

MANAGERIAL ACCOUNTING

TOOLS FOR BUSINESS DECISION MAKING

EIGHTH EDITION

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Managerial Accounting

Tools for Business Decision Making

Eighth Edition

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Enid, Merlynn, and Donna, for their love, support,
and encouragement.*

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From the Authors

Dear Student,

WHY THIS COURSE? Remember your biology course in high school? Did you have one of those “invisible man” models (or maybe something more high-tech than that) that gave you the opportunity to look “inside” the human body? This accounting course offers something similar. To understand a business, you have to understand the financial insides of a business organization. A managerial accounting course will help you understand the essential financial components of businesses. Whether you are looking at a large multinational company like **Apple** or **Starbucks** or a single-owner software consulting business or coffee shop, knowing the fundamentals of managerial accounting will help you understand what is happening. As an employee, a manager, an investor, a business owner, or a director of your own personal finances—any of which roles you will have at some point in your life—you will make better decisions for having taken this course.

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Besides the textbook itself, the book’s companion website also offers various support resources.

Good luck in this course. We hope you enjoy the experience and that you put to good use throughout a lifetime of success the knowledge you obtain in this course. We are sure you will not be disappointed.

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We will appreciate suggestions and comments from users—instructors and students alike. You can send your thoughts and ideas about the textbook to us via email at: AccountingAuthors@yahoo.com.

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Managerial Accounting

The **Chapter Preview** describes the purpose of the chapter and highlights major topics.

Chapter Preview

This chapter focuses on issues illustrated in the following Feature Story about **Current Designs** and its parent company **Wenonah Canoe**. To succeed, the company needs to determine and control the costs of material, labor, and overhead, and understand the relationship between costs and profits. Managers often make decisions that determine their company's fate—and their own. Managers are evaluated on the results of their decisions. Managerial accounting provides tools to assist management in making decisions and to evaluate the effectiveness of those decisions.

The **Feature Story** helps you picture how the chapter topic relates to the real world of business and accounting.

Feature Story

Just Add Water ... and Paddle

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.



Watch the *What Is Managerial Accounting?* video in WileyPLUS for an introduction to managerial accounting and the topics presented in this course.

Chapter Outline

The *Chapter Outline* presents the chapter's topics and subtopics, as well as practice opportunities.

LEARNING OBJECTIVES

LO 1 Identify the features of managerial accounting and the functions of management.	<ul style="list-style-type: none"> • Comparing managerial and financial accounting • Management functions • Organizational structure 	DO IT! 1 Managerial Accounting Overview
LO 2 Describe the classes of manufacturing costs and the differences between product and period costs.	<ul style="list-style-type: none"> • Manufacturing costs • Product vs. period costs • Illustration of cost concepts 	DO IT! 2 Managerial Cost Concepts
LO 3 Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer.	<ul style="list-style-type: none"> • Income statement • Cost of goods manufactured • Cost of goods manufactured schedule • Balance sheet 	DO IT! 3 Cost of Goods Manufactured
LO 4 Discuss trends in managerial accounting.	<ul style="list-style-type: none"> • Service industries • Value chain • Balanced scorecard • Business ethics • Corporate social responsibility 	DO IT! 4 Trends in Managerial Accounting

Go to the Review and Practice section at the end of the chapter for a review of key concepts and practice applications with solutions.

Visit WileyPLUS with Orion for additional tutorials and practice opportunities.

Managerial Accounting Basics

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.

*Essential terms and concepts are printed in blue where they first appear and are defined in the end-of-chapter **Glossary Review**.*

ILLUSTRATION 1.1 Differences between financial and managerial accounting

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. Evaluated based on relevance to decisions.
Verification Process	Audited by CPA.	No independent audits.

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.

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.

