

One of a Kind

Selected Chapters from
**MANAGEMENT
ACCOUNTING**

Hansen,
Mowen

Custom Published for
New York University
Stern School of Business
*Principles of Financial and
Managerial Accounting C10.0102*

I(T)P

Custom Courseware

Selected Chapters from
**MANAGEMENT
ACCOUNTING**

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ISBN: 0-538-89194-7

1 2 3 4 5 6 7 CC 3 2 1 0 9 8 7

Printed in the United States of America

Learning Objectives

After studying Chapter 2, you should be able to:

1. Explain the cost assignment process.
2. Define tangible and intangible products and explain why there are different product cost definitions.
3. Prepare income statements for manufacturing and service organizations.
4. Describe the relationship between activity drivers and cost behavior.
5. Explain the differences between traditional and contemporary management accounting systems.

CHAPTER

Basic Cost Concepts

SCENARIO

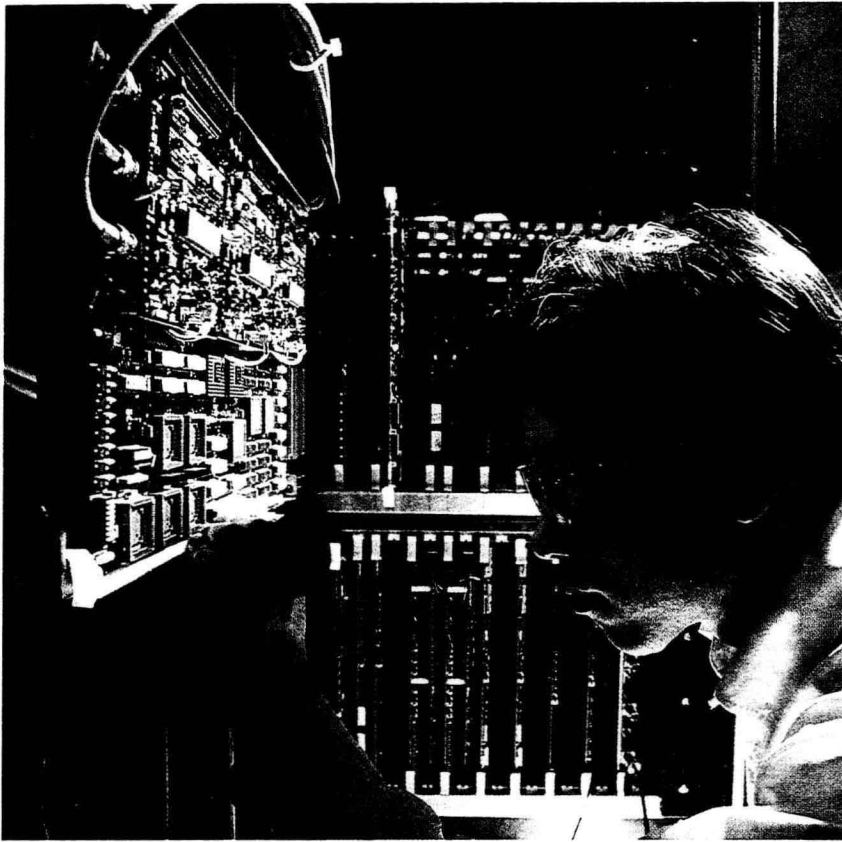


Kaylin Johnson, manager of Perry Electronics Division, scheduled a visit with the division's controller, Randy McManus, to address some issues recently brought to her attention. The following conversation was recorded.

Kaylin: Randy, you've been my controller for ten years. You, more than anyone, should be able to respond to some of the concerns that are surfacing in our company. Specifically, I have engineers, production managers, and marketing managers who are no longer comfortable with the product costs being reported by our system. I look at our reports and I see product costs reported to the fourth decimal place, which seems to imply great accuracy. Yet, I have managers who are saying that these costs are almost useless. In fact, I have been told that the engineering department has developed its own

Custom Contents

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system for assessing costs of new and old products. What's happening here?

Randy: Well, I am pretty comfortable that in the aggregate our product costs are accurate. What we report on our balance sheet and income statements is pretty much on target.

Kaylin: That part is good—but are the individual product costs accurate? Can we rely on the individual costs for decision making? For example, can we use them to help us price our products or to bid on potential jobs? Can they be used to help us improve product designs? Or are my managers correct and we simply cannot rely on our current reported product costs?

Randy: To be honest, I am not confident that the individual product costs are that accurate. After all,

many costs we have are simply assigned to products based on an assumed relationship and this allocation may not reflect any actual cause-and-effect relationship.

Kaylin: Well, Randy, something must be done here. Can we improve the accuracy of our product costing? We must know how much each product is costing. It seems to me that we need to learn more about costs and then make decisions that bear directly on the costs. Understanding the nature of costs is fundamental to good management, and I need your help. After all, if we are going to pursue continuous improvement we must know where we are and what we can do to make things better.

