CHAPTER

8

Responsibility Accounting and Transfer Pricing in Decentralized Organizations

LEARNING OBJECTIVES

After completing this chapter, you should be able to answer the following questions:

1. Why is decentralization appropriate for some companies but not for others?
2. How are responsibility accounting and decentralization related?
3. What are the differences among the four basic types of responsibility centers?
4. Why and how are service department costs allocated to producing departments?
5. Why are transfer prices used in organizations?
6. What are the advantages and disadvantages of service transfer prices?
7. How can multinational companies use transfer prices?

INTRODUCING

Abbott Laboratories

http://www.abbott.com

More than a century ago, 30-year-old Wallace C. Abbott, M.D., began making a new form of medicine. Using the active part of medicinal plants, he formed tiny pills, called "dosimetric granules," which provided a precisely measured amount of drug. Within two years, the demand for these granules far exceeded the needs of his own medical practice.

From a small operation based in Dr. Abbott's Chicago apartment, Abbott Laboratories has evolved into one of the world's leading health care companies with 57,000 employees around the globe. Today, you can find Abbott products in more than 130 countries on five continents. Abbott is involved in five broad business arenas:

- Nutritional Products—medical and nutritional help for adults and children.
- Pharmaceutical Products—including anti-infective, cardiovascular, neuroscience, hormonal, anti-ulcer drugs, and new non-invasive drug therapy for enhancing health.
- Diagnostic Products—*in vitro* diagnostics, and diagnostics for HIV infection, hepatitis, and blood glucose self-testing for people with diabetes.
- Hospital Products—a full line of anesthetics, injectable drugs, infection-control products, diagnostic imaging agents, intravenous solutions, advanced drug-delivery systems and other medical specialty products for hospitals, clinical labs and alternate health care sites.
- Chemical and Agricultural Products—environmentally compatible insecticides and plant growth regulators, animal health products and efficient bulk drug development and manufacturing for internal and external customers.

The company has four decentralized business divisions: pharmaceuticals, hospital products, nutritional, and diagnostics. These divisions require the use of responsibility accounting and transfer pricing for internal purchases and sales.

SOURCE: "Abbott Laboratories Online," Abbott Laboratories Web site, http://www.abbott.com (March 29, 2000).

An organization's structure evolves as its goals, technology, and employees change, and the progression is typically from highly centralized to highly decentralized. When top management retains the major portion of authority, centralization exists. Decentralization refers to top management's downward delegation of decision-making authority to subunit managers. Abbott Laboratories recognizes the need for decentralization in its corporate structure because the company's global operations demand that the managers on location in any particular region be able to most effectively use corporate resources.

This chapter describes the degree to which top managers delegate authority to subordinate managers and the accounting methods—responsibility accounting and transfer pricing—that are appropriate in decentralized organizations.

DECENTRALIZATION

The degree of centralization can be viewed as a continuum. It reflects a chain of command, authority and responsibility relationships, and decision-making capabilities. In a completely centralized firm, a single individual (usually the company owner or president) performs all major decision making and retains full authority and responsibility for that organization's activities.

Alternatively, a purely decentralized organization would have virtually no central authority, and each subunit would act as a totally independent entity. Either extreme of the centralization–decentralization continuum represents a clearly undesirable arrangement.

1

Why is decentralization appropriate for some companies but not for others?

In the totally centralized company, the single individual may have neither the expertise nor sufficient and timely information to make effective decisions in all areas. In the totally decentralized firm, subunits may act in ways that are inconsistent with the organization's goals.

http://www.jj.com

Johnson & Johnson recognized each of these possibilities in the management of its 160 almost wholly autonomous businesses operating in 50 countries. Decentralization gives Johnson & Johnson managers a sense of ownership and control and the ability to act on information more quickly. However, Johnson & Johnson's chairman, Ralph Larsen, also stated that "The glue that binds this company together" is an ethical code of conduct—which Johnson & Johnson dubs its "credo"—that is literally set in stone at the company's headquarters.[1]

Each organization tends to structure itself in light of the pure centralization versus pure decentralization factors presented in Exhibit 18–1. Most businesses are, to some extent, somewhere in the middle part of the continuum because of practical necessity. The combination of managers' personal characteristics, the nature of decisions required for organizational growth, and the nature of organizational activities lead a company to find the appropriate degree of decentralization. For example, to be more responsive to market needs, Hewlett-Packard decentralized, as discussed below:

http://www.hewlett-packard.com

> *[Lew Platt, taking over leadership as CEO in November 1992] started running the company like a conglomerate of little ventures, each responsible for its own success. He changed the focus of H-P from technology to people. [The company is] asking customers what problems they have, then saying H-P has the talent to create technology to solve those problems. Reacting to customers keeps H-P growing and changing, grafting different pieces of itself together, spitting out new products.*[2] *[Platt retired December 31, 1999.]*

Decentralization does not necessarily mean that a unit manager has the authority to make all decisions concerning that unit. Top management selectively determines the types of authority to delegate and the types to withhold. For example,

EXHIBIT 18–1

Degree of Decentralization in an Organizational Structure

FACTOR	CONTINUUM	
	Pure Centralization →	**Pure Decentralization**
Age of firm	Young →	Mature
Size of firm	Small →	Large
Stage of product development	Stable →	Growth
Growth rate of firm	Slow →	Rapid
Expected impact on profits of incorrect decisions	High →	Low
Top management's confidence in subordinates	Low →	High
Historical degree of control in firm	Tight →	Moderate or loose

[1] Staff "Dusting the Opposition," *The Economist* (April 29, 1995), p. 71.
[2] Kevin Maney, "Giant Goes from Stodgy to Nimble," *USA Today* (May 18, 1994), pp. 1B–2B. Copyright 1994, *USA Today*. Also, Eric Nee, "Lew Platt: Why I Dismembered HP," *Fortune* (March 29, 1999), pp. 167ff.

after Alcoa implemented a major decentralization program in 1991, Chairman Paul H. O'Neill still viewed safety, environmental matters, quality, insurance, and information strategy to be "central resource" issues such as cash management, evaluation of division profitability, and capital project approval. He thought that centralization was the most sensible and cost-effective method of handling those specific functions.[3]

http://www.alcoa.com

As with any management technique, decentralization has advantages and disadvantages. These pros and cons are discussed in the following sections and are summarized in Exhibit 18–2.

Advantages of Decentralization

Decentralization has many personnel advantages. Decentralized units provide excellent settings for training personnel and for screening aspiring managers for promotion. Managers in decentralized units have the need and occasion to develop their leadership qualities, creative problem-solving abilities, and decision-making skills. Managers can be comparatively judged on their job performance and on the results of their units relative to those headed by other managers; such comparisons can encourage a healthy level of organizational competition. Decentralization also often leads to greater job satisfaction for managers because it provides for job enrichment and gives a feeling of increased importance to the organization.[4] Employees are given more challenging and responsible work, providing greater opportunities for advancement.

In addition to the personnel benefits, decentralization is generally more effective than centralization in accomplishing organizational goals and objectives. The decentralized unit manager has more knowledge of the local operating environment, which means (1) a reduction of decision-making time, (2) a minimization of difficulties that may result from attempting to communicate problems and instructions through an organizational chain of command, and (3) quicker perceptions of environmental changes than is possible for top management. Thus, the manager of a decentralized unit is both in closest contact with daily operations and charged with making decisions about those operations.

A decentralized structure also allows the management by exception principle to be implemented. Top management, when reviewing divisional reports, can address issues that are out of the ordinary rather than dealing with operations that are proceeding according to plans.

EXHIBIT 18–2

Advantages and Disadvantages of Decentralization

ADVANTAGES

- Helps top management recognize and develop managerial talent
- Allows managerial performance to be comparatively evaluated
- Can often lead to greater job satisfaction
- Makes the accomplishment of organizational goals and objectives easier
- Allows the use of management by exception

DISADVANTAGES

- May result in a lack of goal congruence or suboptimization
- Requires more effective communication abilities
- May create personnel difficulties upon introduction
- Can be extremely expensive

[3] Paul H. O'Neill, Remarks at Alcoa organizational meeting (Pittsburgh Hilton Hotel, August 9, 1991), p. 5.
[4] Job enrichment refers to expanding a job to provide for personal achievement and recognition.

Disadvantages of Decentralization

goal congruence

Not all aspects of decentralization are positive. For instance, the authority and responsibility for making decisions may be divided among too many individuals. This division of authority and responsibility may result in a lack of goal congruence among the organizational units. **Goal congruence** exists when the personal goals of the decision maker, the goals of the decision maker's unit, and the goals of the broader organization are mutually supportive and consistent.

In a decentralized company, unit managers are essentially competing with each other because results of unit activities are compared. Because of this competition, unit managers may make decisions that positively affect their own units, but are detrimental to other organizational units or to the company. This process results in suboptimization.

suboptimization

Suboptimization is a situation in which individual managers pursue goals and objectives that are in their own and/or their segments' particular interests rather than in the company's best interests. Because of their greater degree of flexibility in financial decisions, managers of profit and investment centers (to be discussed later in the chapter) must remember that their operations are integral parts of the entire corporate structure. Therefore, all actions taken should be in the best long-run interest of both the responsibility center and the organization. Unit managers should be aware of and accept the need for goal congruence throughout the entity. To assume awareness of such goal congruence, management may keep certain organizational functions at "headquarters" or recentralize some functions if they have been delegated to unit managers.

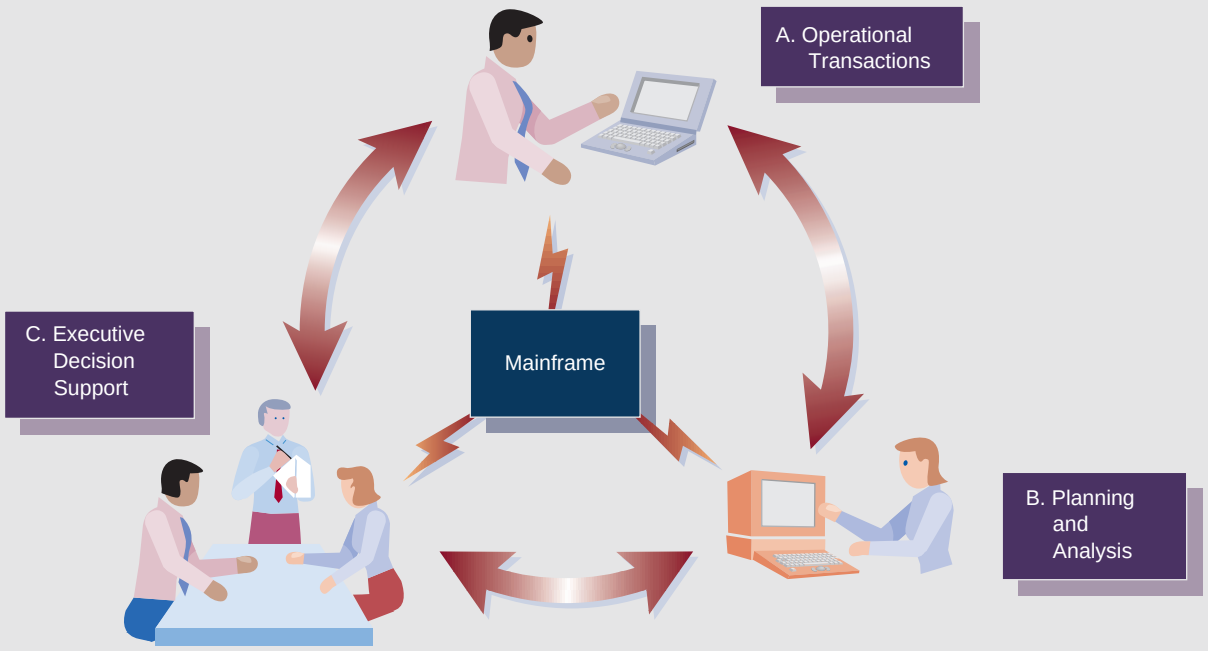
A decentralized organization requires that more effective methods of communicating plans, activities, and achievements be established because decision making is removed from the central office. Top management has delegated the authority to make decisions to unit managers, but top management retains the responsibility for the ultimate effects of those decisions. Thus, to determine whether those operations are progressing toward established goals, top management must maintain an awareness of operations at lower levels.

In attempts to introduce decentralization policies, some top managers may have difficulty relinquishing the control they previously held over the segments or may be unwilling or unable to delegate effectively. Reasons for this unwillingness or inability include the belief of managers that they can do the job better than anyone else, a lack of confidence in the lower-level managers' abilities, and a lack of ability to communicate directions and assignments to subordinates.

A final disadvantage of decentralization is that it may be extremely costly. In a large company, all subordinate managers are unlikely to have equally good decision-making skills. Thus, companies must often incur a cost to train lower-level managers to make better decisions. Another potential cost is that of poor decisions, because decentralization requires managerial tolerance if and when subordinates make mistakes. The potentially adverse consequences of poor decisions by subordinates cause some top managers to resist a high degree of decentralization.

Decentralization also requires that a company develop and maintain a sophisticated planning and reporting system. With more organizations like Abbott Laboratories having decentralized units worldwide, integrated ways to transfer information are extremely important. A manager at an Abbott Laboratories office in Europe may need to work with an Abbott Laboratories manager in South America on a report for the home office in Chicago. For companies having operations spanning the globe, modems, fax machines, interactive computer networks, management information systems, and videoconferencing are no longer on capital budgeting "wish lists"; they have become capital investment necessities. Frito Lay, for example, installed a network that linked all senior staff and field managers at all levels nationwide and allowed decisions to be made quickly from a well-informed perspective. The company referred to the system (shown in Exhibit 18–3) as "directed decentralization."

http://www.fritolay.com



Frito Lay's system is built on a relational database. Any information entered into the system is immediately accessible to all users.

A. A salesperson processes an order on his or her [laptop] computer. The purchasing, manufacturing, and logistics facilities are notified immediately and begin processing the order. Each successive transaction is entered as it occurs; that is, the company can track where the order is in manufacturing, when it left the plant, and when it will be delivered.

B. At the same time, this information is available to the planning and analysis system. This allows the brand manager, the channel manager, and the area manager to spot trends in consumption. Competitive information from supermarket scanners is also fed into the mix, enabling managers to see their markets in wider perspective and to develop appropriate strategies to respond to market needs.

C. This information, broader and more general in scope, becomes instantly available to top management. This allows managers to understand what is going on throughout the company, where the firm is losing market share, and why. This in turn allows the executive process to enter the picture sooner and with greater impact.

SOURCE: Charles S. Field, "Directed Decentralization: The Frito Lay Story," *Financial Executive* (November/December 1990), p. 25. Reprinted with permission from *Financial Executive*, copyright 1990 by Financial Executives Institute, 10 Madison Avenue, P.O. Box 1938, Morristown, N.J. 07962.

EXHIBIT 18–3

Frito Lay's Directed Decentralization System

In a decentralized organization, top management delegates decision-making authority but retains ultimate responsibility for decision outcomes. Thus, a reporting system must be implemented to provide top management with information about, as well as the ability to measure, the overall accountability of the subunits. This accounting and information reporting system is known as a responsibility accounting system.

