficult decisions is what price to charge for the kayaks (Chapter 8).

In order to plan for the future, Current Designs prepares budgets (Chapter 9), and it then compares its budgeted numbers with its actual results to evaluate performance and identify areas that need to change (Chapters 10 and 11). Finally, it sometimes needs to make substantial investment decisions, such as the building of a new plant or the purchase of new equipment (Chapter 12).

Someday, you are going to face decisions just like these. You may end up in sales, marketing, management, production, or finance. You may work for a company that provides medical care, produces software, or serves up mouth-watering meals. No matter what your position is and no matter what your product, the skills you acquire in this class will increase your chances of business success. Put another way, in business you can either guess or you can make an informed decision. As a CEO of Microsoft once noted: "If you're supposed to be making money in business and supposed to be satisfying customers and building market share, there are numbers that characterize those things. And if somebody can't speak to me quantitatively about it, then I'm nervous." This course gives you the skills you need to quantify information so you can make informed business decisions.

Comparing Managerial and Financial Accounting

There are both similarities and differences between managerial and financial accounting. First, each field of accounting deals with the economic events of a business. For example, *determining* the unit cost of manufacturing a product is part of managerial accounting. *Reporting* the total cost of goods manufactured and sold is part of financial accounting. In addition, both managerial and financial accounting require that a company's economic events be quantified and communicated to interested parties. Illustration 1-1 summarizes the principal differences between financial accounting and managerial accounting.

Management Functions

Managers' activities and responsibilities can be classified into three broad functions:

1. Planning
2. Directing
3. Controlling

In performing these functions, managers make decisions that have a significant impact on the organization.

Planning requires managers to look ahead and to establish objectives. These objectives are often diverse: maximizing short-term profits and market share, maintaining a commitment to environmental protection, and contributing to social programs. For example, Hewlett-Packard, in an attempt to gain a stronger foothold in the computer industry, greatly reduced its prices to compete with Dell. A key objective of management is to **add value** to the business under its control. Value is usually measured by the price of the company's stock and by the potential selling price of the company.

Feature	Financial Accounting	Managerial Accounting
Primary Users of Reports	External users: stockholders, creditors, and regulators.	Internal users: officers and managers.
Types and Frequency of Reports	Financial statements. Quarterly and annually.	Internal reports. As frequently as needed.
Purpose of Reports	General-purpose.	Special-purpose for specific decisions.
Content of Reports	Pertains to business as a whole. Highly aggregated (condensed). Limited to double-entry accounting and cost data. Generally accepted accounting principles.	Pertains to subunits of the business. Very detailed. Extends beyond double-entry accounting to any relevant data. Standard is relevance to decisions.
Verification Process	Audited by CPA.	No independent audits.

Illustration 1-1
Differences between financial and managerial accounting

Directing involves coordinating a company's diverse activities and human resources to produce a smooth-running operation. This function relates to implementing planned objectives and providing necessary incentives to motivate employees. For example, manufacturers such as Campbell Soup Company, General Motors, and Dell need to coordinate purchasing, manufacturing, warehousing, and selling. Service corporations such as American Airlines, Federal Express, and AT&T coordinate scheduling, sales, service, and acquisitions of equipment and supplies. Directing also involves selecting executives, appointing managers and supervisors, and hiring and training employees.

The third management function, **controlling**, is the process of keeping the company's activities on track. In controlling operations, managers determine whether planned goals are met. When there are deviations from targeted objectives, managers decide what changes are needed to get back on track. Scandals at companies like Enron, Lucent, and Xerox attest to the fact that companies need adequate controls to ensure that the company develops and distributes accurate information.

How do managers achieve control? A smart manager in a very small operation can make personal observations, ask good questions, and know how to evaluate the answers. But using this approach in a larger organization would result in chaos. Imagine the president of Current Designs attempting to determine whether the company is meeting its planned objectives without some record of what has happened and what is expected to occur. Thus, large businesses typically use a formal system of evaluation. These systems include such features as budgets, responsibility centers, and performance evaluation reports—all of which are features of managerial accounting.