Randy: I understand and I agree totally. There are some measures we can take to improve accuracy and to

support our continuous improvement goal. But it will take commitment and significant effort by everyone to increase accuracy and then use the information for strategic analysis.

Questions to Think About

1. What is meant by product-costing accuracy?
2. How will increasing accuracy of product costing improve decisions?
3. Why does Randy feel that the division's product costs are not very accurate?
4. Is assigning costs accurately as important for services as it is for tangible products?

COST ASSIGNMENT: DIRECT TRACING, DRIVER TRACING, AND ALLOCATION

Objective 1

Explain the cost assignment process.

To study management accounting, it is necessary to understand the meaning of *cost* and the associated cost terminology. Assigning costs to products, services, and other objects of managerial interest is one of the principal objectives of a management accounting information system. Improving the cost assignment process has been one of the major developments in the management accounting field in recent years. The goal has been to increase the accuracy of assignments, producing higher-quality information, which can then be used to make better decisions. For example, Lord Corporation, a producer of products that reduce vibration and noise, found that more accurate cost assignments produced better pricing decisions and significant increases in profits.¹ However, before discussing the cost assignment process, we first need to define what we mean by “cost” and more fully describe its managerial importance.

Cost

cost

Cost is the cash or cash-equivalent value sacrificed for goods and services that are expected to bring a current or future benefit to the organization. We say *cash equivalent* because noncash resources can be exchanged for the desired goods or services. For example, it may be possible to exchange equipment for materials used in production. In effect, we can think of cost as a dollar measure of the resources used to achieve a given benefit. In striving to produce a current or future benefit, managers should make every effort to minimize the cost required to achieve this benefit. Reducing the cost required to achieve a given benefit means that a firm is becoming more efficient. Managers should have the objective of providing the same (or greater) customer value for a lower cost than their competitors. Why? Doing so means that a firm has achieved a competitive advantage.

opportunity cost

Managers should also understand what is meant by *opportunity cost*. Opportunity cost is the benefit given up or sacrificed when one alternative is chosen over another. For example, a firm may invest \$100,000 in inventory for a year instead of investing the capital in a productive investment that would yield a 12 percent rate of return. The opportunity cost of the capital tied up in inventory is \$12,000 ($0.12 \times \$100,000$) and is part of the cost of carrying the inventory.

expenses

Costs are incurred to produce future benefits. In a profit-making firm, future benefits usually mean revenues. As costs are used up in the production of revenues, they are said to expire. Expired costs are called expenses. In each period, expenses are deducted from revenues in the income statement to determine the period's profit. For a company to remain in business, revenues must consistently exceed expenses; moreover, the income earned must be large enough to satisfy the owners of the firm. Thus, cost and price are related in the sense that price must exceed cost such that sufficient income is earned. Furthermore, lowering price increases customer value by lowering customer sacrifice; and, the ability to lower price is connected to the ability to lower costs. Hence, managers need to know cost and trends in cost. Usually, however, knowing cost really means knowing what *something* or some *object* costs. Assigning costs to determine the cost of this object is therefore critical in providing this information to managers.

Cost Objects

cost object

Management accounting systems are structured to measure and assign costs to entities, called *cost objects*. A cost object is any item such as products, customers, departments, projects, activities, and so on, for which costs are measured and assigned. For example, if we want to determine what it costs to produce a bicycle, then the cost object is the bicycle. If we want to determine the cost of operating a maintenance department within

1. Alan W. Rupp, “ABC: A Pilot Approach,” *Management Accounting* (January 1995): 50–55.

a plant, then the cost object is the maintenance department. If the objective is to determine the cost of developing a new toy, then the cost object is the new toy development project.

activity

In recent years, *activities* have emerged as important cost objects. An activity is a basic unit of work performed within an organization. It can also be defined as an aggregation of actions within an organization useful to managers for purposes of planning, controlling, and decision making. Activities play a prominent role in assigning costs to other cost objects and are essential elements of a contemporary management accounting system. Examples of activities include setting up equipment for production, moving materials and goods, purchasing parts, billing customers, paying bills, maintaining equipment, expediting orders, designing products, and inspecting products. Notice that an activity is described by an action verb (for example, paying and designing) joined with an object (for example, bills and products) that receives the action. Notice also that the action verb and object reveal very specific goals.

Accuracy of Assignments

Assigning costs *accurately* to cost objects is crucial. Our notion of accuracy is not evaluated based on knowledge of some underlying “true” cost. Rather, it is a relative concept and has to do with the reasonableness and logic of the cost assignment methods used. The objective is to measure and assign as well as possible the cost of the resources consumed by a cost object. Some cost assignment methods are clearly more accurate than others. For example, suppose you want to determine the cost of lunch for Elaine Day, a student that frequents Hideaway, an off-campus pizza parlor. One cost assignment approach is to count the number of customers Hideaway has between 12:00 P.M. and 1:00 P.M. and then divide the total receipts earned during this period. Suppose that this comes out to \$4.50 per lunchtime customer. Thus, based on this approach we would conclude that Elaine spends \$4.50 per day for lunch. Another approach is go with Elaine and *observe* how much she spends. Suppose that she has a slice of pizza and a medium drink each day, costing \$2.50. It is not difficult to see which cost assignment is more accurate. The \$4.50 cost assignment is distorted by the consumption patterns of other customers (cost objects). As it turns out, most lunchtime clients order the luncheon special for \$4.99 (a minipizza, salad, and medium drink).