RESPONSIBILITY ACCOUNTING SYSTEMS

A responsibility accounting system is an important tool in making decentralization work effectively by providing information to top management about the performance of organizational subunits. As companies became more decentralized, responsibility accounting systems evolved from the increased need to communicate operating results through the managerial hierarchy. Responsibility accounting implies subordinate managers' acceptance of communicated authority from top management.

2

How are responsibility accounting and decentralization related?

Responsibility accounting is consistent with standard costing and activity-based costing because each is implemented for a common purpose—that of control. Responsibility accounting focuses attention on organizational subunit performance and the effectiveness and efficiency of that unit's manager. Standard costing traces variances to the person (or machine) having responsibility for a particular variance (such as tracing the material purchase price variance to the purchasing agent). Activity-based costing traces as many costs as possible to the activities causing the costs to be incurred rather than using highly aggregated allocation techniques. Thus, each technique reflects cause-and-effect relationships.

responsibility report

A responsibility accounting system produces **responsibility reports** that assist each successively higher level of management in evaluating the performances of its subordinate managers and their respective organizational units. Much of the information communicated in these reports is of a monetary nature, although some nonmonetary data may be included. The reports about unit performance should be tailored to fit the planning, controlling, and decision-making needs of subordinate managers. Top managers review these reports to evaluate the performance of each unit and each unit manager.

The number of responsibility reports issued for a decentralized unit depends on the degree of influence that unit's manager has on day-to-day operations and costs. If a manager strongly influences all operations and costs of a unit, one report will suffice for both the manager and the unit because responsibility reports should reflect only the revenues and/or costs under the control of the manager.

Normally, though, some costs of an organizational unit are not controlled (or are only partially or indirectly controlled) by the unit manager. In such instances, the responsibility accounting report takes one of two forms. First, a single report can be issued showing all costs incurred in the unit, separately classified as either controllable or noncontrollable by the manager. Alternatively, separate reports can be prepared for the organizational unit and the unit manager. The unit's report would include all costs; the manager's would include only costs under his or her control.

Responsibility accounting systems help to establish control procedures at the point of cost incidence rather than allocating such costs in a potentially arbitrary manner to all units, managers, and/or products. Managers implement control procedures for three reasons. First, managers attempt to cause actual operating results to conform to planned results; this conformity is known as *effectiveness*. Second, managers attempt to cause the standard output to be achieved with minimum possible input costs; this conformity is known as *efficiency*. Third, managers need to ensure reasonable plant and equipment utilization, which is primarily affected by product or service demand. At higher volumes of activity or utilization, fixed capacity costs can be spread over more units, resulting in a lower unit cost. Reasonable utilization must be tied to demand and thus does not mean producing simply for the sake of lowering fixed cost per unit if sales demand cannot support production.

A responsibility accounting system helps organizational unit managers to conduct the five basic control functions shown in Exhibit 18–4. A budget is prepared and used to officially communicate output expectations (e.g., sales and production) and delegate authority to spend. Ideally, subunit managers negotiate budgets and standards for their units with top management for the coming year. The responsibility accounting system should be designed so that actual data are captured in conformity with budgetary accounts. Thus, during the year, the system can be used to record and summarize data for each organizational unit.

Operating reports comparing actual account balances with budgeted or standard amounts are prepared periodically and issued to unit and top managers for their review. However, because of day-to-day contact with operations, unit managers should have been aware of any significant variances before they were reported, identified the variance causes, and attempted to correct the causes of the problems.

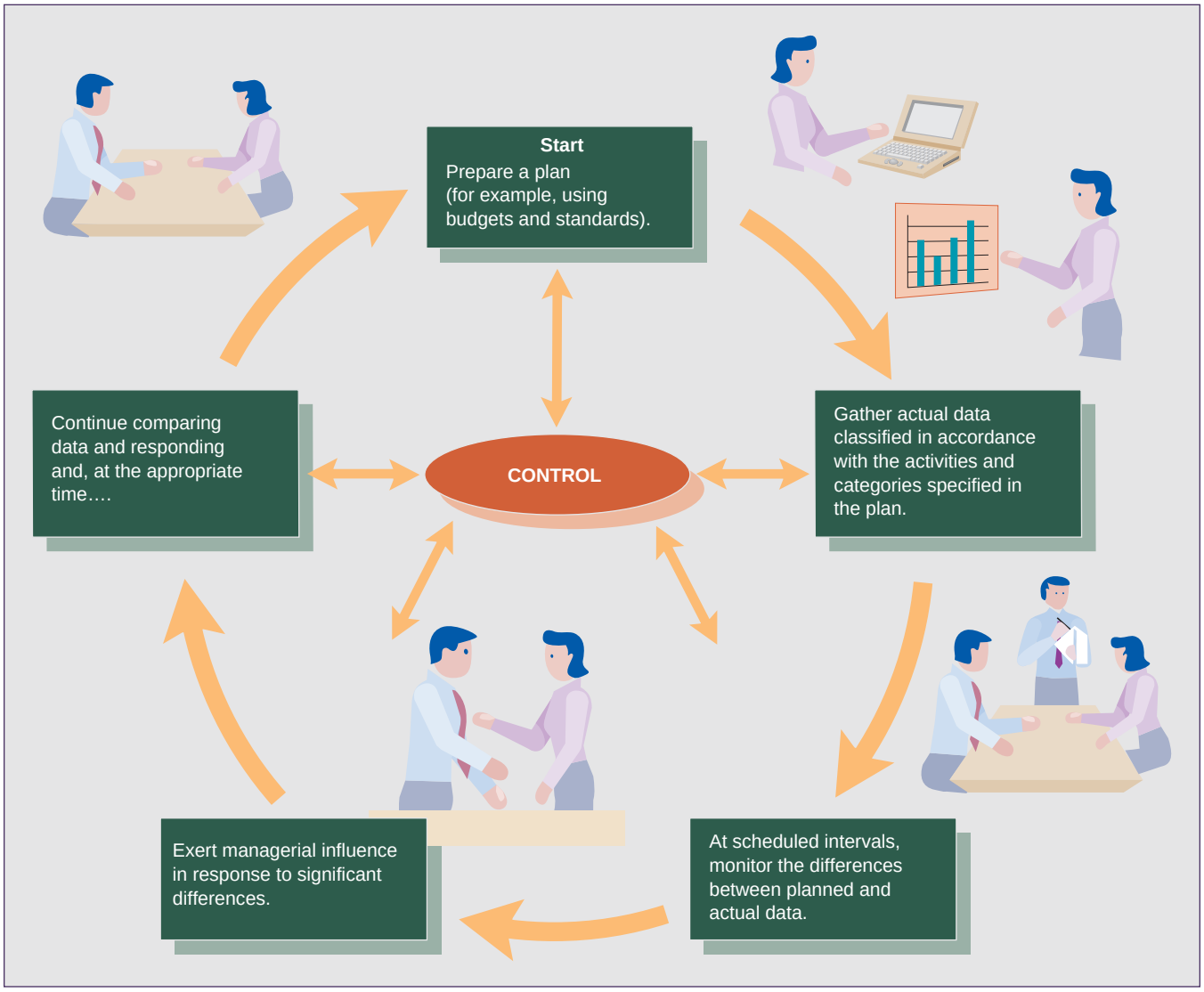


EXHIBIT 18–4

Basic Steps in a Control Process

Top management, on the other hand, may not know about operational variances until responsibility reports are received. By the time top management receives the reports, the problems causing the variances should have been corrected, or subordinate managers should have explanations as to why the problems were not or could not have been resolved.

Responsibility reports for subordinate managers and their immediate supervisors normally compare actual results with flexible budget figures. These comparisons are more useful for control purposes because both operating results and flexible budget figures are based on achieved levels of activity. In contrast, top management may receive responsibility reports comparing actual performance to the master budget. Such a budget-to-actual comparison yields an overall performance evaluation, because the master budget reflects management's expectations about volume, mix, costs, and prices. This type of comparison is especially useful when accompanied by a supporting detailed variance analysis identifying the effect of sales volume differences on segment performance.

Regardless of the type of comparison provided, responsibility reports reflect the upward flow of information from operational units to company top management and illustrate the broadening scope of responsibility. Managers receive detailed

information on the performance of their immediate areas of control and summary information on all organizational units for which they are responsible. Summarizing results causes a pyramiding of information. Like the information received by the executives in the Frito Lay exhibit, reports at the lowest level units are highly detailed, whereas more general information is reported at the top of the organization. Upper-level managers desiring more detail than is provided in summary reports can obtain it by reviewing the responsibility reports prepared for their subordinates.

Exhibit 18–5 illustrates a set of performance reports for the Sanger Pharmaceutical Company. The division's flexible budget is presented for comparative purposes. Data for the production department are aggregated with data of the other departments under the production vice president's control. (These combined data are shown in the middle section of Exhibit 18–5.) In a like manner, the total costs of the production vice president's area of responsibility are combined with other costs for which the company president is responsible and are shown in the top section of Exhibit 18–5.

Variances are the responsibility of the manager under whose direct supervision they occur. Variances are individually itemized in performance reports at the lower levels so that the appropriate manager has the necessary details to take any

EXHIBIT 18–5

Sanger Pharmaceutical Company Performance Reports for Costs Incurred

PRESIDENT'S PERFORMANCE REPORT
JUNE 2000

	Budget	Actual	Variance Fav. (Unfav.)
Administrative office—president	$ 298,000	$ 299,200	$(1,200)
Financial vice president	236,000	234,100	1,900
Production vice president	737,996	744,400	(6,404)
Sales vice president	275,000	276,400	(1,400)
Totals	$1,546,996	$1,554,100	$(7,104)

PRODUCTION VICE PRESIDENT'S PERFORMANCE REPORT JUNE 2000

	Budget	Actual	Variance Fav. (Unfav.)
Administrative office—VP	$180,000	$182,200	$(2,200)
Distribution and storage	124,700	126,000	(1,300)
Production department	433,296	436,200	(2,904)
Totals	$737,996	$744,400	$(6,404)

DISTRIBUTION AND STORAGE MANAGER'S PERFORMANCE REPORT JUNE 2000

	Budget	Actual	Variance Fav. (Unfav.)
Direct material	$ 36,000	$ 35,400	$ 600
Direct labor	54,500	55,300	(800)
Supplies	4,700	5,300	(600)
Indirect labor	12,400	12,900	(500)
Power	11,200	10,900	300
Repairs and maintenance	3,500	3,700	(200)
Other	2,400	2,500	(100)
Totals	$124,700	$126,000	$(1,300)

(continued)

EXHIBIT 18–5

(Concluded)

PRODUCTION DEPARTMENT MANAGER'S PERFORMANCE REPORT JUNE 2000

	Budget	Actual	Variance Fav. (Unfav.)
Direct material	$119,300	$122,500	$(3,200)
Direct labor	190,880	188,027	2,853
Supplies	17,656	18,500	(844)
Indirect labor	46,288	47,020	(732)
Depreciation	38,653	38,653	0
Repairs and maintenance	12,407	12,900	(493)
Other	8,112	8,600	(488)
Totals	$433,296	$436,200	$(2,904)

required corrective action related to significant variances.[5] Under the management by exception principle, major deviations from expectations are highlighted under the subordinate manager's reporting section to assist upper-level managers in making decisions about when to become involved in subordinates' operations. If no significant deviations exist, top management is free to devote its attention to other matters. In addition, such detailed variance analyses alert operating managers to items that may need to be explained to superiors. For example, the items of direct material and direct labor in Exhibit 18–5 on the production department manager's section of the report would probably be considered significant and require explanations to the production vice president.

In addition to the monetary information shown in Exhibit 18–5, many responsibility accounting systems are now providing information on critical nonmonetary measures of the period's activity. Some examples of these types of information are shown in Exhibit 18–6. Many of these measures are equally useful for manufacturing and service organizations and can be used along with financial measurements to judge performance.

The performance reports of each management layer are reviewed and evaluated by each successively higher management layer. Managers are likely to be more careful and alert in controlling operations if they know that the reports generated

EXHIBIT 18–6

Nonmonetary Information for Responsibility Reports

- Departmental/divisional throughput
- Number of defects (by product, product line, supplier)
- Number of orders backlogged (by date, quantity, cost, and selling price)
- Number of customer complaints (by type and product); method of complaint resolution
- Percentage of orders delivered on time
- Manufacturing (or service) cycle efficiency
- Percentage of reduction of non-value-added time from previous reporting period (broken down by idle time, storage time, move time, and quality control time)
- Number and percentage of employee suggestions considered significant and practical
- Number and percentage of employee suggestions implemented
- Number of unplanned production interruptions
- Number of schedule changes
- Number of engineering change orders; percentage change from previous period
- Number of safety violations; percentage change from previous period
- Number of days of employee absences; percentage change from previous period

[5] In practice, the variances presented in Exhibit 18–5 would be further separated into the portions representing price and quantity effects as is shown in Chapter 10 on standard costing.

by the responsibility accounting system will reveal financial accomplishments and problems. Thus, in addition to providing a means for control, responsibility reports can motivate managers to influence operations in ways that will reflect positive performance.

The focus of responsibility accounting is on the manager who is responsible for a particular cost object. In a decentralized company, the cost object is an organizational unit such as a division, department, or geographical region. The cost object under the control of a manager is called a **responsibility center**.

responsibility center

BASIC TYPES OF RESPONSIBILITY CENTERS

3

What are the differences among the four basic types of responsibility centers?

Responsibility accounting systems identify, measure, and report on the performance of people controlling the activities of responsibility centers. Responsibility centers are classified according to their manager's scope of authority and type of financial responsibility. Companies may define their organizational units in various ways based on management accountability for one or more income-producing factors—costs, revenues, profits, and/or asset base. The four basic types of responsibility centers are illustrated in Exhibit 18–7 and discussed in the following sections.