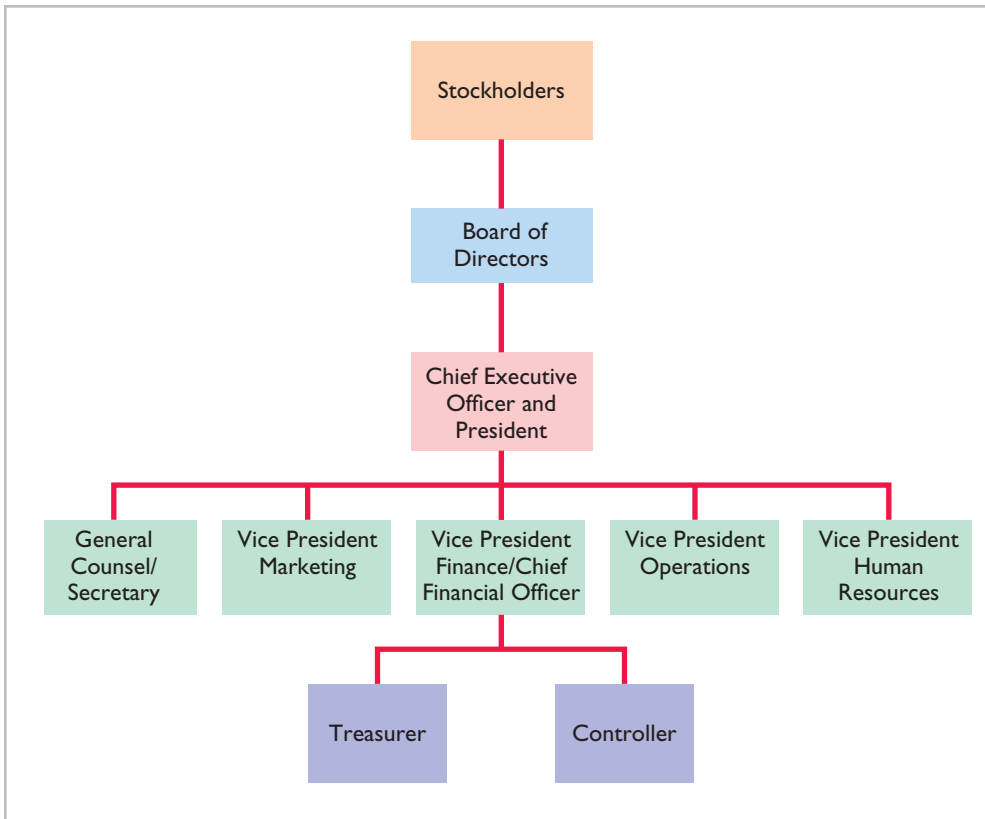
The third management function, **controlling**, is the process of keeping the company's activities on track. In controlling operations, managers determine whether planned goals are met. When there are deviations from targeted objectives, managers decide what changes are needed to get back on track. Scandals 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.

ILLUSTRATION 1.2**A typical corporate 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.

The **chief executive officer (CEO)** has overall responsibility for managing the business. As the organization chart 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.

Management Insight DPR Construction



Sam Edwards/Caiaimage/Getty Images

Does a Company Need a CEO?

Can a company function without a person at the top? Nearly all companies have a CEO although some, such as **Oracle**, **Chipotle**, and **Whole Foods**, have operated with two people in the CEO position. **Samsung** even had three CEOs at the same time. On the other hand, **Abercrombie and Fitch** operated for more than two years without a CEO because its CEO unexpectedly quit and a suitable replacement was hard to find. In fact, some companies replace the CEO position with a management committee. These companies feel this structure improves

decision-making and increases collaboration. For example, the 4,000 employees of **DPR Construction** are overseen by an eight-person committee. Committee members are rotated off gradually but then continue to advise current members. The company notes that this approach provides more continuity over time than the sometimes sudden and harsh changes that occur when CEOs are replaced.

Source: Rachel Feintzeig, “Companies Manage with No CEO,” *Wall Street Journal* (December 13, 2016).

What are some of the advantages cited by companies that choose a structure that lacks a CEO? (Go to WileyPLUS for this answer and additional questions).

Insight boxes illustrate interesting situations in real companies and show how managers make decisions using accounting information. Guideline answers to the critical thinking questions, as well as additional questions, are available in WileyPLUS.

DO IT! exercises ask you to put newly acquired knowledge to work. They outline the Action Plan necessary to complete the exercise, and they show a Solution.

DO IT! 1 | Managerial Accounting Overview

Indicate whether the following statements are true or false. If false, explain why.

1. Managerial accountants have a single role within an organization: collecting and reporting costs to management.
2. Financial accounting reports are general-purpose and intended for external users.
3. Managerial accounting reports are special-purpose and issued as frequently as needed.
4. Managers' activities and responsibilities can be classified into three broad functions: cost accounting, budgeting, and internal control.
5. Managerial accounting reports must now comply with generally accepted accounting principles (GAAP).

Solution

1. False. Managerial accountants do determine product costs, but they are also responsible for evaluating how well the company employs its resources. As a result, when the company makes critical strategic decisions, managerial accountants serve as team members alongside personnel from production, marketing, and engineering.
2. True.
3. True.
4. False. Managers' activities are classified into three broad functions: planning, directing, and controlling. Planning requires managers to look ahead to establish objectives. Directing involves coordinating a company's diverse activities and human resources to produce a smooth-running operation. Controlling keeps the company's activities on track.
5. False. Managerial accounting reports are for internal use and thus do not have to comply with GAAP.

Related exercise material: **BE1.1**, **BE1.2**, **DO IT! 1.1**, and **E1.1**.

ACTION PLAN

- Understand that managerial accounting is a field of accounting that provides economic and financial information for managers and other internal users.
- Understand that financial accounting provides information for external users.
- Analyze which users require which different types of information.

Managerial Cost Concepts

LEARNING OBJECTIVE 2

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

In order for managers at **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 change?
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 incurred to produce a product are classified as direct materials, direct labor, and manufacturing overhead.