Distorted cost assignments can produce erroneous decisions and bad evaluations. For example, if a plant manager is trying to decide whether to continue producing power internally or to buy it from a local utility company, then an accurate assessment of how much it is costing to produce the power is fundamental to the analysis. An overstatement of the cost of power production could suggest to the manager that the internal power department should be shut down in favor of external purchase, whereas a more accurate cost assignment might suggest the opposite. It is easy to see that bad cost assignments can prove to be costly.

Traceability The relationship of costs to cost objects can be exploited to help increase the accuracy of cost assignments. Costs are directly or indirectly associated with cost objects. Indirect costs are costs that cannot be easily and accurately traced to a cost object. Direct costs are those costs that can be easily and accurately traced to a cost object.² “Easily traced” means that the costs can be assigned in an economically feasible way and “accurately traced” means that the costs are assigned using a *cause-and-effect relationship*. Thus, *traceability* is simply the ability to assign a cost to a cost object in an economically feasible way by means of a cause-and-effect relationship. The more costs

indirect costs
direct costs

traceability

2. This definition of direct costs is based on the glossary of terms prepared by Computer Aided Manufacturing-International, Inc. (CAM-I). See Norm Raffish and Peter B. B. Turney, “Glossary of Activity-Based Management,” *Journal of Cost Management* (Fall 1991): 53–63. Other terms defined in this chapter and in the text also follow the CAM-I glossary.

that can be traced to the object, the greater the accuracy of the cost assignments. Establishing traceability is a key element in building accurate cost assignments.

It is possible for a particular cost item to be classified as both a direct cost and an indirect cost. Management accounting systems typically deal with many cost objects. It all depends on which cost object is the point of reference. For example, if the plant is the cost object, then the cost of heating and cooling the plant is a direct cost; however, if the cost object is a product produced in the plant, then this utility cost is an indirect cost.

tracing

direct tracing

Methods of Tracing Traceability means that costs can be assigned easily and accurately, whereas tracing is the actual assignment of costs to a cost object using an *observable* measure of the resources consumed by the cost object. Tracing costs to cost objects can occur in one of two ways: (1) direct tracing or (2) driver tracing. Direct tracing is the process of identifying and assigning costs that are specifically or physically associated with a cost object to that cost object. This is most often accomplished by *physical observation*. For example, assume that the cost object is the activity “maintaining equipment.” The cost of parts, tools, and maintenance equipment are examples of costs that can be specifically identified by physical observation with the cost object. As a second example, let the cost object be a product: bicycles. The product uses both materials and labor. It is easy to observe how many wheels and other parts are used by the product and how many hours of labor it takes to produce bicycles. Both material and labor usage are physically observable and, therefore, their costs can be directly charged to the cost object. Ideally, all costs should be charged to cost objects using direct tracing. Unfortunately, it is often not possible or practical to physically observe the exact amount of resources being consumed by a cost object.

drivers

driver tracing

The next best approach is to use cause-and-effect reasoning to identify factors, called *drivers*, which are observable and which measure a cost object’s resource consumption. Drivers are factors that *cause* changes in resource usage, activity usage, costs, and revenues. Driver tracing is the use of drivers to assign costs to cost objects. Although less precise than direct tracing, if the cause-and-effect relationship is sound, then a high degree of accuracy can be expected.

resource drivers

Driver tracing uses two types of drivers for tracing costs to cost objects: resource drivers and activity drivers. **Resource drivers** measure the demands placed on resources by activities, and are used to assign the cost of resources to activities. Consider the activity “maintaining equipment.” This activity consumes resources such as parts, equipment, tools, labor, and energy (power to run the equipment and tools). Some of these resources such as equipment, tools, and materials are directly traceable to the activity. Other resources such as power and labor may not be directly traceable. Physically observing how much power is used would require a meter to measure the power consumption of the maintenance equipment. Metering may not be practical. Thus, a resource driver such as “machine hours” could be used to assign the cost of power. For example, if the power cost per machine hour is \$0.50 and the activity, maintaining equipment, uses 20,000 machine hours, then \$10,000 of the power cost ($\$0.50 \times 20,000$) would be assigned to the activity. The total cost of the activity is the sum of the directly traceable resource costs and the resource driver assigned costs.

activity drivers

Once the total cost of maintaining equipment is determined, then the cost of this activity can be assigned to objects that consume the activity by using activity drivers. **Activity drivers** measure the demands placed on activities by cost objects and are used to assign the cost of activities to cost objects. For example, the activity driver “number of maintenance hours worked” might be used to assign the cost of the activity “maintaining equipment” to the cost object “production departments.” Thus, if the cost of providing the activity, maintaining equipment, is \$20 per maintenance hour and a production department (say, grinding) uses 2,000 maintenance hours, then \$40,000 of the activity’s cost ($\$20 \times 2,000$ maintenance hours) would be assigned to grinding. A list of sample activities and their potential activity drivers is provided in Exhibit 2-1.