Cost Centers

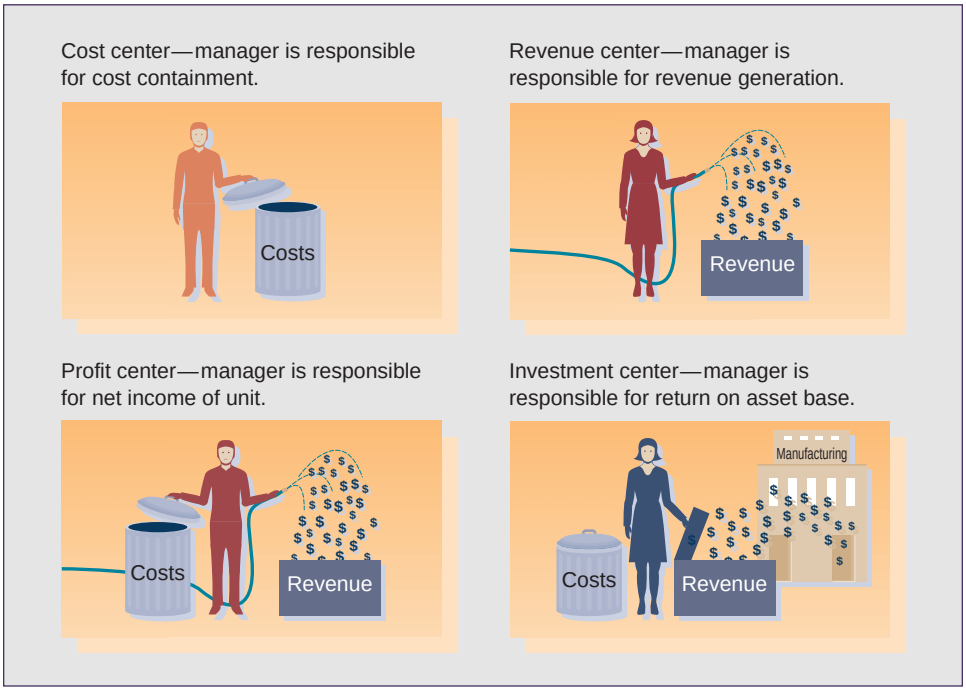
cost center

In a **cost center**, the manager has the authority only to incur costs and is specifically evaluated on the basis of how well costs are controlled. Theoretically, revenues cannot exist in a cost center because the unit does not engage in revenue-producing activity. Cost centers commonly include service and administrative departments. For example, the equipment maintenance center in a hospital may be a cost center because it does not charge for its services, but it does incur costs.

In other instances, revenues do exist for a cost center, but they are either not under the manager's control or are not effectively measurable. The first type of situation exists in a community library that is provided a specific proration of

EXHIBIT 18–7

Types of Responsibility Centers



property tax dollars, but has no authority to levy or collect the related taxes. The second situation could exist in discretionary cost centers, such as a research and development center, in which the outputs (revenues or benefits generated from the cost inputs) are not easily measured.[6] In these two types of situations, the revenues should not be included in the manager's responsibility accounting report.

In the traditional manufacturing environment, a standard costing system is generally used and variances are reported and analyzed. In such an environment, the highest priority in a cost center is normally the minimization of unfavorable cost variances. Top management often concentrates only on the unfavorable variances occurring in a cost center and ignores the efficient performance indicated by favorable variances. To illustrate this possibility, the June 2000 operating results for a production department are shown in Exhibit 18–8.

Sandra Parrish is the manager of the production department of Exhibit 18–8. During June, the department made 477,200 units of product at a unit cost of $0.914 ($436,200 ÷ 477,200); standard unit production cost for these units is $0.908. Top management's analysis of the responsibility report issued for the production department for June might focus on the large unfavorable direct material variance rather than on the large favorable variance for the direct labor. Ms. Parrish's job is to control costs and she did so relatively well when both favorable and unfavorable variances are considered together.

Significant favorable variances should not be disregarded if the management by exception principle is applied appropriately. Using this principle, top management should investigate all variances (both favorable and unfavorable) that fall outside the range of acceptable deviations.

The unfavorable direct material variance in the production department should be investigated further to find its cause. For example, a substandard grade of material may have been purchased and caused excessive usage. If this is the case,

EXHIBIT 18–8

Production Department Costs
June 2000

Units of product made: 477,200

Standard cost per unit of production:		
Direct material		$0.250
Direct labor		0.400
Overhead		
Supplies	$0.037	
Indirect labor	0.097	
Depreciation (units of production method)	0.081	
Repairs and maintenance	0.026	
Other	0.017	0.258
Total		$0.908

	Standard Cost	Actual Cost	Variance Fav. (Unfav.)
Direct material	$119,300	$122,500	$(3,200)
Direct labor	190,880	188,027	2,853
Supplies	17,656	18,500	(844)
Indirect labor	46,288	47,020	(732)
Depreciation	38,653	38,653	0
Repairs and maintenance	12,407	12,900	(493)
Other	8,112	8,600	(488)
Total	$433,296	$436,200	$(2,904)

[6] Discretionary costs are discussed in Chapter 15.

the purchasing agent, not Ms. Parrish, should be assigned the responsibility for the variance. Other possible causes for the unfavorable direct material variance include increased material prices, excess waste, or some combination of all causes. Only additional inquiry will determine whether Ms. Parrish could have controlled the variance.

The favorable direct labor variance should also be analyzed for causes. Ms. Parrish might have used inexperienced personnel who were being paid lower rates. This could explain the favorable direct labor variance and, to some extent, the unfavorable direct material variance (because a lack of employee skill could result in overuse of material). Alternatively, the production department workers could have been very efficient in June or the labor standard was inappropriate.

Revenue Centers

revenue center

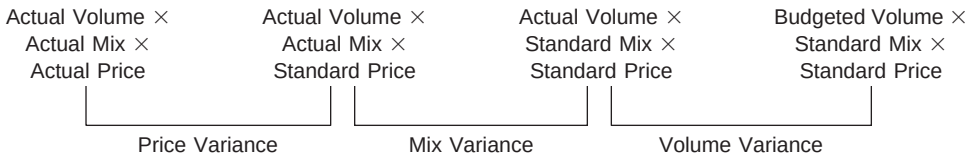
A **revenue center** is strictly defined as an organizational unit for which a manager is accountable only for the generation of revenues and has no control over setting selling prices or budgeting costs. In many retail stores, the individual sales departments are considered independent units, and managers are evaluated based on the total revenues generated by their departments. Departmental managers, however, may not be given the authority to change selling prices to affect volume, and often they do not participate in the budgeting process. Thus, the departmental managers might have no impact on costs.

In most instances, however, pure revenue centers do not exist. Managers of revenue centers are typically not only responsible for revenues, but also are involved in the planning and control over some (but not necessarily all) costs incurred in the center. A more appropriate term for this organizational unit is a *revenue and limited cost center*.

For example, Vincent Rey is the district sales manager for the Commercial Sales Division of the Sanger Pharmaceutical Company and is responsible for the sales revenues generated in his territory. In addition, he is accountable for controlling the mileage and other travel-related expenses of his sales staff. Vincent is not, however, able to influence the types of cars his sales staff obtains because cars are acquired on a fleetwide basis by top management.

Salaries, if directly traceable to the center, are often a cost responsibility of the "revenue center" manager. This situation reflects the traditional retail environment in which sales clerks are assigned to a specific department and are only allowed to finalize sales for customers wanting to purchase that particular department's merchandise. Most stores, however, have found such an arrangement to be detrimental to business because customers are forced to wait for the appropriate clerk. Clerks in many stores are now allowed to assist all customers with all types of merchandise. Such a change in policy converts what was a traceable departmental cost into an indirect cost. Those stores carrying high-cost, high-selling-price merchandise normally retain the traditional system. Managers of such departments are thus able to trace sales salaries as a direct departmental cost.

The effects of price, sales mix, and volume variances from budget are illustrated in the following revenue variance model:



The following revenue statistics are presented for the three products of the Consumer Products Division of the Sanger Pharmaceutical Company for June 2000:

Budget	Units	Unit Price	Revenue	Standard Mix
Flarin [F]	1,000	$1.80	$1,800	1,000 ÷ 2,700 = 37.0%
Sucrain [S]	500	0.80	400	500 ÷ 2,700 = 18.5%
Wassine [W]	1,200	1.00	1,200	1,200 ÷ 2,700 = 44.5%
Totals	2,700		$3,400	100.0%
Actual				
Flarin	1,100	$2.00	$2,200	
Sucrain	540	0.70	378	
Wassine	1,180	1.10	1,298	
Totals	2,820		$3,876	

Using the revenue variance model and the information presented for the Consumer Products Division of Sanger Pharmaceutical, variances can be determined as follows:

	Actual Volume × Actual Mix × Actual Price	Actual Volume × Actual Mix × Standard Price	Actual Volume × Standard Mix × Standard Price	Budgeted Volume × Standard Mix × Standard Price
F	1,100 × $2.00 = $2,200	1,100 × $1.80 = $1,980	1,043.4 × $1.80 = $1,878	1,000 × $1.80 = $1,800
S	540 × $0.70 = 378	540 × $0.80 = 432	521.7 × $0.80 = 417	500 × $0.80 = 400
W	1,180 × $1.10 = 1,298	1,180 × $1.00 = 1,180	1,254.9 × $1.00 = 1,255	1,200 × $1.00 = 1,200
Totals	$3,876	$3,592	$3,550	$3,400

$284 F — Price Variance

$42 F — Mix Variance

$150 F — Volume Variance

$476 F — Total Revenue Variance

Inspection of the results reveals that (1) prices increased (except for Sucrain), causing an overall favorable price variance; (2) the actual mix included more of the highest priced product (Flarin) than the standard mix, causing an overall favorable mix variance; and (3) the total actual units (2,820) sold was greater than the budgeted total units (2,700), causing a favorable volume variance. The Consumer Products Division's manager should be commended for a good performance.

Profit Centers

profit center

In a **profit center**, the manager is responsible for generating revenues and planning and controlling expenses related to current activity. (Expenses not under a profit center manager's control are those related to long-term investments in plant assets; such a situation creates a definitive need for separate evaluations of the subunit and the subunit's manager.) A profit center manager's goal is to maximize the center's net income.

Profit centers should be independent organizational units whose managers have the ability to obtain resources at the most economical prices and to sell products at prices that will maximize revenue. If managers do not have complete authority to buy and sell at objectively determined costs and prices, a meaningful evaluation of the profit center is difficult to make.

Profit centers are not always manufacturing divisions or branches of retail stores. Banks may view each department (checking and savings accounts, loans, and credit cards) as a profit center; trucking companies may view each 18-wheeler as a profit center; and a university may view certain educational divisions as profit centers (undergraduate education, non-degree-seeking night school, and graduate programs).

To illustrate the computations for a profit center, assume that Thompson Wholesale Company uses 18-wheelers to deliver products in the United States and each truck is considered a profit center. The segment margin income statement budgeted

Grocery stores may designate their deli areas as profit centers. Deli managers would then be responsible for determining how much to charge for prepared foods, how best to control costs, and whether a seating area is cost-beneficial.

and actual results of the "Colorado," a truck for which Randolph Green is responsible, are shown in Exhibit 18–9. These comparisons can be used to explain to top management why the budgeted income was not reached. The profit center should be judged on the $34,400 of profit center income, but Randolph Green should be judged on the controllable margin of $63,900. Because actual volume was greater than budgeted, the comparison in Exhibit 18–9 shows unfavorable variances for all of the variable costs. A comparison of actual results to a flexible budget at the actual activity level would provide better information for assessing cost control in the profit center.

Investment Centers

investment center

An **investment center** is an organizational unit in which the manager is responsible for generating revenues and planning and controlling expenses. In addition, the center's manager has the authority to acquire, use, and dispose of plant assets in a manner that seeks to earn the highest feasible rate of return on the center's asset base. Many investment centers are independent, freestanding divisions or

EXHIBIT 18–9

Profit Center Comparisons for "Colorado" for the Month Ended June 30, 2000

	Budget	Actual	Variance
Fees	$120,000	$124,000	$4,000 F
Cost of services rendered			
Direct labor	$ 3,000	$ 3,200	$ 200 U
Gas and oil	25,200	26,300	1,100 U
Variable overhead	5,200	5,800	600 U
Total	$ 33,400	$ 35,300	$1,900 U
Contribution margin	$ 86,600	$ 88,700	$2,100 F
Fixed overhead—controllable	(24,600)	(24,800)	200 U
Controllable segment margin	$ 62,000	$ 63,900	$1,900 F
Fixed overhead—not controllable by profit center manager	(28,000)	(29,500)	1,500 U
Profit center income	$ 34,000	$ 34,400	$ 400 F

subsidiaries of a firm. This independence gives investment center managers the opportunity to make decisions about all matters affecting their organizational units and to be judged on the outcomes of those decisions.

Assume that the Drug Store Sales Division of Thompson Wholesale Company is an investment center headed by Angela Timmons. The 2000 income statement for the plant is as follows:

Sales	$1,720,000
Variable expenses	(900,000)
Contribution margin	$ 820,000
Fixed expenses	(690,000)
Income before tax	$ 130,000

Ms. Timmons has the authority to set selling prices, incur costs, and acquire and dispose of plant assets. The plant has an asset base of $1,480,000 and thus the rate of return on assets for the year was approximately 8.8 percent ($130,000 ÷ $1,480,000). This rate of return would be compared with the rates desired by Thompson Wholesale Company management and would also be compared with other investment centers in the company. Rate of return and other performance measures for responsibility centers are treated in greater depth in Chapters 19 and 20.

Because of their closeness to daily divisional activities, responsibility center managers should have more current and detailed knowledge about sales prices, costs, and other market information than top management does. If responsibility centers are designated as profit or investment centers, managers are encouraged, to the extent possible, to operate those subunits as separate economic entities that exist for the same organizational goals.

Regardless of the size, type of ownership, or product or service being sold, one goal for any business is to generate profits. For other organizations, such as a charity or governmental entity, the ultimate financial goal is to break even. The ultimate goal will be achieved through the satisfaction of organizational critical success factors—those items that are so important that, without them, the organization would cease to exist. Five critical success factors organizations frequently embrace are quality, customer service, speed, cost control, and responsiveness to change. If all of these factors are managed properly, the organization should be financially successful; if they are not, sooner or later the organization will fail. All members of the organization—especially those in management—should work toward the same basic objectives if the critical success factors are to be satisfied. Losing sight of the organizational goal while working to achieve an independent responsibility center's conflicting goal results in suboptimization.

PSEUDO AND REAL MICROPROFIT CENTERS

Every person, workstation, or responsibility center has upstream suppliers and downstream customers. These can be internal or external suppliers and customers. Each set of three organizational units (supplier, responsibility center, and customer) forms a miniature value chain, the relationships of which can be exploited for the good of all units in the set and that of the larger organization. Traditionally, however, for the responsibility center and its customers that are viewed as internal in a given company, the responsibility center has most often been treated as either a cost or a revenue center from a managerial accounting perspective.

Converting a cost or revenue center to a microprofit center requires that each responsibility center manager of a microprofit center be responsible for both revenue and costs. His or her unit can then be treated as a mini-business, the performance of which is subject to evaluation, recognition, and reward.

The purpose of establishing microprofit centers is behavioral. By creating an entity reflecting many small operational units for which profits are measured, more individuals are empowered as more complete managers. They are thus motivated to embrace ownership responsibilities, use their best managerial skills, and engage in creative continuous improvement engendered by an entrepreneurial spirit.

real microprofit center

A microprofit center must have measurable output that can be expressed either as market value based or as artificial revenue. A center is designated as a **real microprofit center** if its output has a market value. A microprofit center for which a surrogate of market value must be used to measure output revenue is known as a **pseudo microprofit center**.[7]

pseudo microprofit center

SERVICE DEPARTMENT COST ALLOCATION

Organizations incur two types of overhead (OH) costs: manufacturing-related OH costs and non-manufacturing-related OH costs. Typically, as the number of product lines or service types increases, so does the need for additional support activities.

service department

An organization's support areas consist of both service and administrative departments. A **service department** is an organizational unit (such as central purchasing, personnel, maintenance, engineering, security, or warehousing) that provides one or more specific functional tasks for other internal units.

administrative department

Administrative departments perform management activities that benefit the entire organization and include the personnel, legal, payroll, and insurance departments, and organization headquarters. Costs of service and administrative departments are referred to collectively as "service department costs," because corporate administration services the rest of the company.