Direct Materials

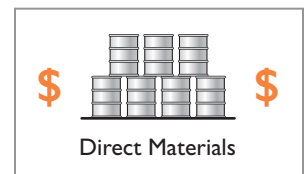
To obtain the materials that will be converted into the finished product, the manufacturer purchases raw materials. **Raw materials** are the basic materials and parts used in the manufacturing process.

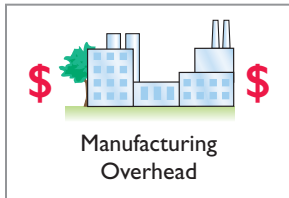
Raw materials that can be physically and directly associated with the finished product during the manufacturing process are **direct materials**. Examples include flour in the baking of bread, syrup in the bottling of soft drinks, and steel in the making of automobiles. A primary direct material of many 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 used in kayak rudder assembly). 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**.





ALTERNATIVE TERMINOLOGY

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

Alternative Terminology notes present synonymous terms used in practice.

ALTERNATIVE TERMINOLOGY

Product costs are also called *inventoriable costs*.

Manufacturing Overhead

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

Tracing 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 running smoothly, or the computers that make sure paychecks are generated 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

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 (see **Alternative Terminology**). Companies record product costs, when incurred, as an asset called 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

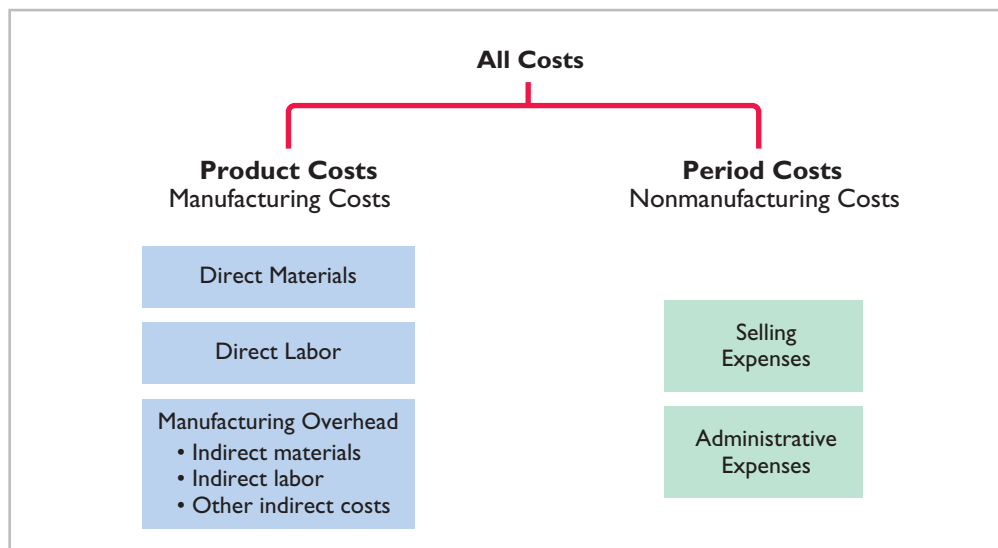


Illustration of Cost Concepts

To improve your understanding of cost concepts, we illustrate them here through an extended example. Suppose you started your own snowboard factory, Terrain Park Boards. Think that's impossible? **Burton Snowboards** was started by Jake Burton Carpenter, when he was only 23 years old. Jake initially experimented with 100 different prototype designs before settling on a final design. Then Jake, along with two relatives and a friend, started making 50 boards per day in Londonderry, Vermont. Unfortunately, while they made a lot of boards in their first year, they were only able to sell 300 of them. To get by during those early years, Jake taught tennis and tended bar to pay the bills.

Here are some of the costs that your snowboard factory, Terrain Park Boards, would incur.

1. The materials cost of each snowboard (wood cores, fiberglass, resins, metal screw holes, metal edges, and ink) is \$30.
2. The labor costs (for example, to trim and shape each board using jig saws and band saws) are \$40.
3. Depreciation on the factory building and equipment (for example, presses, grinding machines, and lacquer machines) used to make the snowboards is \$25,000 per year.
4. Property taxes on the factory building (where the snowboards are made) are \$6,000 per year.
5. Advertising costs (mostly online and catalogue) are \$60,000 per year.
6. Sales commissions related to snowboard sales are \$20 per snowboard.
7. Salaries for factory maintenance employees are \$45,000 per year.
8. The salary of the plant manager is \$70,000.
9. The cost of shipping is \$8 per snowboard.

Illustration 1.4 shows how Terrain Park Boards would assign these manufacturing and selling costs to the various categories.