2-1

Exhibit
Sample of Activities with
Potential Activity Drivers

Activity	Potential Activity Driver
Setting up equipment	Number of setups
Moving materials	Number of moves
Ordering materials	Number of purchase orders placed
Drilling holes	Number of machine hours
Redesigning products	Number of engineering orders
Paying bills	Number of invoices
Inspecting finished goods	Number of batches produced
Maintaining equipment	Number of maintenance hours
Providing power	Number of kilowatt-hours
Packing goods	Number of boxes
Scheduling production	Number of different products

activity-based
costing

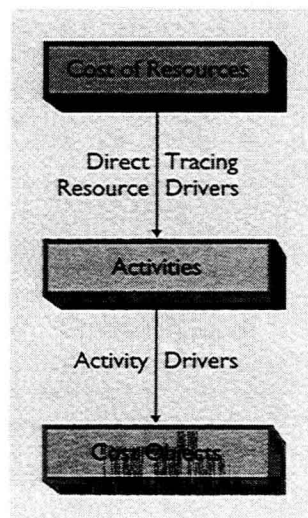
The driver-tracing model just described is summarized in Exhibit 2-2. The driver-tracing model is the heart of a cost-assignment approach known as activity-based costing. Activity-based costing assigns costs to cost objects by first tracing costs to activities and then tracing costs to cost objects. The computational procedures for tracing costs to activities and other cost objects are described in detail in later chapters. At this point, the important thing to understand is that it is possible to assign costs to cost objects through the use of direct tracing, resource drivers, and activity drivers.

allocation

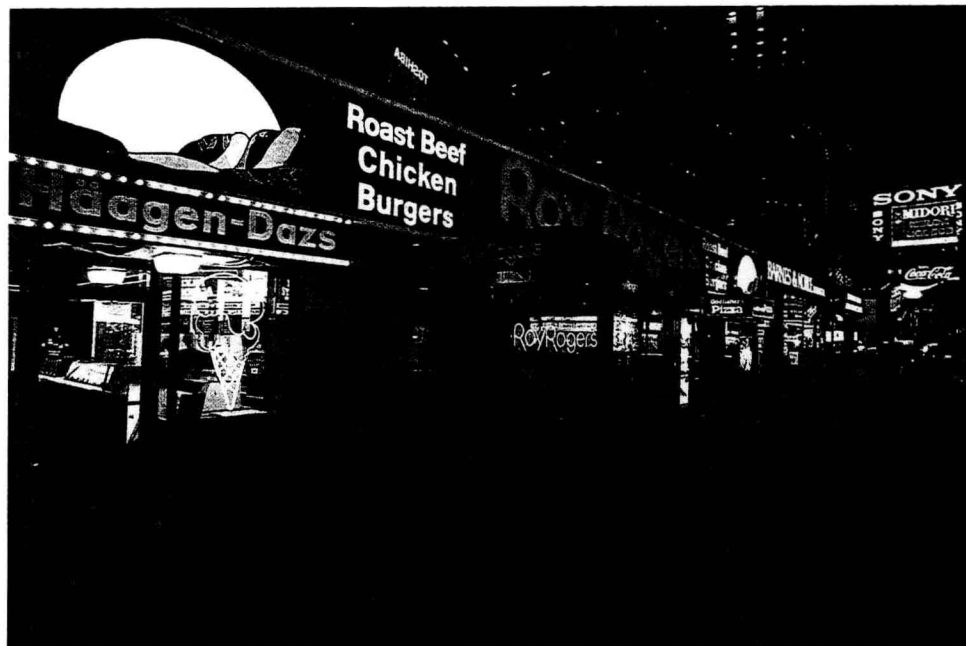
Assigning Indirect Costs Indirect costs cannot be traced to cost objects. This means that no causal relationship exists between the cost and the cost object or that tracing is not economically feasible. Assignment of indirect costs to cost objects is called **allocation**. Since no causal relationship exists, allocating indirect costs is based on *convenience* or some *assumed* linkage. For example, consider the cost of heating and lighting a plant in which five products are manufactured. Suppose that this utility cost is to be assigned to the five products. Clearly, it is difficult to see any causal relationship. A convenient way to allocate this cost is simply to assign it in proportion to the direct labor hours

2-2

Exhibit
Assignment of Costs
Using Driver Tracing



There is often no clear distinction between products and services. These fast food restaurants contain aspects of both. Roy Rogers, for example, produces hamburgers and french fries. It also provides take-out and dine-in service. Häagen-Dazs provides more service than production, as the ice cream is purchased, not made on the premises.