4

Why and how are service department costs allocated to producing departments?

Reasons for Service Department Cost Allocations

All service department costs are incurred, in the long run, to support production or service-rendering activities. An organization producing no goods or performing no services has no need to exist; thus, it also would have no need for service departments. Conversely, as long as operating activities occur, there is a need for service department activity. The conclusion can therefore be drawn that service department costs are merely another form of overhead that must be allocated to revenue-generating departments and, finally, to units of product or service.

The three objectives of cost allocation are full cost computation, managerial motivation, and managerial decision making. Each of these objectives can be met if service department costs are assigned to revenue-producing departments in a reasonable manner. Exhibit 18–10 presents the reasons for and against allocating service department costs in relationship to each allocation objective; some of the positive points follow.

The full cost of a cost object includes all costs that contribute to its existence. Thus, full cost includes all traceable material, labor, and overhead costs incurred by the cost object plus a fair share of allocated costs that support the cost object. If the cost object is defined as a revenue-producing department, the full cost of its operations includes all traceable departmental costs plus an allocated amount of service department costs.[8]

[7] Robin Cooper and Regine Slagmulder, "Micro-Profit Centers," *Strategic Finance* (June 1998), pp. 16ff.

[8] This concept of full cost for revenue-producing departments is recognized to an extent by the Financial Accounting Standards Board in Statement of Financial Accounting Standards No. 14 (*Financial Reporting for Segments of a Business Enterprise*). Based on this statement, certain indirect costs must be allocated to reportable segments on a benefits-received basis. The statement does not, however, allow corporate administrative costs to be allocated to segments. In several pronouncements, the Cost Accounting Standards Board also provides guidance on how to include service and administrative costs in full product cost when attempting to determine a "fair" price to charge under government contracts. For example, CAS 403 (*Allocation of Home Office Expenses to Segment*) indicates acceptable allocation bases using benefits-provided or causal relationships; CAS 410 (*Allocation of Business Unit General and Administrative Expenses to Final Cost Objectives*) also discusses allocation principles.

EXHIBIT 18–10

Allocating Service Department Costs: Pros and Cons

OBJECTIVE: TO COMPUTE FULL COST

Reasons for:

1. Provides for cost recovery.
2. Instills a consideration of support costs in production managers.
3. Reflects production's "fair share" of costs.
4. Meets regulations in some pricing instances.

Reasons against:

1. Provides costs that are beyond production manager's control.
2. Provides arbitrary costs that are not useful in decision making.
3. Confuses the issues of pricing and costing. Prices should be set high enough for each product to provide a profit margin that should cover all nonproduction costs.

OBJECTIVE: TO MOTIVATE MANAGERS

Reasons for:

1. Instills a consideration of support costs in production managers.
2. Relates individual production unit's profits to total company profits.
3. Reflects usage of services on a fair and equitable basis.
4. Encourages production managers to help service departments control costs.
5. Encourages the usage of certain services.

Reasons against:

1. Distorts production divisions' profit figures because allocations are subjective.
2. Includes costs that are beyond production managers' control.
3. Will not materially affect production divisions' profits.
4. Creates interdivisional ill will when there is lack of agreement about allocation base or method.
5. Is not cost beneficial.

OBJECTIVE: TO COMPARE ALTERNATIVE COURSES OF ACTION

Reasons for:

1. Provides relevant information in determining corporatewide profits generated by alternative actions.
2. Provides best available estimate of expected changes in costs due to alternative actions.

Reasons against:

1. Is unnecessary if alternative actions will not cause costs to change.
2. Presents distorted cash flows or profits from alternative actions since allocations are arbitrary.

SOURCE: Adapted from copyright by Institute of Management Accountants (formerly National Association of Accountants), Montvale, N.J., *Statements on Management Accounting Number 4B: Allocation of Service and Administrative Costs* (June 13, 1985), pp. 9–10.

Managers of revenue-producing areas may be made more aware of and sensitive to the support provided by the service areas when full costs are used. This increased sensitivity should motivate operations managers to use support areas in the most cost-beneficial manner and to provide recommendations on service department cost control. In addition, assigning service department costs to revenue-producing divisions and segments allows managers to more effectively compare the performance of their units to independent companies that must incur such costs directly.[9]

[9] The use of a full cost that includes allocated service department costs should be restricted to performance comparisons with entities outside the company. This type of full cost should not be used for internal performance evaluations by top management because the division or segment manager has no direct control over the allocated costs.

differential cost

The third objective of cost allocation is to help provide a basis for comparing alternative courses of action. Including service department costs with the traceable costs of revenue-producing departments gives an indication of the future differential costs involved in an activity. (A **differential cost** is one that differs in amount among the alternatives being considered.) This comparison is especially useful in and relevant to making decisions about capacity utilization.

Meeting one allocation objective may, however, preclude the achievement of another. For example, assignment of full cost to a cost object may not, in some situations, motivate the manager of that cost object. These potential conflicts of objectives may create disagreement as to the propriety of such allocations. If service department costs are to be assigned to revenue-producing areas, a rational and systematic means by which to make the assignment must be developed. Numerous types of allocation bases are available.

Allocation Bases

A rational and systematic allocation base for service department costs should reflect consideration of four criteria. The first criterion is the benefit received by the revenue-producing department from the service department, such as the number of computer reports prepared for each revenue-producing department by the computer department. The second criterion is a causal relationship between factors in the revenue-producing department and costs incurred in the service department; the need for the accounting department to produce paychecks for revenue-department employees illustrates this type of relationship. The third criterion is the fairness or equity of the allocations between or among revenue-producing departments; the assignment of fire and casualty premiums to the revenue-producing departments on the basis of relative fair market values of assets illustrates this type of allocation. The fourth criterion is the ability of revenue-producing departments to bear the allocated costs; this criterion is used, for example, when the operating costs of the public relations department are assigned to revenue-producing departments on the basis of relative revenue dollars.

The benefit received and causal relationship criteria are used most often to select allocation bases, because they are reasonably objective and will produce rational allocations. Fairness is a valid theoretical basis for allocation, but its use may cause dissension because everyone does not have the same perception of what is fair or equitable. The ability-to-bear criterion often results in unrealistic or profit-detrimental actions: managers might manipulate operating data related to the allocation base to minimize service department allocations. For example, the manager of a revenue-producing department that is charged a standard maintenance fee per delivery truck mile might manipulate the mileage logs depending on how well the department is otherwise doing.

Applying the two primary criteria (benefits and causes) to the allocation of service department costs can help to specify some acceptable allocation bases. The allocation base selected should be a valid one because an improper base will yield improper information regardless of how complex or mathematically precise the allocation process appears to be. Exhibit 18–11 lists appropriate bases to assign various types of service department assets.

Methods of Allocating Service Department Costs

The allocation process for service department costs is, like that of revenue-producing areas, a process of pooling, allocating, repooling, and reallocating costs. When service departments are considered in the pooling process, the primary pools are composed of all costs of both the revenue-producing and service departments. These costs can be gathered and specified by cost behavior (variable and fixed) or in total.

EXHIBIT 18–11

Appropriate Service/Administrative Cost Allocation Bases

Type of Cost	Acceptable Allocation Bases
Research and development	Estimated time or usage, sales, assets employed, new products developed
Personnel functions	Number of employees, payroll, number of new hires
Accounting functions	Estimated time or usage, sales, assets employed, employment data
Public relations and corporate promotion	Sales
Purchasing function	Dollar value of purchase orders, number of purchase orders, estimated time of usage, percentage of material cost of purchases
Corporate executives' salaries	Sales, assets employed, pretax operating income
Treasurer's functions	Sales, estimated time or usage, assets or liabilities employed
Legal and governmental affairs	Estimated time or usage, sales, assets employed
Tax department	Estimated time or usage, sales, assets employed
Income taxes	Pretax operating income*
Property taxes	Square feet, real estate valuation

*The source lists "net income" as the base of allocation. The authors believe that pretax operating income is more realistic because net income has taxes already deducted.

SOURCE: Adapted from copyright by Institute of Management Accountants (formerly National Association of Accountants), Montvale, N.J., *Statements on Management Accounting Number 4B: Allocation of Service and Administration Costs* (June 13, 1985), p. 8.

Intermediate pools are then developed in the allocation process. There may be one or more layers of intermediate pools; however, the last layer will consist of only revenue-producing departments. The number of layers and the costs shown in the intermediate pools depend on the type of allocation method selected. The costs of the intermediate pools are then distributed to final cost objects (such as products, services, programs, or functional areas) using specified, rational cost driver allocation bases (such as machine hours, direct labor hours, machine throughput time, or number of machine setups).

The pooled service department costs to revenue-producing departments can be allocated in three ways: by the direct, step, or algebraic methods. These methods are listed in order of ease of application, not necessarily in order of soundness of results. The **direct method** assigns service department costs to revenue-producing areas with only one set of intermediate cost pools or allocations. Cost assignment under the direct method is made using one specific cost driver to the intermediate pool; for example, personnel department costs are assigned to production departments (the intermediate-level pools) based on the number of people in each production department.

direct method

The **step method** of cost allocation considers the interrelationships of the service departments before assigning indirect costs to cost objects. Although a specific base is also used in this method, the step method employs a ranking for the

step method

quantity of services provided by each service department to other areas. This **"benefits-provided" ranking** lists service departments in an order that begins with the one providing the most service to all other corporate areas (both non-revenue-producing and revenue-producing areas); the ranking ends with the service department providing the least service to all but the revenue-producing areas. After the ranking is developed, service department costs are sequentially allocated down the list until all costs have been assigned to the revenue-producing areas. This ranking sequence allows the step method to partially recognize reciprocal relationships among the service departments. For example, because the personnel department provides services for all company areas, it might be the first department listed in the ranking, and all other areas would receive a proportionate allocation of the personnel department's costs.

"benefits-provided" ranking

The **algebraic method** of allocating service department costs considers all departmental interrelationships and reflects these relationships in simultaneous equations. These equations provide for reciprocal allocation of service costs among the service departments as well as to the revenue-producing departments. Thus, no benefits-provided ranking is needed and the sequential step approach is not used. The algebraic method is the most complex of all the allocation techniques, but it is also the most theoretically correct and, if relationships are properly formulated, will provide the best allocations.

algebraic method

SERVICE DEPARTMENT COST ALLOCATION ILLUSTRATION

Data for Katz Pharmaceuticals are used to illustrate the three methods of allocating budgeted service department costs. Katz has two revenue-producing divisions: Cincinnati Division (dermatological products) and St. Paul Division (internal medicines). The company's service departments are corporate administration, personnel, and maintenance. Budgeted costs of each service department are assigned to each revenue-producing area and are then added to the budgeted overhead costs of those areas to determine an appropriate divisional overhead application rate.

Exhibit 18–12 presents an abbreviated 2000 budget of the direct and indirect costs for each department and division of Katz Pharmaceuticals. These costs were budgeted using historical information adjusted for expected changes in factors affecting costs such as increases or decreases in volume and personnel from prior periods. Budgeted 2000 revenues are $2,250,000 for the Cincinnati Division and $1,500,000 for the St. Paul Division.

Exhibit 18–13 shows the bases that Katz Pharmaceuticals has chosen for allocating its service department costs. The service departments are listed in a benefits-provided ranking. Katz Pharmaceuticals' management believes that Administration

EXHIBIT 18–12

Budgeted Departmental and Divisional Costs

	Administration	Personnel	Maintenance	Cincinnati	St. Paul	Total
Initial Departmental Costs						
Direct costs:						
Material	$ 0	$ 0	$ 0	$ 425,200	$223,200	$ 648,400
Labor	450,000	50,000	120,000	245,400	288,000	1,153,400
Total	$ 450,000	$50,000	$120,000	$ 670,600	$511,200	$1,801,800
Departmental overhead*	550,400	23,250	79,400	559,000	89,200	1,301,250
Total initial departmental costs	$1,000,400	$73,250	$199,400	$1,229,600	$600,400	$3,103,050

*Would be specified by type and cost behavior in actual budgeting process.

EXHIBIT 18–13

Service Department Allocation Bases

Administration costs—allocated on dollars of assets employed
Personnel costs—allocated on number of employees
Maintenance costs—allocated on machine hours used

	Dollars of Assets Employed	Number of Employees	Machine Hours Used
Administration	$ 4,000,000	8	0
Personnel	1,200,000	2	0
Maintenance	2,000,000	6	0
Cincinnati Division	10,000,000	25	86,000
St. Paul Division	8,000,000	7	21,500

provides the most service to all other areas of the company; Personnel provides the majority of its services to Maintenance and the revenue-producing areas; and Maintenance provides its services only to the Cincinnati and St. Paul Divisions (equipment used in other areas is under a lease maintenance arrangement and is not serviced by Katz's Maintenance Department).

Direct Method Allocation

In the direct method of allocation, service department costs are assigned using the specified bases only to the revenue-producing areas. The direct method cost allocation for Katz Pharmaceuticals is shown in Exhibit 18–14. (All percentages have been rounded to the nearest whole number.)

Use of the direct method of service department allocation produces the total budgeted costs for Cincinnati Division and St. Paul Division shown on page 818 in Exhibit 18–15. If budgeted revenues and costs equal actual revenues and costs, Cincinnati Division would show a 2000 profit of $243,521 or 11 percent on revenues, and St. Paul Division would show a profit of $403,429 or 27 percent.

EXHIBIT 18–14

Direct Allocation of Service Department Costs

	Base	Proportion of Total Base	Amount to Allocate	Amount Allocated
Administration costs ($s of assets employed)				
Cincinnati Division	$10,000,000	10* ÷ 18* = 56%	$1,000,400	$ 560,224
St. Paul Division	8,000,000	8* ÷ 18* = 44%	$1,000,400	440,176
Total	$18,000,000			$1,000,400
Personnel costs (# of employees)				
Cincinnati Division	25	25 ÷ 32 = 78%	$ 73,250	$ 57,135
St. Paul Division	7	7 ÷ 32 = 22%	$ 73,250	16,115
Total	32			$ 73,250
Maintenance costs (# of machine hours used)				
Cincinnati Division	86,000	86,000 ÷ 107,500 = 80%	$ 199,400	$ 159,520
St. Paul Division	21,500	21,500 ÷ 107,500 = 20%	$ 199,400	39,880
Total	107,500			$ 199,400

*In millions

	Cincinnati	St. Paul	Total
Total budgeted revenues (a)	$2,250,000	$1,500,000	$3,750,000
Allocated overhead			
From Administration	$ 560,224	$ 440,176	$1,000,400
From Personnel	57,135	16,115	73,250
From Maintenance	159,520	39,880	199,400
Subtotal	$ 776,879	$ 496,171	$1,273,050
Departmental overhead	559,000	89,200	648,200
Total overhead (for OH application rate determination)	$1,335,879	$ 585,371	$1,921,250
Direct costs	670,600	511,200	1,181,800
Total budgeted costs (b)	$2,006,479	$1,096,571	$3,103,050
Total budgeted pretax profits (a − b)	$ 243,521	$ 403,429	$ 646,950

VERIFICATION OF ALLOCATION

To:	Administration	Personnel	Maintenance	Cincinnati	St. Paul	Total
Initial costs	$1,000,400	$73,250	$199,400			$1,273,050
From: Administration	(1,000,400)			$560,224	$440,176	
Personnel		(73,250)		57,135	16,115	
Maintenance			(199,400)	159,520	39,880	
Totals	$ 0	$ 0	$ 0	$776,879	$496,171	$1,273,050

EXHIBIT 18–15

Direct Method Allocation to Revenue-Producing Areas

Step Method Allocation

To apply the step method of allocation, a benefits-provided ranking must be specified. This ranking for Katz Pharmaceuticals was given in Exhibit 18–13. Costs are assigned using an appropriate, specified allocation base to the departments receiving service. Once costs have been assigned from a department, no costs are charged back to that department. Step allocation of Katz Pharmaceuticals service costs is shown in Exhibit 18–16.