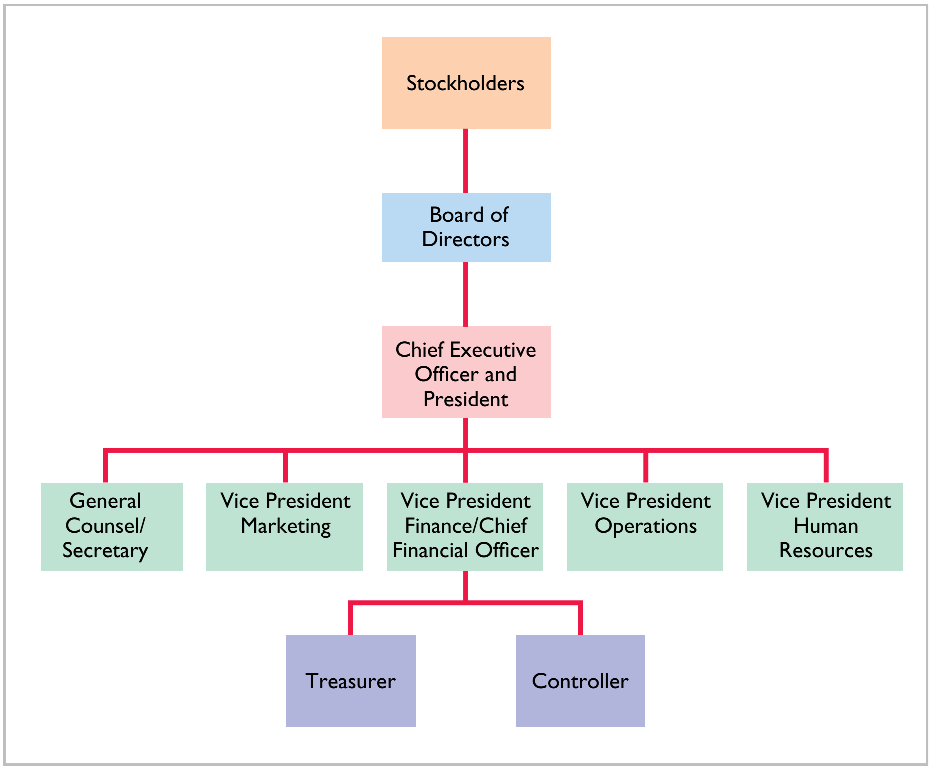
Decision-making is not a separate management function. Rather, it is the outcome of the exercise of good judgment in planning, directing, and controlling.

Organizational Structure

Most companies prepare **organization charts** to show the interrelationships of activities and the delegation of authority and responsibility within the company. Illustration 1-2 shows a typical organization chart.

Stockholders own the corporation, but they manage it indirectly through a **board of directors** they elect. The board formulates the operating policies for the company or organization. The board also selects officers, such as a president and one or more vice presidents, to execute policy and to perform daily management functions.

Illustration 1-2
A typical corporate organization chart



The **chief executive officer (CEO)** has overall responsibility for managing the business. As the organization chart above shows, the CEO delegates responsibilities to other officers.

Responsibilities within the company are frequently classified as either line or staff positions. Employees with **line positions** are directly involved in the company's primary revenue-generating operating activities. Examples of line positions include the vice president of operations, vice president of marketing, plant managers, supervisors, and production personnel. Employees with **staff positions** are involved in activities that support the efforts of the line employees. In a company like General Electric or Facebook, employees in finance, legal, and human resources have staff positions. While activities of staff employees are vital to the company, these employees are nonetheless there to serve the line employees who engage in the company's primary operations.

The **chief financial officer (CFO)** is responsible for all of the accounting and finance issues the company faces. The CFO is supported by the **controller** and the **treasurer**. The controller's responsibilities include (1) maintaining the accounting records, (2) ensuring an adequate system of internal control, and (3) preparing financial statements, tax returns, and internal reports. The treasurer has custody of the corporation's funds and is responsible for maintaining the company's cash position.

Also serving the CFO is the internal audit staff. The staff's responsibilities include reviewing the reliability and integrity of financial information provided by the controller and treasurer. Staff members also ensure that internal control systems are functioning properly to safeguard corporate assets. In addition, they investigate compliance with policies and regulations. In many companies, these staff members also determine whether resources are used in the most economical and efficient fashion.

The vice president of operations oversees employees with line positions. For example, the company might have multiple plant managers, each of whom reports to the vice president of operations. Each plant also has department managers, such as fabricating, painting, and shipping, each of whom reports to the plant manager.

LEARNING OBJECTIVE 2

Describe the classes of manufacturing costs and the differences between product and period costs.

In order for managers at a company like Current Designs to plan, direct, and control operations effectively, they need good information. One very important type of information relates to costs. Managers should ask questions such as the following.

1. What costs are involved in making a product or performing a service?
2. If we decrease production volume, will costs decrease?
3. What impact will automation have on total costs?
4. How can we best control costs?

To answer these questions, managers obtain and analyze reliable and relevant cost information. The first step is to understand the various cost categories that companies use.

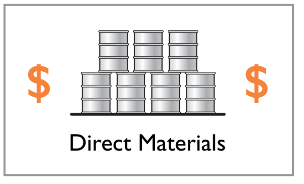
Manufacturing Costs

Manufacturing consists of activities and processes that convert raw materials into finished goods. Contrast this type of operation with merchandising, which sells products in the form in which they are purchased. Manufacturing costs are classified as direct materials, direct labor, and manufacturing overhead.

DIRECT MATERIALS

To obtain the materials that will be converted into the finished product, the manufacturer purchases raw materials. **Raw materials** are the basic materials and parts used in the manufacturing process.

Raw materials that can be physically and directly associated with the finished product during the manufacturing process are **direct materials**. Examples include flour in the baking of bread, syrup in the bottling of soft drinks, and steel in the making of automobiles. A primary direct material of many Current Designs' kayaks is polyethylene powder. Some of its high-performance kayaks use Kevlar®.