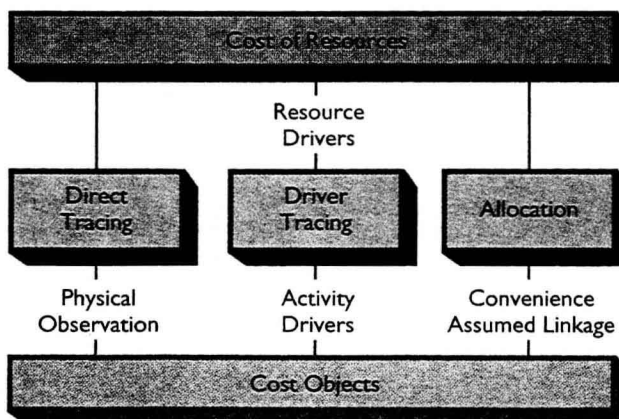


used by each product. Arbitrarily assigning indirect costs to cost objects reduces the overall accuracy of the cost assignments. Accordingly, the best costing policy may be assigning only direct (traceable) costs to cost objects. However, allocations of indirect costs may serve other purposes besides accuracy. For example, allocating indirect costs to products (a cost object) may be required to satisfy external reporting conventions. Nonetheless, most managerial uses of cost assignments are better served by accuracy; thus, at the very least direct and indirect cost assignments should be reported separately.

Cost Assignment Summarized The foregoing discussion reveals three methods of assigning costs to cost objects: direct tracing, driver tracing, and allocation. These methods are illustrated in Exhibit 2-3. Of the three methods, direct tracing is the most precise; it relies on physically observable causal relationships. Direct tracing is followed by driver tracing in terms of cost assignment accuracy. Driver tracing relies on causal factors, called drivers, to assign costs to cost objects. The precision of driver tracing depends on the quality of the causal relationship described by the driver. Identifying drivers and assessing the quality of the causal relationship is much more costly than either direct

2-3

Exhibit Cost Assignment Methods



tracing or allocation. In fact, one advantage of allocation is its simplicity and low cost of implementation. However, allocation is the least accurate cost assignment method and its use should be minimized (avoided where possible). In many cases (maybe most) the benefits of increased accuracy outweigh the additional measurement cost associated with driver tracing. This cost-benefit issue is discussed more fully later in the chapter. What it really entails is choosing among competing management accounting information systems.

PRODUCT AND SERVICE COSTS

Objective 2

Define tangible and intangible products and explain why there are different product cost definitions.

tangible products
services

The output of organizations represents one of the most important cost objects. There are two types of output: tangible products and services. **Tangible products** are goods produced by converting raw materials through the use of labor and capital inputs, such as plant, land, and machinery. Televisions, hamburgers, automobiles, computers, clothes, and furniture are examples of tangible products. **Services** are tasks or activities performed for a customer or an activity performed by a customer using an organization's products or facilities. Services are also produced using materials, labor, and capital inputs. Insurance coverage, medical care, dental care, funeral care, and accounting are examples of service activities performed for customers. Car rental, video rental, and skiing are examples of services where the customer uses an organization's products or facilities.

intangibility

perishability

inseparability

heterogeneity

Services differ from tangible products on four important dimensions: intangibility, perishability, inseparability, and heterogeneity. **Intangibility** means that buyers of services cannot see, feel, hear, or taste a service before it is bought. Thus, services are *intangible products*. **Perishability** means that services cannot be stored for future use by a consumer (there are a few unusual cases where tangible goods cannot be stored) but must be consumed when performed. Although services cannot be stored, some services, like plastic surgery, have long-term effects and need not be repeated for a given customer. Other services have short-term effects and generate repeat customers. Examples of repetitive services are checking services, janitorial services, and dry cleaning. **Inseparability** means that producers of services and buyers of services must usually be in direct contact for an exchange to take place. In effect, services are often inseparable from their producers. For example, an eye examination requires both the patient and the optometrist to be present. However, producers of tangible products need not have direct contact with the buyers of their goods. Thus, buyers of automobiles never need to have contact with the engineers and assembly line workers that produced their automobiles. **Heterogeneity** means that there is a greater chance of variation in the performance of services than in the production of products. Service workers can be affected by the job undertaken, the mix of other individuals with whom they work, their education and experience, and personal factors such as home life.

These factors make providing a consistent level of service more difficult. The measurement of productivity and quality in a service company must be ongoing and sensitive to these factors. These differences affect the types of information needed for planning, control, and decision making. Exhibit 2-4 illustrates the features associated with services, some of their derived properties, and how they interface with the management accounting system. Notice that accurate cost assignments, quality, and productivity are concerns shared by producers of services with producers of tangible products.

Organizations that produce tangible products are called *manufacturing* organizations. Those that produce intangible products are called *service* organizations. Managers of both types of organizations need to know how much individual products cost. Accurate product costs are vital for profitability analysis and strategic decisions concerning product design, pricing, and product mix. Individual product cost can refer to either a tangible or an intangible product. Thus, when we discuss product costs, we are referring to both intangible and tangible products.