Terrain Park Boards				
Cost Item	Product Costs			Period Costs
	Direct Materials	Direct Labor	Manufacturing Overhead	
1. Material cost (\$30 per board)	X			
2. Labor costs (\$40 per board)		X		
3. Depreciation on factory equipment (\$25,000 per year)			X	
4. Property taxes on factory building (\$6,000 per year)			X	
5. Advertising costs (\$60,000 per year)				X
6. Sales commissions (\$20 per board)				X
7. Maintenance salaries (factory facilities, \$45,000 per year)			X	
8. Salary of plant manager (\$70,000 per year)			X	
9. Cost of shipping boards (\$8 per board)				X

ILLUSTRATION 1.4

Assignment of costs to cost categories

Total manufacturing costs are the sum of the **product costs**—direct materials, direct labor, and manufacturing overhead—incurred in the current period. If Terrain Park Boards produces 10,000 snowboards the first year, the total manufacturing costs would be \$846,000, as shown in **Illustration 1.5**.

ILLUSTRATION 1.5**Computation of total manufacturing costs**

<u>Cost Number and Item</u>	<u>Manufacturing Cost</u>
1. Material cost (\$30 × 10,000)	\$300,000
2. Labor cost (\$40 × 10,000)	400,000
3. Depreciation on factory equipment	25,000
4. Property taxes on factory building	6,000
7. Maintenance salaries (factory facilities)	45,000
8. Salary of plant manager	70,000
Total manufacturing costs	<u><u>\$846,000</u></u>

Once it knows the total manufacturing costs, Terrain Park Boards can compute the manufacturing cost per unit. Assuming 10,000 units, the cost to produce one snowboard is \$84.60 ($\$846,000 \div 10,000$ units).

The cost concepts discussed in this chapter are used extensively in subsequent chapters. So study Illustration 1.4 carefully. If you do not understand any of these classifications, go back and reread the appropriate section.

DO IT! 2 | Managerial Cost Concepts

A bicycle company has these costs: tires, salaries of employees who put tires on the wheels, factory building depreciation, advertising expenditures, factory machine lubricants, spokes, salary of factory manager, salary of accountant, handlebars, and salaries of factory maintenance employees. Classify each cost as direct materials, direct labor, overhead, or a period cost.

Solution

Direct materials: Tires, spokes, and handlebars. **Direct labor:** Salaries of employees who put tires on the wheels. **Manufacturing overhead:** Factory building depreciation, factory machine lubricants, salary of factory manager, and salaries of factory maintenance employees. **Period costs:** Advertising expenditures and salary of accountant.

Related exercise material: **BE1.3, BE1.4, BE1.5, BE1.6, DO IT! 1.2, E1.2, E1.3, E1.4, E1.5, E1.6, and E1.7.**

ACTION PLAN

- **Direct materials:** any raw materials physically and directly associated with the finished product.
- **Direct labor:** the work of factory employees directly associated with the finished product.
- **Manufacturing overhead:** any costs indirectly associated with the finished product.
- **Costs that are not product costs** are period costs.

Manufacturing Costs in Financial Statements

LEARNING OBJECTIVE 3

Demonstrate how to compute cost of goods manufactured and prepare financial statements for a manufacturer.

The financial statements of a manufacturer are very similar to those of a merchandiser. For example, you will find many of the same sections and same accounts in the financial statements of **Procter & Gamble** that you find in the financial statements of **Dick's Sporting Goods**. The principal differences between their financial statements occur in two places: the cost of goods sold section in the income statement and the current assets section in the balance sheet.

Income Statement

Under a periodic inventory system, the income statements of a merchandiser and a manufacturer differ in the cost of goods sold section. Merchandisers compute cost of goods sold by adding the beginning inventory to the **cost of goods purchased** and subtracting the ending inventory. Manufacturers compute cost of goods sold by adding the beginning finished goods inventory to the **cost of goods manufactured** and subtracting the ending finished goods inventory. **Illustration 1.6**, which assumes a periodic inventory system, shows these different methods.