In this case, the amount of service department costs assigned to each revenue-producing area differs only slightly between the step and direct methods. However, in many situations, the difference can be substantial. If budgeted revenues and costs equal actual revenues and costs, the step method allocation process will cause Cincinnati Division and St. Paul Division to show profits of $213,643 and $433,307, respectively, as follows:

	Cincinnati Division	St. Paul Division
Revenues	$2,250,000	$1,500,000
Direct costs	(670,600)	(511,200)
Indirect departmental costs	(559,000)	(89,200)
Allocated service department costs	(806,757)	(466,293)
Profit	$ 213,643	$ 433,307

These profit figures reflect rates of return on revenues of 9 percent and 29 percent, respectively.

The step method is a hybrid allocation method between the direct and algebraic methods. This method is more realistic than the direct method in that it partially recognizes relationships among service departments, but it does not recognize the two-way exchange of services between service departments that may exist. A service department is eliminated from the allocation sequence in the step method

	Base	Proportion of Total Base	Amount to Allocate	Amount Allocated
Administration costs ($s of assets employed; 000s omitted)				
Personnel	$ 1,200	1,200 ÷ 21,200 = 6%	$1,000,400	$ 60,024
Maintenance	2,000	2,000 ÷ 21,200 = 9%	$1,000,400	90,036
Cincinnati	10,000	10,000 ÷ 21,200 = 47%	$1,000,400	470,188
St. Paul	8,000	8,000 ÷ 21,200 = 38%	$1,000,400	380,152
Total	$21,200			$1,000,400
Personnel costs (# of employees)				
Maintenance	6	6 ÷ 38 = 16%	$133,274*	$ 21,324
Cincinnati	25	25 ÷ 38 = 66%	$133,274	87,961
St. Paul	7	7 ÷ 38 = 18%	$133,274	23,989
Total	38			$ 133,274
Maintenance (# of machine hours used)				
Cincinnati	86,000	86,000 ÷ 107,500 = 80%	$310,760**	$ 248,608
St. Paul	21,500	21,500 ÷ 107,500 = 20%	$310,760	62,152
Total	107,500			$ 310,760

*Personnel costs = Original cost + Allocated from Administration = $73,250 + $60,024 = $133,274
**Maintenance costs = Original cost + Allocated from Administration + Allocated from Personnel = $199,400 + $90,036 + $21,324 = $310,760

VERIFICATION OF ALLOCATION

To:	Administration	Personnel	Maintenance	Cincinnati	St. Paul	Total
Initial costs	$1,000,400	$ 73,250	$199,400			$1,273,050
From:						
Administration	(1,000,400)	60,024	90,036	$470,188	$380,152	0
Personnel		(133,274)	21,324	87,961	23,989	0
Maintenance			(310,760)	248,608	62,152	0
Totals	$ 0	$ 0	$ 0	$806,757	$466,293	$1,273,050

EXHIBIT 18–16

Step Allocation of Service Department Costs

once its costs have been assigned outward. If a service department further down the ranking sequence provides services to departments that have already been eliminated, these benefits are not recognized by the step method cost allocation process.

Algebraic Method Allocation

The algebraic method of allocation eliminates the two disadvantages of the step method in that all interrelationships among departments are recognized and no decision must be made about a ranking order of service departments. The algebraic method involves formulating a set of equations that reflect reciprocal relationships among departments. Solving these equations simultaneously recognizes the fact that costs flow both into and out of each department.

The starting point for the algebraic method is a review of the bases used for allocation (shown in Exhibit 18–13) and the respective amounts of those bases for each department. A schedule is created that shows the proportionate usage by each department of the other departments' services. These proportions are then used to develop equations that, when solved simultaneously, will give cost allocations that fully recognize the reciprocal services provided.

The allocation proportions for all departments of Katz Pharmaceuticals are shown in Exhibit 18–17. Allocation for the Personnel Department is discussed to illustrate how these proportions were derived. The allocation basis for personnel cost is number of employees; there are 46 employees in the organization exclusive of those in the Personnel Department. Personnel employees are ignored because costs are being removed from that department and assigned to other areas. Because the Maintenance Department has six employees, the proportionate amount of Personnel services used by Maintenance is 6 ÷ 46 or 13 percent.

Using the calculated percentages, algebraic equations representing the interdepartmental usage of services can be formulated. The departments are labeled A, P, and M in the equations for Administration, Personnel, and Maintenance, respectively. The initial costs of each service department are shown first in the formulas:

$$A = \$1{,}000{,}400 + 0.18P + 0.00M$$
$$P = \$\ \ 73{,}250 + 0.06A + 0.00M$$
$$M = \$\ 199{,}400 + 0.09A + 0.13P$$

These equations are solved simultaneously by substituting one equation into the others, gathering like-terms, and reducing the unknowns until only one unknown exists. The value for this unknown is then computed and substituted into the remaining equations. This process is continued until all unknowns have been eliminated.

1. Substituting the equation for A into the equation for P gives the following:

$$P = \$73{,}250 + 0.06(\$1{,}000{,}400 + 0.18P)$$

Multiplying and combining terms produces the following results:

$$P = \$\ 73{,}250 + \$60{,}024 + 0.01P$$
$$P = \$133{,}274 + 0.01P$$
$$P - 0.01P = \$133{,}274$$
$$0.99P = \$133{,}274$$
$$P = \$134{,}620$$

EXHIBIT 18–17

Interdepartmental Proportional Relationships

	ADMINISTRATION ($S OF ASSETS EMPLOYED*)		PERSONNEL (# OF EMPLOYEES)		MAINTENANCE (# OF MACHINE HOURS USED)	
	Base	Percent**	Base	Percent**	Base	Percent**
Administration	n/a	n/a	8	18	0	0
Personnel	1,200	6	n/a	n/a	0	0
Maintenance	2,000	9	6	13	n/a	n/a
Cincinnati	10,000	47	25	54	86,000	80
St. Paul	8,000	38	7	15	21,500	20
Total	21,200	100	46	100	107,500	100

*000s omitted
**Percentages rounded to total 100 percent.

2. The value for P is now substituted in the formula for Administration:

$$A = \$1{,}000{,}400 + 0.18(\$134{,}620)$$
$$A = \$1{,}000{,}400 + \$24{,}232$$
$$A = \$1{,}024{,}632$$

3. Substituting the values for A and P into the equation for M gives the following:

$$M = \$199{,}400 + 0.09(\$1{,}024{,}632) + 0.13(\$134{,}620)$$
$$M = \$199{,}400 + \$92{,}217 + \$17{,}501$$
$$M = \$309{,}118$$

The amounts provided by these equations are used to reallocate costs among all the departments; costs will then be assigned only to the revenue-producing areas. These allocations are shown in Exhibit 18–18.

The $1,024,632 of administration costs are used to illustrate the development of the amounts in Exhibit 18–18. Administration costs are assigned to the other areas based on dollars of assets employed. Exhibit 18–18 indicates that Personnel has 6 percent of the dollars of assets of Katz Pharmaceuticals; thus, costs equal to $61,478 (0.06 × $1,024,632) are assigned to that area. This same process of proration is used for the other departments. Allocations from Exhibit 18–18 are used in Exhibit 18–19 to determine the reallocated costs and finalize the total budgeted overhead of the Cincinnati and St. Paul Divisions.

By allocating costs in this manner, total costs shown for each service department have increased over the amounts originally given. For example, Administration now shows total costs of $1,024,632 rather than the original amount of $1,000,400. These added "costs" are double-counted in that they arise from the process of service reciprocity. As shown on the line labeled "Less reallocated costs" in Exhibit 18–19, these additional double-counted costs are not recognized in the revenue-producing areas for purposes of developing an overhead application rate.

When the company has few departmental interrelationships, the algebraic method can be solved by hand. If a large number of variables are present, this method must be performed by a computer. Because computer usage is now prevalent in all but the smallest organizations, the results obtained from the algebraic method are easy to generate and provide the most rational and appropriate means of allocating service department costs.

EXHIBIT 18–18

Algebraic Solution of Service Department Costs

Costs are allocated based on percentages computed in Exhibit 18–17.

	ADMINISTRATION		PERSONNEL		MAINTENANCE	
	Percent	Amount	Percent	Amount	Percent	Amount
Administration	n/a	n/a	18	$ 24,231	0	$ 0
Personnel	6	$ 61,478	n/a	n/a	0	0
Maintenance	9	92,217	13	17,501	n/a	n/a
Cincinnati	47	481,577	54	72,695	80	247,294
St. Paul	38	389,360	15	20,193	20	61,824
Total*	100	$1,024,632	100	$134,620	100	$309,118

*Total costs are the solution results of the set of algebraic equations.

	Total Service Department Cost (from equations)	Administration	Personnel	Maintenance	Cincinnati	St. Paul
Administration	$1,024,632	$ 0	$61,478	$ 92,217	$ 481,577	$389,360
Personnel	134,620	24,231	0	17,501	72,695	20,193
Maintenance	309,118	0	0	0	247,294	61,824
Total costs	$1,468,370	$24,231	$61,478	$109,718	$ 801,566	$471,377
Less reallocated costs	(195,427)	(24,231)	(61,478)	(109,718)		
Budgeted costs	$1,272,943*	$ 0	$ 0	$ 0		
Departmental overhead costs of revenue-producing areas					559,000	89,200
Total budgeted cost for OH application rate determination					$1,360,566	$560,577

*Off due to rounding.

EXHIBIT 18–19

Final Determination of Revenue-Producing Department Overhead Costs

Regardless of the method used to allocate service department costs, the final step is to determine the overhead application rates for the revenue-producing areas. Once service department costs have been assigned to production, they are included as part of production overhead and allocated to products or jobs through normal overhead assignment procedures.

The final figures shown in Exhibit 18–19, costs of $1,360,566 and $560,577 for Cincinnati Division and St. Paul Division, respectively, are divided by an appropriate allocation base to assign both manufacturing and nonmanufacturing overhead to products. For example, assume that Katz Pharmaceuticals has chosen total ounces of internal medicine products as the overhead allocation base for St. Paul Division. If the division expects to produce 750,000 ounces of internal medicine products in 2000, the overhead cost assigned to each ounce would be $0.75 or ($560,577 ÷ 750,000).

For simplicity, cost behavior in all departments has been ignored. A more appropriate allocation process would specify different bases in each department for the variable and fixed costs. Such differentiation would not change the allocation process, but would change the results of the three methods (direct, step, or algebraic). Separation of variable and fixed costs would provide better allocation; use of the computer makes this process more practical than otherwise.

Before any type of allocation is made, management should be certain that the allocation base is reasonable. Allocations are often based on the easiest available measure, such as number of people or number of documents processed. Use of such measures can distort the allocation process.

When service department cost allocations have been made to revenue-producing areas, income figures derived from the use of these amounts should not be used for manager performance evaluations. Any attempt to evaluate the financial performance of a manager of a revenue-producing department should use an incremental, rather than a full allocation, approach. Although full allocation should not be used for performance evaluations, allocating service department costs to revenue-producing areas does make managers more aware of and responsible for controlling service usage.

The next section of Chapter 18 discusses the concept of setting transfer prices for the provision of services between two organizational units. To properly evaluate segments and their managers, useful information about performance must be available. When the various segments of a firm exchange goods or services among themselves, a "price" for those goods or services must be set so that the "selling" segment can measure its revenue and the "buying" segment can measure its costs. Such an internal price is known as a transfer price.

TRANSFER PRICING

5

Why are transfer prices used in organizations?

transfer price

Transfer prices (or prices in a chargeback system) are internal charges established for the exchange of goods or services between responsibility centers of the same company. Although a variety of transfer prices may be used for internal reporting purposes, intracompany inventory transfers should be presented on an external balance sheet at the producing segment's actual cost. Internal transfers would be eliminated for external income statement purposes altogether. Thus, if transfers are "sold" at an amount other than cost, any intersegment profit in inventory, expense, and/or revenue accounts must be eliminated.

Transfer prices may be established to promote goal congruence, make performance evaluation among segments more comparable, and/or "transform" a cost center into a profit center. The appropriate transfer price should ensure optimal resource allocation and promote operating efficiency. A number of different approaches are used to establish a transfer price for goods or services. The basic caveat is that intracompany transfers should be made only if they are in the best interest of the total organization. Within this context, the general rules for choosing a transfer price follow.[10]

- The maximum price should be no greater than the lowest market price at which the buying segment can acquire the goods or services externally.
- The minimum price should be no less than the sum of the selling segment's incremental costs associated with the goods or services plus the opportunity cost of the facilities used.

From the company's perspective, any transfer price set between these two limits is generally considered appropriate. To illustrate the use of these rules, assume that a product is available from external suppliers at a price below the lower limit (selling division's incremental costs plus opportunity cost). The immediate short-run decision might be that the selling division is to stop production and allow the purchasing division to buy the product from the external suppliers. This decision may be reasonable because, compared with the external suppliers, the selling division does not appear to be cost efficient in its production activities. Stopping production would release the facilities for other, more profitable purposes. A longer run solution may be to have the selling division improve its efficiency and reduce the internal cost of making the product. This solution could be implemented without stopping internal production, but internal production might need to be reduced by making some external purchases until costs are under control.

After the transfer price range limits have been established, one criterion used to select a particular price in the range is the ease by which that price can be determined. Managers should be able to understand the computation of a transfer price and to evaluate the impact of that transfer price on their responsibility centers' profits. The more complex the method used to set a transfer price, the less comfortable managers will be with both the method and the resulting price. In addition, from a cost standpoint, it takes more time and effort to administer and account for a complicated transfer pricing system than a simple one.