2-4

ExhibitInterface of Services with
Management Accounting

Service	Service Characteristics	Implications for Management Accounting
Intangibility	Services cannot be stored	No inventories
	No patent protection	Strong ethical code*
	Cannot display or communicate services	
	Prices difficult to set	Demand for more accurate cost assignment*
Perishability	Service benefits expire quickly	No inventories
	Services may be repeated often for one customer	Need for standards and consistent high quality*
Inseparability	Customer directly involved with production of service	Costs often accounted for by customer type*
	Centralized mass production of services difficult	Demand for measurement and control of quality to maintain consistency*
Heterogeneity	Wide variation in service product possible	Productivity and quality measurement and control must be ongoing*
		Total quality management critical*

*Many of these effects are also true of tangible products.

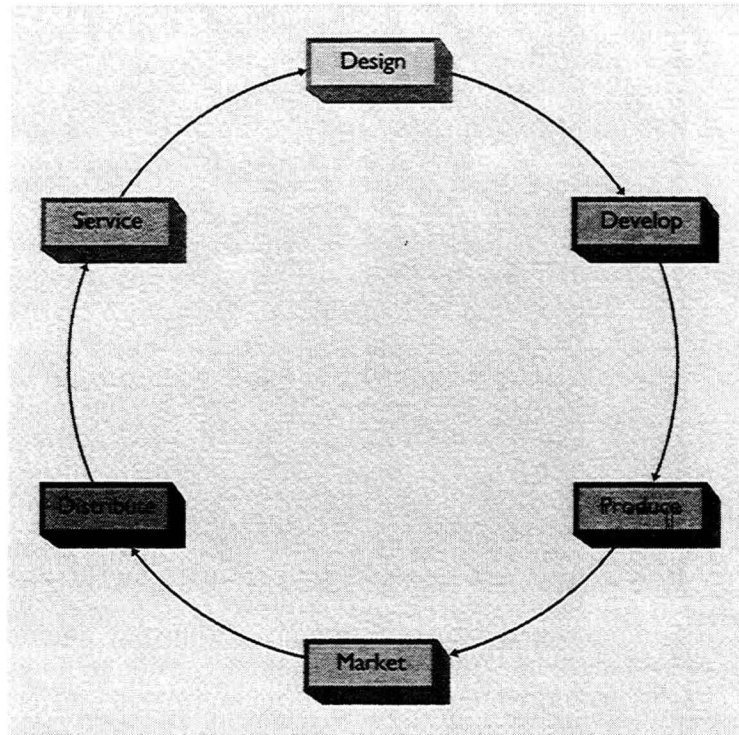
Different Costs for Different Purposes**product cost**

Product cost is a cost assignment that supports a well-specified managerial objective. Thus, what “product cost” means depends on the managerial objective being served. The product cost definition illustrates a fundamental cost management principle: “different costs for different purposes.” As a first example, suppose that management is interested in strategic profitability analysis. To support this objective, management needs information about all the revenues and costs associated with a product. In this case, a *value-chain product cost* is appropriate because it accounts for all the costs necessary to assess strategic profitability. Recall that the value chain is the set of all activities required to design, develop, produce, market, distribute, and service a product. The value chain is illustrated in Exhibit 2-5. A value-chain product cost is obtained by first assigning costs to the set of activities that define the value chain and then assigning the cost of these activities to products. As a second example, suppose that the managerial objective is short-run or tactical profitability analysis. In this case, the costs of designing and developing may not be relevant—especially for existing products. A decision, for example, to accept or reject an order for an existing product would depend on the price offered by the potential customer and the costs of producing, marketing, distributing, and servicing the special order. Thus, only the operating activities within the value chain would be important and the assignment of the costs of these activities to the product defines an *operating product cost*. As a third example, suppose that the managerial objective is external financial reporting. In this case, *traditional product costs* are needed. The rules and conventions that govern external financial reporting mandate that only production costs can be used in calculating product costs. Exhibit 2-6 summarizes the three product cost examples. Other objectives may use still other product cost definitions.