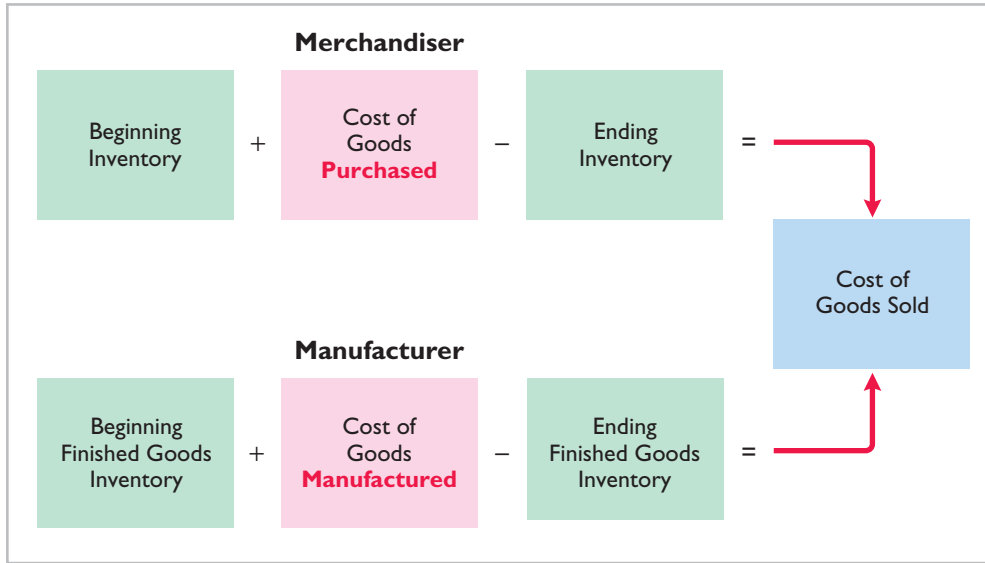


ILLUSTRATION 1.6

Cost of goods sold components

A number of accounts are involved in determining the cost of goods manufactured. To eliminate excessive detail, income statements typically show only the total cost of goods manufactured. A separate statement, called a Cost of Goods Manufactured Schedule, presents the details (see Illustration 1.9).

Illustration 1.7 shows the different presentations of the cost of goods sold sections for merchandising and manufacturing companies. The other sections of an income statement are similar for merchandisers and manufacturers.

ILLUSTRATION 1.7 Cost of goods sold sections of merchandising and manufacturing income statements

Merchandising Company Income Statement (partial) For the Year Ended December 31, 2020		Manufacturing Company Income Statement (partial) For the Year Ended December 31, 2020	
Cost of goods sold		Cost of goods sold	
Inventory, Jan. 1	\$ 70,000	Finished goods inventory, Jan. 1	\$ 90,000
Cost of goods purchased	<u>650,000</u>	Cost of goods manufactured	<u>370,000</u>
		(see Illustration 1.9)	
Cost of goods available for sale	720,000	Cost of goods available for sale	460,000
Less: Inventory, Dec. 31	<u>400,000</u>	Less: Finished goods inventory, Dec. 31	<u>80,000</u>
Cost of goods sold	<u>\$ 320,000</u>	Cost of goods sold	<u>\$380,000</u>

Cost of Goods Manufactured

An example may help show how companies determine the cost of goods manufactured. Assume that on January 1, **Current Designs** has a number of kayaks in various stages of production. In total, these partially completed manufactured units are called **beginning work in process inventory**. These are kayaks that were worked on during the prior year but were not completed. As a result, these kayaks will be completed during the current year. The cost of beginning work in process inventory is based on the **manufacturing costs incurred in the prior period**.

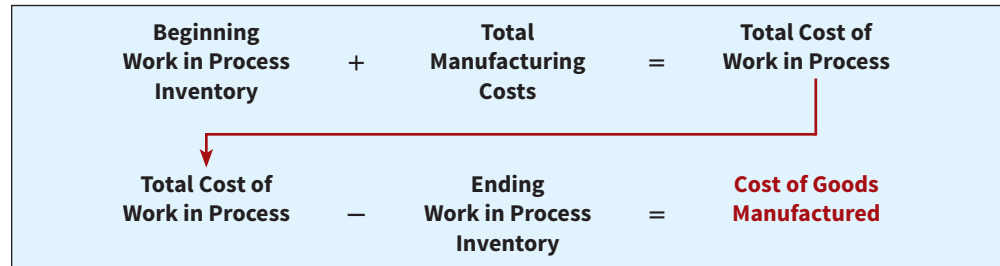
Current Designs first incurs manufacturing costs in the current year to complete the kayaks that were in process on January 1. It then incurs manufacturing costs for production of new orders. The sum of the direct materials costs, direct labor costs, and manufacturing overhead incurred in the current year is the **total manufacturing costs** for the current period.

We now have two cost amounts: (1) the cost of the beginning work in process and (2) the total manufacturing costs for the current period. The sum of these costs is the **total cost of work in process** for the year.

At the end of the year, Current Designs may have some kayaks that are only partially completed. The costs of these units become the cost of the **ending work in process inventory**. To find the **cost of goods manufactured**, we subtract this cost from the total cost of work in process. **Illustration 1.8** shows the formula for determining the cost of goods manufactured.

ILLUSTRATION 1.8

Cost of goods manufactured formula



Decision Tools that are useful for management decision-making are highlighted throughout the textbook. A summary of the Decision Tools is provided in the Review and Practice section of each chapter.

Decision Tools

The cost of goods manufactured schedule helps managers determine if the company is maintaining control over the costs of production.

Cost of Goods Manufactured Schedule

The **cost of goods manufactured schedule** reports cost elements used in calculating cost of goods manufactured. **Illustration 1.9** shows the schedule for Current Designs (using assumed data). The schedule presents detailed data for direct materials and for manufacturing overhead (see **Decision Tools**).