The difference between the upper and lower transfer price limits is the corporate "profit" (or savings) generated by producing internally rather than buying externally. The transfer price chosen acts to "divide the corporate profit" between the buying and selling segments. For external statements, it is irrelevant which segment shows the profits from transfers because such internal profit allocations are

[10] These rules are more difficult to implement when the selling division is in a "captive" relationship, in that it is not able to transfer its products to customers outside the corporate entity. Captive relationships often exist when the selling division was acquired or established in a company's move toward vertical integration. In such situations, opportunity cost must be estimated to provide the selling division an incentive to transfer products.

eliminated in preparing these statements. For internal reporting, though, this division of profits may be extremely important. Use of transfer prices affects the responsibility reports that are prepared, and top management may have established a subunit performance measurement system that is affected by such "profit" allocations.

Segment managers in a decentralized company often have competing vested interests if managerial performance is evaluated on a competitive basis. Such internal competition could lead to suboptimization because both buying and selling segment managers want to maximize their financial results in the responsibility accounting reports. The supplier-segment manager attempts to obtain the highest transfer (selling) price, whereas the buying-segment manager attempts to acquire the goods or services at the lowest transfer (purchase) price. Thus, transfer prices should be agreed on by the company's selling and buying segments.

Many top managers believe in giving subunit managers a considerable amount of autonomy to negotiate divisional transfer prices. Division managers are expected to make choices that will maximize the effectiveness and efficiency of their divisions as well as contribute to overall company performance.

Three traditional methods are used for determining transfer prices: cost-based prices, market-based prices, and negotiated prices. A discussion follows of each method and its advantages and disadvantages. This discussion will use information on the Scott Company, an Australian subsidiary of Thompson Wholesale Company. Scott Company is composed of two investment centers: a marine biochemical producing division (managed by Lynn Hume) and an evergreen chemicals plant (managed by Tom Forsyth). The managers are attempting to establish a reasonable transfer price for a particular unit of chemical product from evergreen trees. The Evergreen Division data (shown in Exhibit 18–20 in Australian dollars) are used to illustrate various transfer pricing approaches. Note that the Evergreen Division is capable of supplying all external and internal production needs.

Cost-Based Transfer Prices

A cost-based transfer price is, on the surface, an easily understood concept until one realizes the variations that can exist in the definition of the term *cost*. Different companies use different definitions of cost in conjunction with transfer pricing. These definitions range from variable production cost to absorption cost plus additional amounts for selling and administrative costs (and, possibly, opportunity cost) of the selling unit. Another consideration in a cost-based transfer price is

EXHIBIT 18–20

Scott Company Evergreen Division

Standard unit production cost:		
Direct material	A$0.20	
Direct labor	0.06	
Variable overhead	0.10	
Variable selling and administrative	0.04	
Total variable costs		A$0.40
Fixed overhead*	A$0.09	
Fixed selling and administrative*	0.03	
Total fixed cost		0.12
Total cost		A$0.52
Normal markup on variable cost (50%)		0.20
List selling price		A$0.72

Estimated annual production: 700,000 units
Estimated sales to outside entities: 400,000 units
Estimated intracompany transfers: 300,000 units

*Fixed costs are allocated to all units produced based on estimated annual production.

whether actual or standard cost is used. Actual costs may vary according to the season, production volume, and other factors, whereas standard costs can be specified in advance and are stable measures of efficient production costs. For these two reasons, standard costs provide a superior basis for transfer pricing. When standard costs are used, any variances from standard are borne by the selling segment because otherwise the selling division's efficiencies or inefficiencies are passed on to the buying division.

COST ALTERNATIVE—VARIABLE COST

Using the data provided in Exhibit 18–20, a variable cost transfer price for a unit of evergreen chemicals can be either A$0.36 (production variable costs only) or A$0.40 (total variable costs). The difference depends on whether variable cost is defined as variable production cost or total variable cost. Even using A$0.40 as the transfer price provides little incentive to Mr. Forsyth to sell to the Marine Biochemical Division. Fixed costs of the Evergreen Division are not reduced by selling internally, and no contribution margin is being generated by the transfers to help cover fixed costs. The low transfer prices could result in a poor financial showing for the Evergreen Division that, in turn, could detrimentally affect Mr. Forsyth's performance evaluation.

Considering the total standard cost per unit of A$0.52 in Mr. Forsyth's division, a loss of A$0.12 will result on each evergreen chemical unit sold internally at a transfer price of A$0.40. If all sales and transfers occur as expected and there are no variances from standard costs, Mr. Forsyth's responsibility report will appear as follows:

Sales		
External (400,000 × A$0.72)	A$288,000	
Internal (300,000 × A$0.40)	120,000	A$408,000
Costs:		
Total variable and fixed costs (700,000 × A$0.52)		(364,000)
Income before tax		A$ 44,000

Had the Evergreen Division been able to sell all of its production externally, it would have shown a net income for the period of A$140,000:

Sales (700,000 × A$0.72)	A$504,000
Costs (shown previously)	(364,000)
Income before tax	A$140,000

This A$96,000 difference can be reconciled as the 300,000 units multiplied by the A$0.32 per unit (A$0.72 − A$0.40) "lost" revenue from making internal sales.

Assume, on the other hand, that the 400,000 units represented the total number of units that could be sold externally and the Evergreen Division has no other opportunity to use the facilities. In this instance, the opportunity cost of the facilities used is zero and the division is no worse off by transferring the 300,000 evergreen units internally than by sitting with idle capacity. Relating this situation to the general transfer pricing rules, the transfer price of A$0.40 is at its lower limit.

COST ALTERNATIVE—ABSORPTION COST

Transfer prices based on absorption cost (direct material, direct labor, and variable and fixed overhead) at least provide a contribution toward covering the selling division's fixed production overhead. Such a transfer price does not produce the same amount of income that would be generated if the transferring division sold the goods externally, but it does provide for coverage of all production costs. Absorption cost for an evergreen chemical unit is A$0.45 (A$0.20 DM + A$0.06 DL + A$0.10 VOH + A$0.09 FOH). The Evergreen Division's income statement would appear as follows using absorption cost as the transfer price:

Sales:		
External (400,000 × A$0.72)	A$288,000	
Internal (300,000 × A$0.45)	135,000	A$423,000
Costs (shown previously)		364,000
Income before tax		A$ 59,000

Although the absorption cost transfer price provides a reasonable coverage of costs to the selling segment, that same cost could create a suboptimization problem because of the effects on the buying segment.

Suppose the Marine Biochemical Division of Scott Company can purchase evergreen units externally from United Evergreen for A$0.44 and that the externally purchased evergreen units are of the same quality and specifications as those produced internally. If the transfer price is set at the absorption cost of A$0.45, the Marine Biochemical Division may decide to purchase the evergreen units from United Evergreen for A$0.44. Purchasing at the lower price would give the buying unit's manager more favorable financial results than would making the acquisition internally. In such an instance, Scott Company is paying A$0.44 for a product its Evergreen Division can make for a variable cost of A$0.40. Thus, although the buying segment manager appears to "save" A$0.01 per evergreen unit, the company would be better off by A$12,000 if the evergreen units were purchased internally rather than externally:

Unit cost to Marine Biochemical Division to purchase externally	A$0.44
Unit cost to produce in Evergreen Division (out-of-pocket costs)	0.40
Net advantage of company to produce per unit	A$0.04
Multiplied by number of units transferred	× 300,000
Total savings to produce internally	A$ 12,000

These facts assume that the Evergreen Division does not have an opportunity cost of more than A$0.04 per evergreen unit for the use of the facilities devoted to the 300,000 units. If, however, the Evergreen Division can sell all the units it produces at list price, the division should do so. The Marine Biochemical Division could then purchase its evergreen units from United Evergreen, and Scott Company would be optimizing its resources. Computations to arrive at this conclusion are as follows:

Evergreen Division's additional contribution margin from outside sales (300,000 × A$0.32)	A$96,000
Additional cost caused by Marine Biochemical Division's purchase from outside source (300,000 × A$0.04)	(12,000)
Net incremental income to company before tax	A$84,000

The company is better off by A$84,000 because the A$0.32 contribution margin (A$0.72 − A$0.40) realized on each additional unit sale to outsiders is greater than the A$0.04 difference between the A$0.44 external purchase price paid by the Marine Biochemical Division and the A$0.40 incremental cost of the Evergreen Division to produce the units.

Under the above circumstances, the general transfer pricing rules also would have yielded the decision not to make the internal transfer. The sum of the A$0.40 incremental cost to produce and the A$0.32 opportunity cost of additional contribution on external sales is A$0.72, which exceeds the upper limit of the A$0.44 market price. Scott Company should not make the transfer as long as the Marine Biochemical Division can purchase the units externally for a price less than A$0.72.

COST ALTERNATIVE—MODIFICATIONS TO VARIABLE AND/OR ABSORPTION COST

Modifications can be made to minimize the definitional and motivational problems associated with cost-based transfer prices. When variable cost is used as a base, an additional amount can be added to cover some fixed costs and provide a measure

of profit to the selling division. This adjustment is an example of a *cost-plus* arrangement. Some company managers think cost-plus arrangements are acceptable substitutes for market-based transfer prices, especially when market prices for comparable substitute products are unavailable.

Absorption cost can be modified by adding an amount equal to an average of the nonproduction costs associated with the product and/or an amount for profit to the selling division. In contrast, a transfer price could be set at less than absorption cost on the theory that there might be no other use for the idle capacity, and the selling division should receive some benefit from partial coverage of its fixed factory overhead. Alternatively, absorption cost can be reduced by the estimated savings in production costs on internally transferred goods. For example, packaging may not be necessary or as expensive if the inventory is sold intracompany rather than externally.

Market-Based Transfer Prices

To eliminate the problems of defining "cost," some companies simply use a market price approach to setting transfer prices. Market price is believed to be an objective, arm's-length measure of value that simulates the selling price that would be offered and paid if the subunits were independent, autonomous companies. If a selling division is operating efficiently relative to its competition, it should be able to show a profit when transferring products or services at market prices. Similarly, an efficiently operating buying division should not be troubled by a market-based transfer price because that is what it would have to pay for the goods or services if the alternative of buying internally did not exist. Using such a system, the Evergreen Division would transfer all evergreen units to the Marine Biochemical Division at the A$0.72 price charged to external purchasers.

Although this approach appears logical, several problems may exist with the use of market prices for intracompany transfers. First, transfers can involve products having no exact counterpart in the external market. Second, market price is not entirely appropriate because of cost savings on internal sales arising from reductions in bad debts and/or in packaging, advertising, or delivery expenditures. Third, difficulties can arise in setting a transfer price when the external market is depressed because of a temporary reduction in demand for the product. Should the current depressed price be used as the transfer price or should the expected long-run market price be used? Fourth, different prices are quoted and different discounts and credit terms are allowed to different buyers. Which market price is the "right" one to use?

Negotiated Transfer Prices

negotiated transfer price

Because of the problems associated with both cost- and market-based prices, **negotiated transfer prices** are often set through a process of bargaining between the selling and purchasing unit managers. Such prices are typically below the normal market purchase price of the buying unit, but above the sum of the selling unit's incremental and opportunity costs. A negotiated price meeting these specifications falls within the range limits of the transfer pricing rules.

A negotiated transfer price for the Scott Company would be bounded on the top side by the Marine Biochemical Division's external buying price and on the bottom side by the A$0.40 incremental variable costs of the Evergreen Division. If some of the variable selling costs could be eliminated, the incremental cost would be less. If the Evergreen Division could not sell any additional evergreen units externally or downsize its facilities, no opportunity cost would be involved. Otherwise, the amount of the opportunity cost would need to be determined, and it could be as much as the A$0.32 contribution margin (if all units could be sold externally).

Ability to negotiate a transfer price implies that segment managers have the autonomy to sell or buy products externally if internal negotiations fail. Because such extensive autonomy may lead to dysfunctional behavior and suboptimization, top management may provide a means of arbitrating a price in the event that the units cannot agree. This arbitration arrangement must be specified and agreed on in advance and be skillfully handled or the segment managers may perceive that their autonomy is being usurped by upper-level management.

To encourage cooperation between the transferring divisions, top management may consider joint divisional profits as one performance measurement for both the selling and buying unit managers. Another way to reduce difficulties in establishing a transfer price is simply to use a dual pricing approach.

Dual Pricing

dual pricing arrangement

Because a transfer price is used to satisfy internal managerial objectives, a **dual pricing arrangement** can be used to provide for different transfer prices for the selling and buying segments. Such an arrangement lets the selling division record the transfer of goods or services at a market or negotiated market price and the buying division to record the transfer at a cost-based amount.[11] Use of dual prices would provide a profit margin on the goods transferred and thus reflects a "profit" for the selling division. The arrangement would also provide a minimal cost to the buying division. Dual pricing eliminates the problem of having to divide the profits artificially between the selling and buying segments and allows managers to have the most relevant information for both decision making and performance evaluation.

When dual pricing is used, the sum of the individual segment performances will not equal the companywide performance. The selling segment's recorded sales price is not equal to the buying segment's recorded purchase price for the same transaction. The difference is assigned to an internal reconciliation account used to adjust revenues and costs when company financial statements are prepared. Such reconciliation is the same as would exist in preparing consolidated statements when sales are made between the consolidated entities at an amount other than cost.

Several benefits can result from the use of dual transfer pricing. These are expressed in the accompanying News Note about dual pricing arrangements in which the writer advocates market price for the selling segment and variable cost for the buying segment.

In contrast, while reducing disagreements, dual pricing might also eliminate some of the benefits of managerial competition. These include the understanding and cooperation resulting from negotiation and the opportunity for creative solutions to mutual problems.

Using the information for the Evergreen and Marine Biochemical Divisions of Scott Company, journal entries to record transfers under various transfer pricing systems are shown in Exhibit 18–21.

Selecting a Transfer Pricing System

Setting a reasonable transfer price is not an easy task. Everyone involved in the process must be aware of the positive and negative aspects of each type of transfer price and be responsive to suggestions of change if needed. The determination of the type of transfer pricing system to use should reflect the organizational units' characteristics as well as corporate goals. No single method of setting a transfer price is best in all instances. Also, transfer prices are not intended to be permanent; they are frequently revised in relation to changes in costs, supply, demand, competitive forces, and other factors. Flexibility by the selling segment to increase

[11] Typically, the cost-based amount used by the buying division reflects only the variable costs of the selling division.

GENERAL BUSINESS  NEWS NOTE

Dual Pricing

Transfer pricing, or the pricing of products or services supplied by one division to another division, should accomplish three things:

1. It must always result in goal congruence, or guide division managers to take actions not just in their own interests but for the good of the entire organization.
2. It should ease the fundamental tension between decision making and control.
3. It should provide essential information so that managers can make suitable, short-run decisions.

For most domestic transfers of products with a fairly developed intermediate market in which the buyer can seek out alternative suppliers, a modified dual transfer pricing method would enable the organization's divisions to make optimal, short-run decisions and to work toward common goals. The dual transfer price method recognizes that the interests of selling and buying divisions are always opposed. Under the dual price method, the selling division is credited with the market price and the buying division pays the variable cost of the product. The resulting difference is then debited to a reconciliation or adjustment account at the head office. This method helps resolve conflicts between buyer and seller, and gives both divisions adequate incentive to transact internally in the interests of the corporation.

SOURCE: Manmohan Rai Kapoor, "Dueling Divisions: A New Dual Transfer Pricing Method," *CMA Management* (March 1998), p. 23.