value chain

2-5

Exhibit
Value-Chain Activities



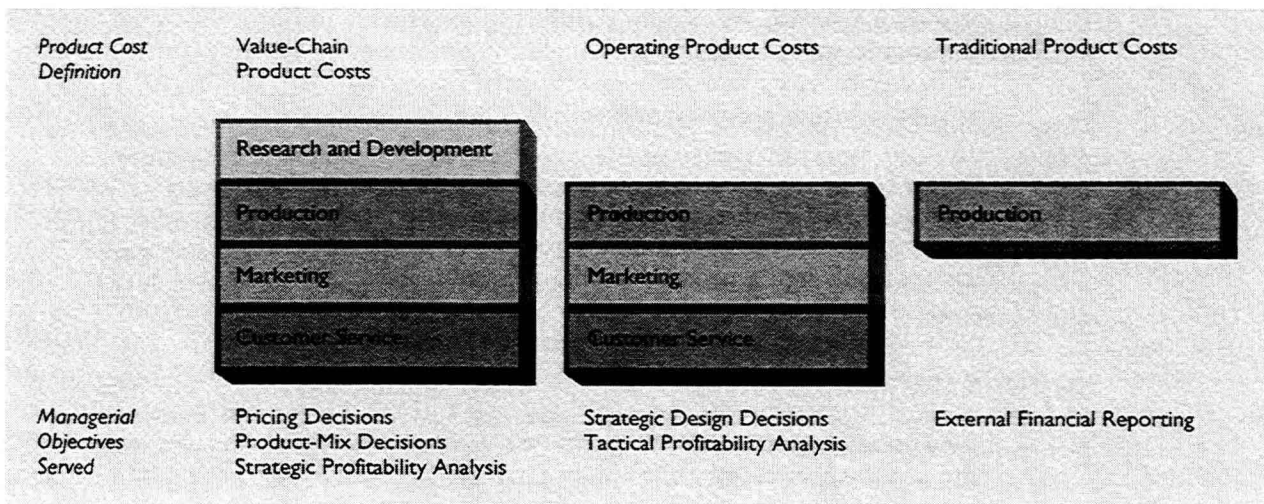
Product Costs and External Financial Reporting

One of the central objectives of a cost management system is the calculation of product costs for external financial reporting. For product-costing purposes, externally imposed conventions dictate that costs be classified in terms of the special purposes, or functions, they serve. Costs are subdivided into two major functional categories: production and

2-6

Examples of Product Cost Definitions

Exhibit



At this Levi's jeans manufacturing plant, we see examples of many product costs. The woman sewing jeans is direct labor. Her sewing machine is part of overhead. The denim is direct materials and the thread may be direct or indirect materials. Notice also the pattern pieces stacked on carts—we can easily imagine the activity "materials handling" from these.



production costs nonproduction costs

nonproduction. **Production costs** are those costs associated with the manufacture of goods or the provision of services. **Nonproduction costs** are those costs associated with the functions of designing, developing, marketing, distribution, customer service, and general administration. The costs of marketing, distribution, and customer service are often placed into one general category called *selling costs*. The costs of designing, developing, and general administration are placed into a second general category called *administrative costs*. For tangible goods, production and nonproduction costs are often referred to as *manufacturing costs* and *nonmanufacturing costs*, respectively. Production costs can be further classified as *direct materials*, *direct labor*, and *overhead*. Only these three cost elements can be assigned to products for external financial reporting.

direct materials

Direct Materials Direct materials are those materials that are traceable to the goods or services being produced. The cost of these materials can be directly charged to products because physical observation can be used to measure the quantity consumed by each product. Materials that become part of a tangible product or those that are used in providing a service are usually classified as direct materials. For example, steel in an automobile, wood in furniture, alcohol in cologne, denim in jeans, braces for correcting teeth, surgical gauze and anesthesia for an operation, a casket for a funeral service, and food on an airline are all direct materials.

direct labor

Direct Labor Direct labor is the labor that is traceable to the goods or services being produced. As with direct materials, physical observation can be used to measure the quantity of labor used to produce a product or service. Those employees who convert raw materials into a product or who provide a service to customers are classified as direct labor. Workers on an assembly line at Chrysler, a chef in a restaurant, a surgical nurse attending an open heart operation, and a pilot for Delta Airlines are examples of direct laborers.

overhead

Overhead All production costs other than direct materials and direct labor are lumped into one category called overhead. In a manufacturing firm, overhead is also known as *factory burden* or *manufacturing overhead*. The overhead cost category contains a wide variety of items. Many inputs other than direct labor and direct materials are needed to

supplies

produce products. Examples include depreciation on buildings and equipment, maintenance, supplies, supervision, material handling, power, property taxes, landscaping of factory grounds, and plant security. **Supplies** are generally those materials necessary for production that do not become part of the finished product or which are not used in providing a service. Dishwasher detergent in a fast-food restaurant and oil for production equipment are examples of supplies.

Direct materials that form an insignificant part of the final product are usually lumped into the overhead category as a special kind of indirect material. This is justified on the basis of cost and convenience. The cost of the tracing is greater than the benefit of increased accuracy. The glue used in furniture or toys is an example.

The cost of overtime for direct laborers is usually assigned to overhead as well. The rationale is that typically no particular production run can be identified as the cause of the overtime. Accordingly, overtime cost is common to all production runs and is therefore an indirect manufacturing cost. Note that only the overtime cost is treated this way. If workers are paid an \$8 regular rate and a \$4 overtime premium, then only the \$4 overtime premium is assigned to overhead. The \$8 regular rate is still regarded as a direct labor cost. In certain cases, however, overtime is associated with a particular production run; for example, a special order is taken when production is at 100 percent capacity. In these special cases, it is appropriate to treat overtime premiums as a direct labor cost.

