

CHAPTER 2

BASIC COST MANAGEMENT CONCEPTS AND ACCOUNTING FOR MASS CUSTOMIZATION OPERATIONS

Learning Objectives

1. Explain what is meant by the word "cost."
2. Distinguish among product costs, period costs, and expenses.
3. Describe the role of costs on published financial statements.
4. List five types of manufacturing operations and describe mass customization.
5. Give examples of three types of manufacturing costs.
6. Prepare a schedule of cost of goods manufactured, a schedule of cost of goods sold, and an income statement for a manufacturer.
7. Understand the importance of identifying an organization's cost drivers.
8. Describe the behavior of variable and fixed costs, in total and on a per-unit basis.
9. Distinguish among direct, indirect, controllable, and uncontrollable costs.
10. Define and give examples of an opportunity cost, an out-of-pocket cost, a sunk cost, a differential cost, a marginal cost, and an average cost.

Chapter Overview

- I. What Is a Cost?
 - A. Product costs, period costs, and expenses

- II. Costs on Financial Statements
 - A. Income statement: expenses
 - B. Balance sheet: inventories
 - 1. Raw-materials inventory
 - 2. Work-in-process inventory
 - 3. Finished-goods inventory

- III. Types of Production Processes
 - A. Job shop, batch, assembly line, continuous flow
 - B. Mass customization

- IV. Manufacturing Costs
 - A. Direct material
 - B. Direct labor
 - C. Manufacturing overhead
 - 1. Indirect material
 - 2. Indirect labor
 - 3. Other manufacturing costs
 - D. Conversion cost, prime cost

- V. Manufacturing Cost Flows
 - A. Cost of goods manufactured

- VI. Basic Cost Management Concepts
 - A. Cost drivers
 - B. Variable and fixed costs
 - C. Direct and indirect costs
 - D. Controllable and uncontrollable costs

- VII. Costs and Decision Making
 - A. Opportunity costs
 - B. Out-of-pocket costs
 - C. Sunk costs
 - D. Differential and incremental costs
 - E. Marginal and average costs

VIII. Information Costs and Benefits

IX. Costs in the Service Industry

Key Lecture Concepts

1. WHAT IS A COST?

- A **cost** is the sacrifice made to achieve a particular purpose.
- There are different costs for different purposes, with costs that are appropriate for one use being totally inappropriate for others (e.g., a cost that is used to determine inventory valuation may be irrelevant in deciding whether or not to manufacture that same product).
- An **expense** is defined as the cost incurred when an asset is used up or sold for the purpose of generating revenue. The terms "product cost" and "period cost" are used to describe the timing with which expenses are recognized.
 - **Product costs** are the costs of goods manufactured or the cost of goods purchased for resale. These costs are inventoried until the goods are sold.
 - **Period costs** are all other non-product costs in an organization (e.g., selling and administrative). Such costs are not inventoried but are expensed as time passes.

2. COSTS ON FINANCIAL STATEMENTS

- Product costs are shown as cost of goods sold on the income statement when goods are sold. Income statements of service enterprises lack a cost-of-goods-sold section and instead reveal a firm's operating expenses.
- Product costs, housed on the balance sheet until sale, are found in three inventory accounts:
 - **Raw materials** – materials that await production
 - **Work in process** – partially completed production
 - **Finished goods** – completed production that awaits sale

3. TYPES OF PRODUCTION PROCESSES

- There are various types of production processes; for example:
 - *Job shop* – low production volume, little standardization; one-of-a-kind products
 - *Batch* – multiple products; low volume
 - *Assembly line* – a few major products; higher volume
 - *Mass customization* – high production volume; standardized components; customized combinations of components

- *Continuous flow* – high volume; highly standardized commodity products
- In **mass customization**, many standardized components are combined to produce custom-made goods to customer order.
 - Production is triggered by the placement of a customer order, which often takes place via the Internet.
 - Inventories of finished goods and raw materials are relatively low, the latter because raw materials are ordered only when needed in manufacturing.