EXHIBIT 18–21

Journal Entries for Transfer Prices

Assume that 1,000 units of product are transferred from the Evergreen Division to the Marine Biochemical Division:
Variable production cost (1,000 × A$0.36) = A$360
Full production cost (1,000 × A$0.45) = A$450
External selling price (1,000 × A$0.72) = A$720

SITUATION	EVERGREEN (E)			MARINE BIOCHEMICAL (MB)		
Transfer at variable production cost	A/R—Division MB	360		Inventory	360	
	Intracompany Sales		360	A/P—Division E		360
	Intracompany CGS	450				
	Finished Goods		450			
Transfer at full production cost	A/R—Division MB	450		Inventory	450	
	Intracompany Sales		450	A/P—Division E		450
	Intracompany CGS	450				
	Finished Goods		450			
Transfer at external selling price	A/R—Division MB	720		Inventory	720	
	Intracompany Sales		720	A/P—Division E		720
	Intracompany CGS	450				
	Finished Goods		450			
Transfer at dual price of external selling price for selling division and full production cost for buying division	A/R—Division MB	450		Inventory	450	
	Intracompany Sales in Excess of Assigned Costs	270		A/P—Division E		450
	Intracompany Sales		720			
	Intracompany CGS	450				
	Finished Goods		450			

NOTE: Entries for negotiated transfer prices would be similar to those at full production cost, except that the negotiated transfer price would be shown for the first entry for the selling division and the purchase entry for the buying division.

a transfer price when reduced productive capacity is present and to increase a transfer price when excess productive capacity exists is a strong management lever. Regardless of what method is used, a thoughtfully set transfer price will provide

- an appropriate basis for the calculation and evaluation of segment performance,
- the rational acquisition or use of goods and services between corporate divisions,
- the flexibility to respond to changes in demand or market conditions, and
- a means of motivation to encourage and reward goal congruence by managers in decentralized operations.

TRANSFER PRICES FOR SERVICE DEPARTMENTS

The practice of setting prices for products transferred between one organizational segment and another is well established. Instituting transfer prices for services is a less common but effective technique for some types of service departments.

Setting Service Transfer Prices

Setting transfer prices for services requires that practical internal guidelines be developed to provide meaningful information for both the user and provider departments. For an organization to be profitable, revenue-producing areas must cover service department costs. These costs can be allocated internally to user departments based on the methods shown in an earlier section of this chapter, or services can be "sold" to user departments using transfer prices. In either case, service department costs are included in the costs of revenue-producing departments so that those departments' sales can cover the service departments' costs. The decision as to the most useful information is at the discretion of top management.

Transfer prices for services can take the same forms as those for products: cost based, market based, negotiated, or dual. Traditionally, these transfer prices are most often negotiated between buyer and seller. This is especially true for services because the value is often qualitative—expertise, reliability, convenience, and responsiveness—and can only be assessed judgmentally from the perspective of the parties involved. The type of transfer price to use should depend on the cost and volume level of the service as well as whether comparable substitutes are available. Examples include the following:

- Market-based transfer prices are effective for common, standardized services that are high-cost, high-volume services such as storage and transportation.
- Negotiated transfer prices are useful for customized services that are high-cost, high-volume services such as risk management and specialized executive training.
- Cost-based or dual transfer prices are generally chosen for services that are low-cost, low-volume services such as temporary maintenance and temporary office staff assistance.

6

What are the advantages and disadvantages of service transfer prices?

A company should weigh the advantages and disadvantages of service transfer prices before instituting such a transfer policy. Transfer prices are useful when service departments provide distinct, measurable benefits to other areas or provide services having a specific cause-and-effect relationship.

Advantages of Service Transfer Prices

Transfer prices in these circumstances are useful and can provide certain organizational advantages in both the revenue-producing and service departments. These advantages (listed in Exhibit 18–22) are as follows. First, transfer prices can encourage more involvement between service departments and their users. Service

EXHIBIT 18–22

Advantages of Transfer Prices for Services

	Revenue Departments	Service Departments
User Involvement	Encourages ways to improve services to benefit users	Promotes development of services more beneficial to users
Cost Consciousness	Relates to services used; restricts usage to those necessary and cost beneficial	Relates to cost of services provided; must justify transfer price established
Performance Evaluations	Includes costs for making performance evaluations if control exists over amount of services used	Promotes making a service department a profit center rather than a cost center and thus provides more performance evaluation measures

departments are more likely to interact with users to determine the specific services that are needed and to eliminate or reduce services that are not cost beneficial. If charged a transfer price, users may be more likely to suggest ways the service department could reduce costs and improve its performance, and thereby lower the transfer prices charged.

Second, using transfer prices for services should cause service department and user department managers to be more cost conscious and eliminate wasteful usage. If service departments incur excessive costs, a reasonable transfer price may not cover those costs or a high transfer price may not be justifiable to users. If user departments are charged for all services they receive, they might decide their service demands have been excessive. For example, if the Management Information Department charged other departments for the number of reports received, managers would be less likely to request reports simply to be "on the receiving list," as sometimes occurs.

Last, transfer prices result in useful information for performance evaluations. Responsibility reports show a controllable service department cost relative to the actual services used by individual managers instead of noncontrollable allocated expense amounts. The use of transfer prices can also allow service departments to become profit rather than cost centers. Although transfer prices are effective responsibility accounting tools, there are disadvantages to their use.

Disadvantages of Service Transfer Prices

Transfer prices for services do have certain disadvantages, including the following:

- There can be (and most often is) disagreement among organizational unit managers as to how the transfer price should be set.
- Implementing transfer prices in the accounting system requires additional organizational costs and employee time.
- Transfer prices do not work equally well for all departments or divisions. For example, service departments that do not provide measurable benefits or cannot show a distinct cause-and-effect relationship between cost behavior and service use by other departments should not attempt to use transfer prices.
- The transfer price may cause dysfunctional behavior among organizational units or may induce certain services to be under- or overutilized.

- U.S. tax regulations regarding transfer prices in multinational companies are quite complicated.

These same disadvantages are associated with transfer prices for products.

TRANSFER PRICES IN MULTINATIONAL SETTINGS

7

How can multinational companies use transfer prices?

Because of the differences in tax systems, customs duties, freight and insurance costs, import/export regulations, and foreign-exchange controls, setting transfer prices for products and services becomes extremely difficult when the company is engaged in multinational operations. In addition, as shown in Exhibit 18–23, the internal and external objectives of transfer pricing policies differ in multinational enterprises (MNEs).

Because of these differences, the determination of transfer prices in MNEs has no simple resolution. Multinational companies may use one transfer price when a product is sent to or received from one country and a totally different transfer price for the same product when it is sent to or received from another.

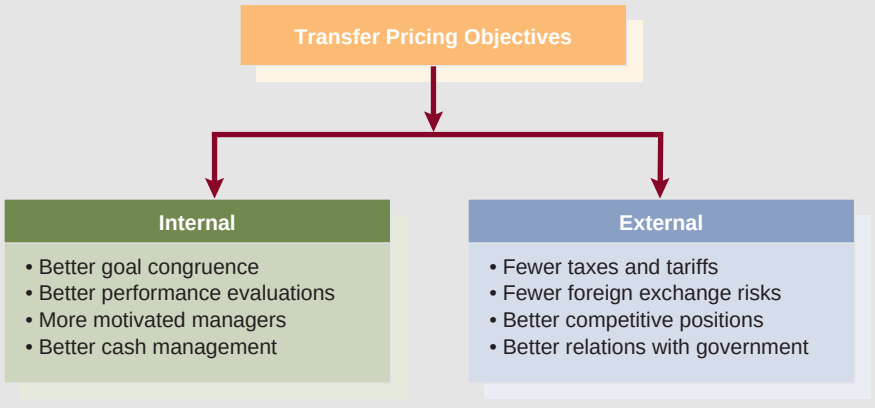
However, some guidelines on transfer pricing policies should be set by the company and be followed on a consistent basis. For example, a company should not price certain parent company services to foreign subsidiaries in a manner that would send the majority of those costs to the subsidiary in the country with the highest tax rate unless that method of pricing were reasonable and equitable to all subsidiaries. The general test of reasonableness is that transfer prices should reflect an arm's-length transaction.

Tax authorities in both the home and host countries carefully scrutinize multinational transfer prices because such prices determine which country taxes the income from the transfer. The U.S. Congress is concerned about both U.S. multinationals operating in low-tax-rate countries and foreign companies operating in the United States. In both situations, Congress believes that companies could avoid paying U.S. corporate income taxes because of misleading or inaccurate transfer pricing. Thus, the Internal Revenue Service (IRS) may be quick to investigate U.S. subsidiaries that operate in low-tax areas and suddenly have unusually high profits.

If foreign companies charge their U.S. subsidiaries higher prices than what they would charge subsidiaries in their home country, U.S. taxable income and thus the

EXHIBIT 18–23

Multinational Company Transfer Pricing Objectives



SOURCE: Wagdy M. Abdallah, "Guidelines for CEOs in Transfer Pricing Policies," *Management Accounting* (September 1988), p. 61. Reprinted from *Management Accounting.* Copyright by Institute of Management Accountants, Montvale, N.J.

tax base will decline—which can also provoke an IRS review. The accompanying News Note discusses the IRS's Advanced Pricing Agreement Program.

Transfers among nations are becoming easier through the institution of trade integration arrangements such as the European Union and the North American Free Trade Agreement. These arrangements should help reduce the significance of transfer price manipulations through (among other features) the harmonization of tax structures and the reduction in import/export fees, tariffs, and capital movement restrictions.

To determine the effectiveness of their transfer pricing policies, multinational company managers should consider the following two questions:

1. Does the system achieve economic decisions that affect MNE performance positively, including international capital investment decisions, output level decisions for both intermediate and final products, and product pricing decisions for external customers?
2. Do subsidiary managers feel that they are being fairly evaluated and rewarded for their divisional contributions to the MNE as a whole?[12]

If the answers to both of these questions are yes, then the company appears to have a transfer pricing system that appropriately coordinates the underlying considerations, minimizes the internal and external goal conflicts, and balances the short- and long-range perspectives of the multinational company.

INTERNATIONAL  **NEWS NOTE**

Get The Transfer Price Right!

First, let's define "transfer price." This term refers to the price at which an enterprise transfers goods or intangible property or provides services to a related enterprise, such as a parent company to a subsidiary. The Internal Revenue Service is concerned that companies could use these transfer prices to shift profits between related entities through cost of goods sold. Thus, transfer pricing manipulation could be used by taxpayers to shift income from high tax jurisdictions like the U.S. to low tax jurisdictions.

The right price from the IRS's perspective is the market value price. Because it's difficult to prove that the transfer price was equal to the market price, companies often find themselves in disputes with the IRS. But now there's help. The IRS's Advanced Pricing Agreement (APA) Program provides companies an opportunity to avoid costly audits and litigation by allowing them to negotiate a prospective agreement with the IRS regarding the facts, the transfer pricing methodology, and an acceptable range of results. The program is aimed at multinational corporations interested in avoiding penalties, managing risk, and determining their tax liability with certainty.

In the APA Program, you as a financial professional and representative of your company would work proactively with the IRS in a cooperative negotiating environment rather than in an adversarial examination or litigation environment. The APA Program's goal? To agree upon the best method to calculate market-driven prices, which allows you to determine your transfer price and, ultimately, your tax liability with certainty. An APA results in no surprises for the taxpayer. Because the IRS has agreed prospectively, you won't find yourself involved in transfer pricing disputes later as long as you comply with the agreement, which can cover as many as five years and can also be applied to prior years.

SOURCE: Steven C. Wrappe, Ken Milani, and Julie Joy, "The Transfer Price Is Right . . . Or Is It?" *Strategic Finance* (July 1999), pp. 38ff. Copyright by Institute of Management Accountants, Montvale, N.J.

[12] Wagdy M. Abdallah, "Guidelines for CEOs in Transfer Pricing Policies," *Management Accounting* (September 1988), p. 61. Reprinted from *Management Accounting*. Copyright by Institute of Management Accountants, Montvale, N.J.

REVISITING

Abbott Laboratories

http://www.abbott.com

Abbott's mission is to improve lives. The company does this by developing technologies that build, protect and improve people's health. With one of the most diverse product lines in the industry and unique expertise in many of the most common and important medical conditions, Abbott touches the lives of millions of people around the world every year.

Above all, Abbott is a science company. More than 5,000 Abbott scientists around the world are committed to developing new health care technologies to improve lives. To support Abbott's commitment to advancing medical science, the company devotes more than $1 billion every year toward the research and development of innovative health care solutions.

While the demand for health is boundless, the willingness to pay for its benefits is limited—sometimes sharply. Abbott has operated in a cost-constrained environment for many years—bounded by government controls around the world and payer pressures in the United States.

What the market will reward is innovation—new medical technologies that advance care cost effectively. New products that deliver unique benefits will always find a market. Abbott delivers products that provide meaningful, distinctive advantages to users and closely manages costs to ensure that the company stays as efficient as its markets.

Another major force shaping Abbott's environment is the continually accelerating pace of change. The demand for new health care products creates a parallel need to rapidly advance the state of scientific knowledge. To achieve this, companies in the industry have been combining at a previously unparalleled rate to create companies of unparalleled size.

Abbott's diversified product base, its size, and its presence around the globe require that it empower managers who can respond quickly and appropriately to local changes and conditions anywhere the company conducts business. At the same time, these managers must also maintain the high standards of the worldwide company. Therefore, Abbott maintains an appropriate degree of decentralization. Responsibility accounting reports provide for the needed two-way flow of information. Transfer pricing with international considerations is employed.

Is it any wonder that *Industry Week* in its "Best-Managed Companies" (published in the April 19, 1999, issue) ranked Abbott as one of the 100 best-managed companies in the world, for the fourth year in a row? In 1998, Abbott paid its 300th consecutive quarterly dividend.

SOURCE: "Abbott Laboratories Online," Abbott Laboratories Web site, http://www.abbott.com (March 29, 2000).

CHAPTER SUMMARY

A decentralized organization is composed of operational units led by managers who have some degree of decision-making autonomy. The degree to which a company is decentralized depends on top management philosophy and on the ability of unit managers to perform independently. Decentralization provides managers the opportunity to develop leadership qualities, creative problem-solving abilities, and decision-making skills. It also lets the individual closest to the operational unit make decisions for that unit, thereby reducing the time spent in communicating and making decisions.

One disadvantage of decentralization is that responsibility may be spread too thinly throughout the organization. Competition can also result among the managers of decentralized units, which could lessen the organizational goal congruence. Some disruption may occur during a transition to decentralization because top managers resist delegating a portion of their authority to subordinates. Last, the costs of incorrect decisions made by the decentralized unit managers could be high.

Responsibility accounting systems are used to provide information on the revenues and/or costs under the control of unit managers. Responsibility reports reflect the upward flow of information from each decentralized unit to top management. Managers receive information regarding the activities under their immediate control as well as the control of their direct subordinates. The information is successively aggregated, and the reports allow the application of the management by exception principle.