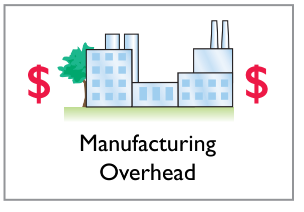
Some raw materials cannot be easily associated with the finished product. These are called indirect materials. **Indirect materials** have one of two characteristics. (1) They do not physically become part of the finished product (such as polishing compounds used by Current Designs for the finishing touches on kayaks). Or, (2) they are impractical to trace to the finished product because their physical association with the finished product is too small in terms of cost (such as cotter pins and lock washers). Companies account for indirect materials as part of **manufacturing overhead**.

DIRECT LABOR

The work of factory employees that can be physically and directly associated with converting raw materials into finished goods is **direct labor**. Bottlers at Coca-Cola, bakers at Sara Lee, and equipment operators at Current Designs are employees whose activities are usually classified as direct labor. **Indirect labor** refers to the work of employees that has no physical association with the finished product or for which it is impractical to trace costs to the goods produced. Examples include wages of factory maintenance people, factory time-keepers, and factory supervisors. Like indirect materials, companies classify indirect labor as **manufacturing overhead**.

MANUFACTURING OVERHEAD

Manufacturing overhead consists of costs that are indirectly associated with the manufacture of the finished product. Overhead costs also include manufacturing costs that cannot be classified as direct materials or direct labor. Manufacturing overhead includes indirect materials, indirect labor, depreciation



Terminology
Some companies use terms such as *factory overhead, indirect manufacturing costs*, and *burden* instead of manufacturing overhead.

on factory buildings and machines, and insurance, taxes, and maintenance on factory facilities.

One study of manufactured goods found the following magnitudes of the three different product costs as a percentage of the total product cost: direct materials 54%, direct labor 13%, and manufacturing overhead 33%. Note that the direct labor component is the smallest. This component of product cost is dropping substantially because of automation. Companies are working hard to increase productivity by decreasing labor. In some companies, direct labor has become as little as 5% of the total cost.

Allocating direct materials and direct labor costs to specific products is fairly straightforward. Good recordkeeping can tell a company how much plastic it used in making each type of gear, or how many hours of factory labor it took to assemble a part. But allocating overhead costs to specific products presents problems. How much of the purchasing agent's salary is attributable to the hundreds of different products made in the same plant? What about the grease that keeps the machines humming, or the computers that make sure paychecks come out on time? Boiled down to its simplest form, the question becomes: Which products cause the incurrence of which costs? In subsequent chapters, we show various methods of allocating overhead to products.

Product Versus Period Costs

Terminology
Product costs are also called *inventoriable costs.*

Each of the manufacturing cost components—direct materials, direct labor, and manufacturing overhead—are product costs. As the term suggests, **product costs** are costs that are a necessary and integral part of producing the finished product. Companies record product costs, when incurred, as inventory. These costs do not become expenses until the company sells the finished goods inventory. At that point, the company records the expense as cost of goods sold.

Period costs are costs that are matched with the revenue of a specific time period rather than included as part of the cost of a salable product. These are nonmanufacturing costs. Period costs include selling and administrative expenses. In order to determine net income, companies deduct these costs from revenues in the period in which they are incurred.

Illustration 1-3 summarizes these relationships and cost terms. Our main concern in this chapter is with product costs.

Illustration 1-3
Product versus period costs

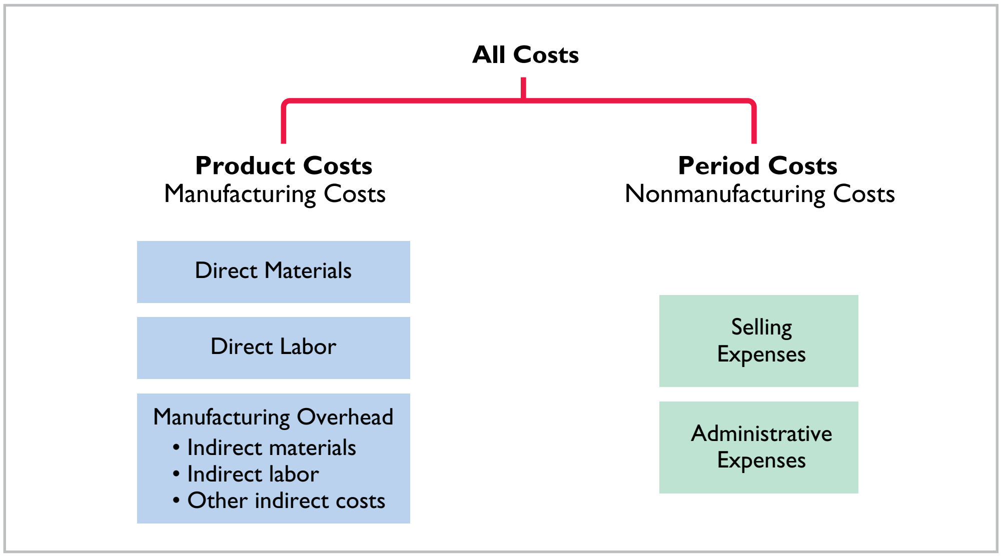


Illustration of Cost Concepts

To improve your understanding of cost concepts, we illustrate them here through an extended example. Suppose you started your own snowboard factory, Terrain