You should be able to distinguish between “Total manufacturing costs” and “Cost of goods manufactured.” As Illustration 1.9 shows, total manufacturing costs is the sum of all manufacturing costs (direct materials, direct labor, and manufacturing overhead) **incurred during the period**. Cost of goods manufactured is the cost of those goods that were **completed during the period**. If we add beginning work in process inventory to the total manufacturing costs incurred during the period and then subtract the ending work in process inventory (the formula given in Illustration 1.8), we arrive at the cost of goods manufactured during the period.

ILLUSTRATION 1.9

Cost of goods manufactured schedule

Often, numbers or categories in the financial statements are highlighted in red type to draw your attention to key information.

Current Designs			
Cost of Goods Manufactured Schedule			
For the Year Ended December 31, 2020			
Work in process, January 1			\$ 18,400
Direct materials			
Raw materials inventory, January 1	\$ 16,700		
Raw materials purchases	152,500		
Total raw materials available for use	169,200		
Less: Raw materials inventory, December 31	22,800		
Direct materials used		\$146,400	
Direct labor		175,600	
Manufacturing overhead			
Indirect labor	14,300		
Factory repairs	12,600		
Factory utilities	10,100		
Factory depreciation	9,440		
Factory insurance	8,360		
Total manufacturing overhead		54,800	
Total manufacturing costs			376,800
Total cost of work in process			395,200
Less: Work in process, December 31			25,200
Cost of goods manufactured			\$370,000




Balance Sheet

The balance sheet for a merchandising company shows just one category of inventory. In contrast, the balance sheet for a manufacturer may have three inventory accounts, as shown in **Illustration 1.10** for Current Designs' kayak inventory (see **Decision Tools**).

Decision Tools

The balance sheet helps managers determine whether sufficient inventory exists to meet forecasted demand.

ILLUSTRATION 1.10 Inventory accounts for a manufacturer

Raw Materials Inventory	Work in Process Inventory	Finished Goods Inventory
		
Shows the cost of raw materials on hand.	Shows the cost applicable to units that have been started into production but are only partially completed.	Shows the cost of completed goods on hand.

Finished Goods Inventory is to a manufacturer what Inventory is to a merchandiser. Each of these classifications represents the goods that the company has available for sale. The current assets sections presented in **Illustration 1.11** contrast the presentations of inventories for merchandising and manufacturing companies. The remainder of the balance sheet is similar for the two types of companies.

ILLUSTRATION 1.11 Current assets sections of merchandising and manufacturing balance sheets

Merchandising Company Balance Sheet December 31, 2020		Manufacturing Company Balance Sheet December 31, 2020	
Current assets		Current assets	
Cash	\$100,000	Cash	\$180,000
Accounts receivable (net)	210,000	Accounts receivable (net)	210,000
Inventory	400,000	Inventory	
Prepaid expenses	22,000	Finished goods	\$80,000
Total current assets	<u>\$732,000</u>	Work in process	25,200
		Raw materials	22,800
		Prepaid expenses	18,000
		Total current assets	<u>\$536,000</u>

Each step in the accounting cycle for a merchandiser applies to a manufacturer. For example, prior to preparing financial statements, manufacturers make adjusting entries. The adjusting entries are essentially the same as those of a merchandiser. The closing entries are also similar for manufacturers and merchandisers.

DO IT! 3 | Cost of Goods Manufactured

The following information is available for Keystone Company.

	<u>March 1</u>	<u>March 31</u>
Raw materials inventory	\$12,000	\$10,000
Work in process inventory	2,500	4,000
Materials purchased in March	\$ 90,000	
Direct labor in March	75,000	
Manufacturing overhead in March	220,000	

Prepare the cost of goods manufactured schedule for the month of March 2020.

Solution

Keystone Company
Cost of Goods Manufactured Schedule
For the Month Ended March 31, 2020

Work in process, March 1		\$ 2,500
Direct materials		
Raw materials, March 1	\$ 12,000	
Raw materials purchases	<u>90,000</u>	
Total raw materials available for use	102,000	
Less: Raw materials, March 31	<u>10,000</u>	
Direct materials used		\$ 92,000
Direct labor		75,000
Manufacturing overhead		<u>220,000</u>
Total manufacturing costs		387,000
Total cost of work in process		<u>389,500</u>
Less: Work in process, March 31		<u>4,000</u>
Cost of goods manufactured		<u><u>\$385,500</u></u>

Related exercise material: **BE1.7, BE1.8, BE1.9, BE1.10, DO IT! 1.3, E1.8, E1.9, E1.10, E1.11, E1.12, E1.13, E1.14, E1.15, E1.16, and E1.17.**

ACTION PLAN

- Start with beginning work in process as the first item in the cost of goods manufactured schedule.
- Sum direct materials used, direct labor, and manufacturing overhead to determine total manufacturing costs.
- Sum beginning work in process and total manufacturing costs to determine total cost of work in process.
- Cost of goods manufactured is the total cost of work in process less ending work in process.

Managerial Accounting Today

LEARNING OBJECTIVE 4

Discuss trends in managerial accounting.