4. MANUFACTURING COSTS

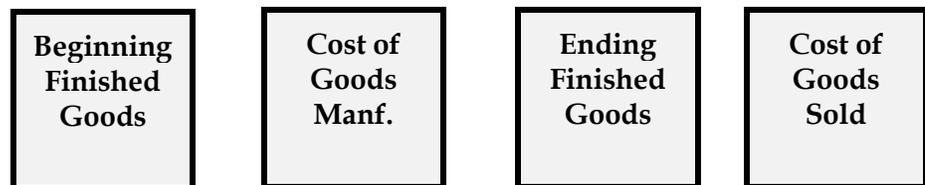
- **Direct materials** – materials easily traced to a finished product (e.g., the seat on a bicycle)
- **Direct labor** – the wages of anyone who works directly on the product (e.g., the assembly-line wages of the bicycle manufacturer)
- **Manufacturing overhead** – all other manufacturing costs such as:
 - **Indirect materials** – materials and supplies other than those classified as direct materials,
 - **Indirect labor** – personnel who do not work directly on the product (e.g., manufacturing supervisors), and

- Other manufacturing costs not easily traceable to a finished good (insurance, property taxes, depreciation, utilities, and service/support department costs). Overtime premiums and the cost of idle time are also accounted for as overhead.
- **Conversion cost** (the cost to convert direct materials into finished product): direct labor + manufacturing overhead
- **Prime cost:** direct material + direct labor

5. MANUFACTURING COST FLOWS

- Manufacturing costs (direct materials, direct labor, and manufacturing overhead) are "put in process" and attached to work-in-process inventory. The goods are completed (finished goods), and the costs are then passed along to cost of goods sold upon sale.
- **Cost of goods manufactured:** Direct materials used + direct labor + manufacturing overhead + beginning work-in-process inventory - ending work-in-process inventory
 - This amount is transferred from work-in-process inventory to finished-goods inventory when goods are completed.
- Product costs and cost of goods sold for a manufacturer:

$$\begin{array}{ccccccc} \text{Beginning} & & \text{Cost of Goods} & & \text{Ending} & & \\ \text{Inventory,} & & \text{Manufactured} & & \text{Inventory,} & & \\ \text{Finished Goods} & + & \text{to Completion} & - & \text{Finished Goods} & = & \text{Cost of} \\ & & & & & & \text{Goods Sold} \end{array}$$



Supported by
the prior year's
balance sheet

A schedule of
production costs

Current
balance sheet

Income
statement

- Production-cost concepts are applicable to service businesses and nonprofit organizations. For example, the direct-materials concept can be applied to the food consumed in a restaurant or the jet fuel used by an airline. Similarly, direct labor would be equivalent to the cooks in a restaurant and the flight crews of an airline.

6. BASIC COST MANAGEMENT CONCEPTS

- A **cost driver** is any event or activity that causes costs to be incurred. Possible examples include labor hours in manual assembly work and machine hours in automated production settings.
 - The higher the degree of correlation between a cost-pool increase and the increase in its cost driver, the better the cost management information.
- Variable and fixed costs
 - **Variable costs** move in direct proportion to a change in activity. For example, in the manufacture of bicycles, the total cost of bicycle seats goes up in proportion to the number of bicycles produced. However, the cost per unit (i.e., per seat) remains constant.
 - **Fixed costs** remain constant in total as the level of activity changes. For instance, straight-line depreciation of a bicycle plant remains the same whether 100 bicycles or 1,000 bicycles are produced. However, the depreciation cost per unit fluctuates because this constant total is spread over a smaller or greater volume.

- Direct and indirect costs
 - An entity (e.g., a specific product, service, or department) to which a cost is assigned is commonly known as a **cost object**.
 - A **direct cost** is one that can be easily traced to a cost object.
 - If a college department has been defined as the cost object, professors' salaries and administrative assistants' salaries are direct costs of the department (just as assembly workers' wages are direct costs of a manufacturing department).
 - An **indirect cost** is a cost that cannot be easily traced to a cost object.
 - For example, the costs of a university's controller, president, campus security, and groundskeeper cannot be directly traceable to a specific department, as these individuals service the entire university. (Similarly, a factory guard's salary is not traceable to only one department and is, thus, considered indirect to all departments.)
 - A cost management system strives to trace costs to the objects that caused them so that managers can isolate responsibility for spending and objectively evaluate operations.

Teaching Tip: When discussing indirect costs, you may want to cite a hospital's medical and surgical supplies as an example. Such items do not appear to be a primary target for trimming; however, these indirect costs often account for a sizable portion of a hospital's operating costs. Understanding indirect costs has become more valuable in a managed-care environment because it helps hospitals negotiate fixed-fee contracts.