**noninventoriable
(period) costs**

Selling and Administrative Costs There are two broad categories of nonproduction costs: selling costs and administrative costs. For external financial reporting, selling and administrative costs are *noninventoriable* or *period costs*. **Noninventoriable (period) costs** are expensed in the period in which they are incurred. Thus, none of these costs can be assigned to products or appear as part of the reported values of inventories on the balance sheet. In a manufacturing organization, the level of these costs can be significant (often greater than 25 percent of sales revenue), and controlling them may bring greater cost savings than the same effort exercised in controlling production costs. For service organizations, the relative importance of selling and administrative costs depends on the nature of the service produced. Physicians and dentists, for example, do very little marketing and thus have very low selling costs. A grocery chain, on the other hand, may incur substantial marketing costs, especially if the companies experiment with alternative shopping and delivery technologies. For example, Netherlands-based Albert Heijn implemented a home-shopping program in which consumers order products via fax, telephone, or interactive-CD technology. For a small charge, the orders are delivered to the customers' homes.³

**marketing (selling)
costs**

Those costs necessary to market, distribute, and service a product or service are **marketing (selling) costs**. They are often referred to as *order-getting* and *order-filling costs*. Examples of selling costs include: salaries and commissions of sales personnel, advertising, warehousing, shipping, and customer service. The first two items are examples of order-getting costs; the last three are order-filling costs.

**administrative
costs**

All costs associated with research, development, and general administration of the organization that cannot be reasonably assigned to either marketing or production are **administrative costs**. General administration has the responsibility of ensuring that the various activities of the organization are properly integrated so that the overall mission of the firm is realized. The president of the firm, for example, is concerned with the efficiency of selling, production, and research and development as they carry out their respective roles. Proper integration of these functions is essential to maximize the overall profits of a firm. Examples, then, of general administrative costs are top executive salaries, legal fees, printing the annual report, and general accounting. Research and development costs are the costs associated with designing and developing new products.

3. James Fallon, "Worldwide Connections," *Supermarket News* (25 September 1995): 15–16.

Prime and Conversion Costs The production and nonproduction classifications give rise to some related cost concepts. The functional delineation between nonmanufacturing and manufacturing costs is essentially the basis for the concepts of noninventoriable costs and inventoriable costs—at least for purposes of external reporting. Combinations of different production costs also produce the concepts of conversion costs and prime costs.

prime cost
conversion cost

Prime cost is the sum of direct materials cost and direct labor cost. Conversion cost is the sum of direct labor cost and overhead cost. For a manufacturing firm, conversion cost can be interpreted as the cost of converting raw materials into a final product.

EXTERNAL FINANCIAL STATEMENTS

Objective 3

Prepare income statements for manufacturing and service organizations.

To meet external reporting requirements, costs must be classified according to function. In preparing an income statement, production costs and selling and administrative costs are segregated. They are segregated because production costs are viewed as product costs, and selling and administrative costs are viewed as period costs. Thus, production costs attached to the products sold are recognized as an expense (cost of sales) on the income statement. Production costs that are attached to products that are not sold are reported as inventory on the balance sheet. Selling and administrative expenses are viewed as costs of the period and must be deducted each and every period as expenses; they would not appear on the balance sheet.

Income Statement: Manufacturing Firm

The income statement based on a functional classification for a manufacturing firm is displayed in Exhibit 2-7. This income statement follows the traditional format taught in an introductory financial accounting course. Income computed by following a functional classification is frequently referred to as absorption-costing (full-costing) income because all manufacturing costs are fully assigned to the product.

Under the absorption-costing approach, expenses are segregated according to function and then deducted from revenues to arrive at income before taxes. As can be seen in Exhibit 2-7, there are two major functional categories of expense: cost of goods sold and operating expenses. These categories correspond, respectively, to a firm's manufacturing and nonmanufacturing expenses. Cost of goods sold is the cost of direct materials, direct labor, and overhead attached to the units sold. To compute the cost of goods sold, it is first necessary to determine the cost of goods manufactured.

absorption-costing
(full-costing)
income

cost of goods sold

cost of goods
manufactured

Cost of Goods Manufactured The cost of goods manufactured represents the total cost of goods completed during the current period. The only costs assigned to goods com-

2-7

Exhibit

Income Statement: Manufacturing Organization For the Year Ended December 31, 1998

Sales		\$2,800,000
Less cost of goods sold:		
Beginning finished goods inventory	\$ 500,000	
Add: Cost of goods manufactured	<u>1,200,000</u>	
Goods available for sale	\$1,700,000	
Less: Ending finished goods inventory	<u>(300,000)</u>	<u>1,400,000</u>
Gross margin		\$1,400,000
Less operating expenses:		
Selling expenses	\$600,000	
Administrative expenses	<u>300,000</u>	<u>(900,000)</u>
Income before taxes		<u>\$ 500,000</u>