The business environment never stands still. Regulations are always changing, global competition continues to intensify, and technology is a source of constant upheaval. In this rapidly changing world, managerial accounting needs to continue to innovate in order to provide managers with the information they need.

Service Industries

Much of the U.S. economy has shifted toward an emphasis on services. Today, more than 50% of U.S. workers are employed by service companies. Airlines, marketing agencies, cable companies, and governmental agencies are just a few examples of service companies. How do service companies differ from manufacturing companies? One difference is that services are consumed immediately by customers. For example, when a restaurant produces a meal, that meal is not put in inventory but is instead consumed immediately. An airline uses special equipment to provide its product, but again, the output of that equipment is consumed immediately by the customer in the form of a flight. And a marketing agency performs services for its clients that are immediately consumed by the customer in the form of a marketing plan. For a manufacturing company, like **Boeing**, it often has a long lead time before its airplane is used or consumed by the customer.

This chapter's examples featured manufacturing companies because accounting for the manufacturing environment requires the use of the broadest range of accounts. That is, the accounts used by service companies represent a subset of those used by manufacturers because service companies are not producing inventory. Neither the restaurant, the airline, or the marketing agency discussed above produces an inventoriable product. However, just like a manufacturer, each needs to keep track of the costs of its services in order to know whether it is generating a profit (see **Ethics Note**). A successful restaurateur needs to know the cost of each offering on the menu, an airline needs to know the cost of flight service to each destination,

ETHICS NOTE

Do telecommunications companies have an obligation to provide service to remote or low-user areas for a fee that may be less than the cost of the service?

Ethics Notes help sensitize you to some of the ethical issues in accounting.

and a marketing agency needs to know the cost to develop a marketing plan. Thus, the techniques shown in this chapter, to accumulate manufacturing costs to determine manufacturing inventory, are equally useful for determining the costs of performing services.

For example, let's consider the costs that **Hewlett-Packard (HP)** might incur on a consulting engagement. A significant portion of its costs would be salaries of consulting personnel. It might also incur travel costs, materials, software costs, and depreciation charges on equipment. In the same way that it needs to keep track of the cost of manufacturing its computers and printers, HP needs to know what its costs are on each consulting job. It could prepare a cost of services performed schedule similar to the cost of goods manufactured schedule in Illustration 1.9. The structure would be essentially the same as the cost of goods manufactured schedule, but section headings would be reflective of the costs of the particular service organization.

Many of the examples we present in subsequent chapters will be based on service companies, as well as a number of end-of-chapter materials.

Service Company Insight Allegiant Airlines



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Low Fares but Decent Profits

When other airlines were cutting flight service due to recession, **Allegiant Airlines** increased capacity by 21%. Sounds crazy, doesn't it? But it must know something because while the other airlines were losing money, it was generating profits. In fact, it often has the industry's highest profit margins. Consider also

that its average one-way fare is only \$83. So how does it make money? As a low-budget airline, it focuses on controlling costs.

Allegiant purchases used planes for \$3 million each rather than

new planes for \$40 million. It flies out of small towns, so wages are low and competition is nonexistent. It minimizes hotel costs by having its flight crews finish their day in their home cities. The company also only flies a route if its 150-passenger planes are nearly full (it averages about 90% of capacity). The bottom line is that Allegiant knows its costs to the penny. Knowing what your costs are might not be glamorous, but it sure beats losing money.

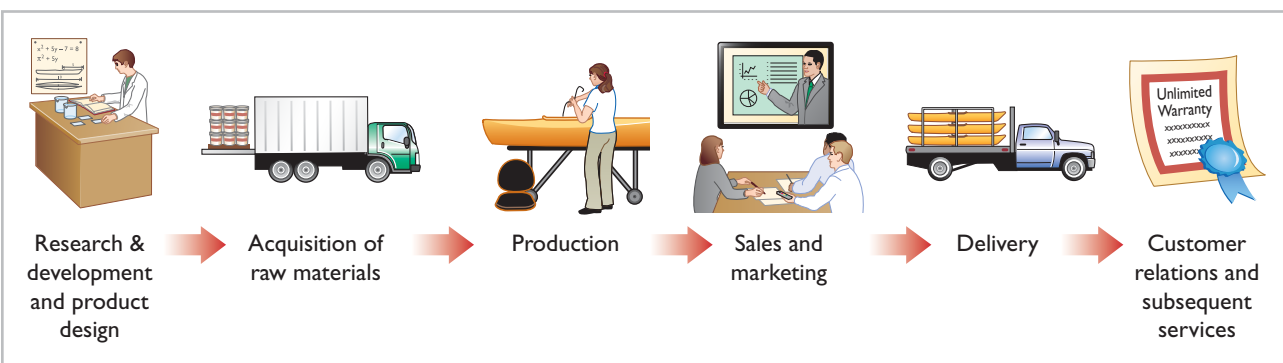
Sources: Susan Carey, "For Allegiant, Getaways Mean Profits," *Wall Street Journal Online* (February 18, 2009); and Scott Mayerowitz, "Tiny Allegiant Air Thrives on Low Costs, High Fees," <http://bigstory.ap.org> (June 28, 2013).