- Controllable and uncontrollable costs
 - **Controllable costs** – costs over which a manager has influence (e.g., direct materials)
 - **Uncontrollable costs** – costs over which a manager has no influence (e.g., the salary of a firm's CEO from the production manager's viewpoint)

7. COSTS AND DECISION MAKING

- **Opportunity cost** – the benefit forgone by choosing an alternative course of action (e.g., the wages forgone when a student decides to attend college full-time rather than be employed)
- **Out-of-pocket cost** – a cost that requires a cash outlay
- **Sunk cost** – a cost incurred in the past that cannot be changed by future action (e.g., the cost of existing inventory or equipment)
 - Such costs are not relevant for decision making.
- **Differential cost** – the net difference in cost between two alternative courses of action
 - **Incremental cost** – the increase in cost from one alternative to another
- **Marginal cost** – the extra cost incurred when one additional unit is produced

- **Average cost**— total cost divided by the units of activity
- The preceding costs are relevant in manufacturing entities as well as for service providers.

8. INFORMATION COSTS AND BENEFITS

- Accountants must weigh the benefits of providing information against the costs of generating, communicating, and using that information. The goal is to use information effectively and avoid information overload.

Teaching Overview

The main purpose of Chapter 2 is to expand the way in which costs are defined and viewed. After completing a course in financial accounting, students are very much geared into thinking about functional costs (depreciation, utilities, commissions) for an entire organization. While this is useful information to an outside creditor or investor, it is insufficient with respect to helping internal managers do their jobs effectively. Managers must also consider cost behavior, controllability, costs incurred by smaller segments, and so on. An initial reminder of these facts generally opens a discussion of additional ways of viewing financial information. It is worthwhile to spend a few extra minutes in the area of cost behavior since it is so fundamental to later topics.

Before discussing manufacturing costs, I ask for a show of hands from students who have actually visited a manufacturing plant. The typical, small number of hands serves as a reminder that many students have little idea of what a factory "looks like" and does. Pictures and videos are helpful in providing a context for the concepts being discussed—even a field trip to a local manufacturer is a good idea. This is also an excellent time to point out that even if a student does not plan to work in production management, he or she may well work in accounting, finance, or marketing for a company that makes a product. Therefore, being conversant in the language and concepts of cost accounting will be useful. Accounting techniques in manufacturing are frequently transferable to the service sector, and this fact should be emphasized in class.

In summary, Chapter 2 discusses the many ways that costs can be categorized. Chapter 3 then follows with a discussion of a system to track product costs and answers the age-old question, "How much does this cost?" I recommend using Problem 2-50 (cost terminology and cost behavior) and Exercise 2-28 (financial schedules and statements) as lecture demonstration problems.

Links to the Text

Homework Grid

Homework Grid- CHAPTER 2

<i>Item No.</i>	<i>Learning Objectives</i>	<i>Completion Time (min.)</i>	<i>Special Features*</i>
<i>Exercises:</i>			
2-28	2, 8, 9	20	
2-24	1, 3, 6	10	
2-25	5	10	
2-26	5	10	
2-29	1, 3, 6	25	
2-27	4	30	W
2-30	1, 8	15	
2-32	1, 10	5	I
2-31	1, 8, 10	15	
2-34	1, 9, 10	5	
2-35	1, 10	10	
2-33	1, 10	5	

<i>Item No.</i>	<i>Learning Objectives</i>	<i>Completion Time (min.)</i>	<i>Special Features*</i>
2-36	1, 10	15	
<i>Problems:</i>			
2-42	2, 5, 10	25	
2-44	1, 3, 5, 9	15	
2-37	3, 4	20	C
2-50	1, 2, 3	10	
2-49	1, 3, 10	10	
2-46	1, 3, 5, 9	20	

2-43	1, 3, 5, 6	35	
2-38	5, 6	30	
2-41	2, 5	40	
2-40	5, 6, 8	25	
2-39	5, 6	25	
2-48	8, 9	25	
2-47	8, 9	15	
2-45	5, 8, 9	20	
2-54	1, 3	40	C
2-56	3, 8, 9, 10	25	
2-51	7, 8	15	
2-53	1, 3, 9, 10	20	
2-55	7, 10	10	
2-52	4, 10	15	
2-58	8, 10	15	
2-57	7, 8	25	
Cases:			
2-60	7, 8, 10	50	C, G
2-59	1, 9, 10	30	E, C

* C = Business communication E = Ethics G = Group work I =

International
W = Web-based application

Links to the Ancillaries

Video Programs

McGraw-Hill has produced various videos that are relevant to the instruction of managerial/cost accounting. Information about these videos (including a description of those applicable to this chapter) appears in Appendix A.