What are some of the line items that would appear in the cost of services performed schedule of an airline? (Go to WileyPLUS for this answer and additional questions.)

Focus on the Value Chain

The **value chain** refers to all business processes associated with providing a product or performing a service. **Illustration 1.12** depicts the value chain for a manufacturer. Many of the most significant business innovations in recent years have resulted either directly, or indirectly, from a focus on the value chain. For example, so-called **lean manufacturing**, originally pioneered by Japanese automobile manufacturer **Toyota** but now widely practiced, reviews all business processes in an effort to increase productivity and eliminate waste, all while continually trying to improve quality.

ILLUSTRATION 1.12 A manufacturer's value chain



Just-in-time (JIT) inventory methods, which have significantly lowered inventory levels and costs for many companies, are one innovation that resulted from the focus on the value chain. Under the JIT inventory method, goods are manufactured or purchased just in time for sale. For example, **Dell** can produce and deliver a custom computer within 48 hours of a customer's order. However, JIT also necessitates increased emphasis on product quality. Because JIT companies do not have excess inventory on hand, they cannot afford to stop production because of defects or machine breakdowns. If they stop production, deliveries will be delayed and customers will be unhappy. For example, a design flaw in an **Intel** computer chip was estimated to cost the company \$1 billion in repairs and reduced revenue.

As a consequence, many companies now focus on **total quality management (TQM)** to reduce defects in finished products, with the goal of zero defects. **Toyota** was one of the pioneers of TQM processes as early as the 1940s. Some of the largest companies in the world, including **Ford** and **ExxonMobil**, have benefitted from these practices.

Another innovation, the **theory of constraints**, involves identification of “bottlenecks”—constraints within the value chain that limit a company's profitability. Once a major constraint has been identified and eliminated, the company moves on to fix the next most significant constraint. **General Motors** found that by applying the theory of constraints to its distribution system, it could more effectively meet the demands of its dealers and minimize the amount of excess inventory in its distribution system. This also reduced its need for overtime labor. An application of the theory of constraints is presented in Chapter 6.

Technology has played a big role in the focus on the value chain and the implementation of lean manufacturing. For example, **enterprise resource planning (ERP) systems**, such as those provided by **SAP**, provide a comprehensive, centralized, integrated source of information to manage all major business processes—from purchasing, to manufacturing, to sales, to human resources. ERP systems have, in some large companies, replaced as many as 200 individual software packages. In addition, the focus on improving efficiency in the value chain has also resulted in adoption of automated manufacturing processes. Many companies now use computer-integrated manufacturing. These systems often reduce the reliance on manual labor by using robotic equipment. This increases overhead costs as a percentage of total product costs.

As overhead costs have increased because of factory automation, the accuracy of overhead cost allocation to specific products has become more important. Managerial accounting devised an approach, called **activity-based costing (ABC)**, which allocates overhead based on each product's use of particular activities in making the product. In addition to providing more accurate product costing, ABC also can contribute to increased efficiency in the value chain. For example, suppose one of a company's overhead pools is allocated based on the number of setups that each product requires. If a particular product's cost is high because it is allocated a lot of overhead due to a high number of setups, management will be motivated to try to reduce the number of setups and thus reduce its overhead allocation. ABC is discussed further in Chapter 4.

Management Insight Inditex SA



Miguel Vidal/REUTERS/Alamy
Stock Photo

Supplying Today's (Not Yesterday's) Fashions

In terms of total sales dollars, **Inditex SA** is the planet's largest fashion retailer. What does it do differently than its competitors? How did it double its sales over a recent

seven-year period while competitors such as **Gap Inc.** stumbled badly? Inditex distinguishes itself in its value chain's ability to react quickly to constantly changing customer tastes. First, designers and commercial staff sit side by side in a massive, open workspace facility, taking direct input from sales staff around the world regarding new product ideas. Manufacturing facilities are located relatively near to company headquarters, allowing more direct input and oversight into production. Also, all goods (other

than online sales) are shipped straight from the production facility to stores, rather than warehouses. As a result of its unique approach to how it designs, manufactures and distributes its goods, Inditex can actually sometimes get a new product from initial idea to the store shelf in two weeks rather than the industry norm of two to eight months. And because Inditex provides customers with designs that competitors don't have yet, it can charge higher prices while also continuing to look for ways to increase efficiency and thus cut costs.

Source: Patricia Kowsmann, “Fast Fashion: How a Zara Coat Went from Design to Fifth Avenue in 25 Days,” *Wall Street Journal* (December 6, 2016).

What steps has Inditex taken that make its value chain unique? (Go to WileyPLUS for this answer and additional questions).