Responsibility centers are classified as cost, revenue, profit, or investment centers. Managers of cost and revenue centers have control primarily over, respectively, costs and revenues. Profit center managers are responsible for maximizing their segments' incomes. Investment center managers must generate revenues and control costs to produce a satisfactory return on the asset base under their influence. All responsibility center managers should perform their functions within the framework of organizational goal congruence, although there is a possibility of suboptimization of resources.

Converting a cost or revenue center to a microprofit center requires that each of these responsibility center managers be responsible for both revenue and costs. Then the responsibility center can be treated as a mini-business, the performance of which is subject to evaluation, recognition, and reward.

Management may want to allocate service department costs to revenue-producing areas using one of the following three methods: the direct method, step method, or algebraic method. The direct method assigns service department costs only to revenue-producing departments and does not consider services that may be provided by one service department to another.

The step method uses a benefits-provided ranking that lists service departments from the one providing the most service to other departments to the one servicing primarily the revenue-producing areas. Costs are assigned from each department in order of the ranking. Once costs have been assigned from an area, they cannot flow back into that area.

The algebraic method recognizes the interrelationships among all departments through the use of simultaneous equations. This method provides the best allocation information and is readily adaptable to computer computations.

A transfer price is an intracompany charge for goods or services bought and sold between segments of a decentralized company. A transfer price for products is typically cost based, market based, or negotiated. The upper limit of a transfer price is the lowest market price at which the product can be acquired externally. The lower limit is the incremental cost of production plus the opportunity cost of the facilities used. A dual pricing system may also be used that assigns different transfer prices to the selling and buying units. Top management should promote a transfer pricing system that enhances goal congruence, provides segment autonomy, motivates managers to strive for segment effectiveness and efficiency, is practical, and is credible in measuring segment performance.

Setting transfer prices in multinational enterprises is a complex process because of the differences existing in tax structures, import/export regulations, customs duties, and other factors of the international subsidiaries and divisions. A valid transfer price for a multinational company achieves economic benefit for the entire company and support from the domestic and international managers using the system.

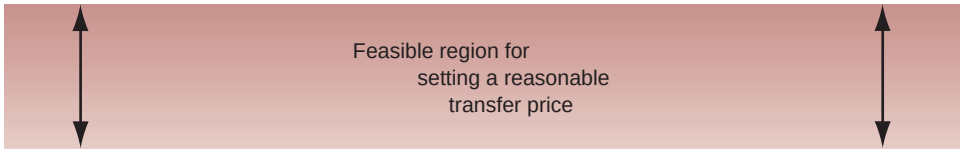
KEY TERMS

administrative department (p. 812)
algebraic method (p. 816)
"benefits-provided" ranking (p. 816)
cost center (p. 806)
differential cost (p. 814)
direct method (p. 815)
dual pricing arrangement (p. 828)
goal congruence (p. 800)
investment center (p. 810)
negotiated transfer price (p. 827)
profit center (p. 809)
pseudo microprofit center (p. 812)
real microprofit center (p. 812)
responsibility center (p. 806)
responsibility report (p. 802)
revenue center (p. 808)
service department (p. 812)
step method (p. 815)
suboptimization (p. 800)
transfer price (p. 823)

SOLUTION STRATEGIES

Transfer Prices (Cost-Based, Market-Based, Negotiated, Dual)

Upper Limit: Lowest price available from external suppliers



Lower Limit: Incremental costs of producing and selling the transferred goods or services plus the opportunity cost for the facilities used

Service Department Cost Allocation

Direct Method

1. Determine rational and systematic allocation bases for each service department.
2. Assign costs from each service department directly to revenue-producing areas using specified allocation bases.

Step Method

1. Determine rational and systematic allocation bases for each service department.
2. List service departments in sequence (benefits-provided ranking) from the one that provides the most service to all other areas (both revenue- and non-revenue-producing areas) to the one that provides service to only revenue-producing areas.
3. Beginning with the first service department listed, allocate the costs from that department to all remaining departments; repeat the process until only revenue-producing departments remain.

Algebraic Method

1. Determine rational and systematic allocation bases for each department.
2. Develop algebraic equations representing the services provided by each department to other service departments and to revenue-producing departments using the allocation bases.
3. Solve the simultaneous equations for the service departments through an iterative process or by computer until all values are known.
4. Allocate costs using allocation bases developed in step 2. Eliminate "reallocated" costs from consideration.

DEMONSTRATION PROBLEM

Kala Marina Inc. is a diversified company of which one segment makes spear guns and another produces air tanks. Costs for a tank produced by the Tank Division are as follows:

Direct material	$12	
Direct labor	5	
Variable overhead	3	
Variable S&A (both for external and internal sales)	1	
Total variable cost		$21
Fixed overhead*	$ 3	
Fixed S&A	2	
Total fixed cost		5
Total cost per tank		$26
Markup on total variable cost (33 1/3%)		7
List price to external customers		$33

*Fixed costs are allocated to all units produced based on estimated annual production.

- Estimated annual production: 400,000 tanks
- Estimated sales to outside entities: 300,000 tanks
- Estimated sales by the Tank Division to the Spear Gun Division: 100,000 tanks

The managers of the two divisions are currently negotiating a transfer price.

Required:

a. Determine a transfer price based on variable product cost.
b. Determine a transfer price based on total variable cost plus markup.
c. Determine a transfer price based on full production cost.
d. Determine a transfer price based on total cost per tank.
e. Assume that the Tank Division has no alternative use for the facilities that make the tanks for internal transfer. Also assume that the Spear Gun Division can buy equivalent tanks externally for $25. Calculate the upper and lower limits for which the transfer price should be set.
f. Compute a transfer price that divides the "profit" between the two divisions equally.
g. In contrast to the assumption in part (e), assume that the Tank Division can rent the facilities in which the 100,000 tanks are produced for $100,000. Determine the lower limit of the transfer price.

Solution to Demonstration Problem

a.

Direct material	$12
Direct labor	5
Variable overhead	3
Transfer price	$20

b.

Total variable cost	$21
Markup	7
Transfer price	$28

c.

Variable production cost	$20
Fixed production cost	3
Transfer price	$23

d.

Total variable cost	$21
Total fixed cost	5
Transfer price	$26

e. Upper limit: Spear Gun Division's external purchase price = $25
Lower limit: Total variable cost of Tank Division = $21
f. (Lower limit + Upper limit) ÷ 2 = ($21 + $25) ÷ 2 = $23
g. $100,000 ÷ 100,000 tanks = $1 opportunity cost per tank
Lower limit: Incremental cost of Tank Division + Opportunity cost = $21 + $1 = $22

QUESTIONS

1. What is the distinction between a centralized organizational structure and a decentralized organizational structure? In what types of companies is decentralization appropriate and why?
2. "A company's operations are either centralized or decentralized." Discuss this statement.
3. Bill Barnes is the president and chief operating officer of Barnes Electronics. Bill founded the company and has led it to its prominent place in the electronics field. He has manufacturing plants and outlets in 40 states. Bill, however, is finding that he cannot "keep track" of things the way he did in the past. Discuss the advantages and disadvantages of decentralizing the firm's decision-making activities among the various local and regional managers.
4. Even in a decentralized company, some functions may be best performed centrally. List several of these functions and the reasons you have for suggesting them.
5. Why is it suggested that decentralization has many costs associated with it? Describe some of the significant costs associated with decentralization.
6. How does decentralization affect accounting?
7. Why are responsibility reports prepared?
8. Is it appropriate for a single responsibility report to be prepared for a division of a major company? Why or why not?
9. Discuss the way in which a performance report consolidates information at each successively higher level of management.
10. Why might firms use both monetary and nonmonetary measures to evaluate the performance of subunit managers?
11. Discuss the differences among the various types of responsibility centers.
12. Why might salaries be included in the responsibility report of a revenue center manager?
13. What is suboptimization and what factors contribute to suboptimization in a decentralized firm?
14. Define and give four examples of a service department. How do service departments differ from operating departments?
15. Why are service department costs often allocated to revenue-producing departments? Is such a process of allocation always useful from a decision-making standpoint?
16. How might service department cost allocation create a feeling of cost responsibility among managers of revenue-producing departments?
17. "The four criteria for selecting an allocation base for service department costs should be applied equally." Discuss the merits of this statement.
18. How do the direct, step, and algebraic methods of allocating service department costs differ? In what ways are these methods similar?
19. What are the advantages and disadvantages of the direct, step, and algebraic methods of allocating service department costs?
20. Why is a benefits-provided ranking necessary in the step method of allocation but not in the algebraic method?
21. When the algebraic method of allocating service department costs is used, total costs for each service department increase from what they were prior to the allocation. Why does this occur and how are the additional costs treated?
22. How has the evolution of computer technology enhanced the feasibility of using the algebraic method of service department cost allocation?
23. What are transfer prices and why are they used by companies?
24. Would transfer prices be used in each of the following responsibility centers: cost, revenue, profit, and investment? If so, how would they be used?

25. How could the use of transfer prices improve goal congruence? Impair goal congruence?
26. What are the high and low limits of transfer prices and why do these limits exist?
27. A company is considering the use of a cost-based transfer price. What arguments favor the use of standard rather than actual cost?
28. What problems might be encountered when attempting to implement a cost-based transfer pricing system?
29. What practical problems could impede the use of a market-based transfer price?
30. Why would the element of negotiation be "potentially both the most positive and the most negative aspect of negotiated transfer prices"?
31. What is dual pricing? What is the intended effect of dual pricing on the performance of each division affected by the dual price?
32. How can service departments use transfer prices and what advantages do transfer prices have over cost allocation methods?
33. What are some of the major disadvantages of using transfer prices?
34. Explain why the determination of transfer prices may be more complex in a multinational setting than in a domestic setting.
35. Use the Internet to identify a multinational company encountering tax problems related to transfer pricing between its organizational units in different countries. Prepare a brief discussion of the issues and the actual or potential consequences.

EXERCISES

36. *(Terminology)* Match the following lettered terms on the left with the appropriate numbered description on the right.

a. Centralized organization
b. Cost center
c. Decentralized organization
d. Dual pricing arrangement
e. Goal congruence
f. Investment center
g. Profit center
h. Revenue center
i. Suboptimization
j. Transfer price

1. Situation in which buying division is charged a price that differs from that credited to the selling division
2. Structure in which most decisions are made by segment managers
3. Situations in which decisions are made that are sometimes not in the best interest of whole firm
4. Segment whose manager is responsible primarily for costs
5. Segment whose manager is responsible primarily for revenues, expenses, and assets
6. Segment whose manager is responsible for both revenues and expenses
7. Segment whose manager is primarily responsible for revenues
8. Structure in which most decisions are made by top management
9. An internal exchange price
10. Situation in which mutual support exists among goals of individual managers and the organization

37. *(Decentralization advantages and disadvantages)* Indicate which of the following is a potential advantage (A), disadvantage (D), or neither (N) of decentralization.

a. Promotion of goal congruence
b. Support of training in decision making
c. Development of leadership qualities
d. Complication of communication process
e. Cost of developing the planning and reporting system
f. Placement of decision maker closer to time and place of problem
g. Speed of decisions
h. Use of management by exception principle by top management
i. Provision of greater job satisfaction
j. Delegation of ultimate responsibility

38. *(Centralization versus decentralization)* For each situation below, indicate whether the firm would tend to be more centralized (C) or more decentralized (D), or if the tendency is indefinite (I).
a. The firm's growth rate is rapid.
b. The firm is small.
c. The firm is in a growth stage of product development.
d. Top management expects that incorrect subordinate management decisions could have a disastrous impact on company profits.
e. The company was founded two years ago.
f. Top management has a high level of confidence in subordinates' judgment and skills.
g. Top management is proud of its record of tight control.
h. Both d and f.
i. Both c and g.
j. Both a and b.

39. *(Revenue variances)* The Sales Department of Porcelain Works is responsible for sales of two figurines. One is called "Elegant Maiden" and the other is called "Summer Memories." For April 2001, the Sales Department's actual and budgeted sales were as follows:

	ELEGANT MAIDEN		SUMMER MEMORIES	
	Dollars	Units	Dollars	Units
Budgeted sales	$10,000	1,000	$15,000	3,000
Actual sales	9,000	750	15,750	3,500

For April 2001, compute each of the following for the Sales Department of Porcelain Works:
a. Price variance
b. Mix variance
c. Volume variance

40. *(Revenue variances)* Athletes' Friend, Inc., manufactures two products: baseball bats and gloves. For 2001, the firm budgeted the following:

	Bats	Gloves
Sales	$400,000	$600,000
Unit sales price	40	30

At the end of 2001, managers were informed that total actual sales amounted to 35,000 units and totaled $1,225,000. Glove sales for the year amounted to 20,000 units at an average price of $35.
a. Compute the total revenue variance for 2001.
b. Compute the price variance for 2001.
c. Compute the mix variance for 2001.
d. Compute the volume variance for 2001.

41. *(Direct method)* Chance Corporation allocates its service department costs to its production departments using the direct method. Information for June 2001 follows:

	Personnel	Maintenance
Service department costs	$68,000	$50,000
Services provided to other departments		
Personnel		10%
Maintenance	15%	
Fabricating	45%	60%
Finishing	40%	30%

a. What amount of personnel and maintenance costs should be assigned to Fabricating for June?

b. What amount of personnel and maintenance costs should be assigned to Finishing for June?

42. *(Direct method)* Palisade Bank has three revenue-generating areas: checking accounts, savings accounts, and loans. The bank also has three service areas: administration, personnel, and accounting. The direct costs per month and the interdepartmental service structure are shown below in a benefits-provided ranking.

		PERCENTAGE OF SERVICE USED BY					
Department	Direct Costs	Admin.	Personnel	Accounting	Checking	Savings	Loan
Administration	$ 90,000		10	10	30	40	10
Personnel	60,000	10		10	30	20	30
Accounting	90,000	10	10		40	20	20
Checking	90,000						
Savings	75,000						
Loans	150,000						

Compute the total cost for each revenue-generating area using the direct method.

43. *(Step method)* Using the step method and the information in Exercise 42, compute the total cost for each revenue-generating area.

44. *(Step method)* Cognevich Company is organized in three service departments (Personnel, Administration, and Maintenance) and two revenue-generating departments (Stamping and Assembly). The company uses the step method to allocate service department costs to operating departments. In October 2000, Personnel incurred $60,000 of costs, Administration incurred $90,000, and Maintenance incurred $40,000. Proportions of services provided to other departments for October 2000 follow:

	Personnel	Administration	Maintenance
Personnel		10%	5%
Administration	15%		10%
Maintenance	10%	15%	
Stamping	45%	50%	50%
Assembly	30%	25%	35%

a. Assuming that the departments are listed in a benefits-provided ranking, what amount of Personnel cost should be assigned to each of the other departments for October? Administration costs? Maintenance costs?

b. What is the total service department cost that was assigned to Stamping in October? To Assembly?

c. Explain why the cost allocation is affected by the order in which costs are assigned.

45. *(Algebraic method)* Use the information for Palisade Bank in Exercise 42 to compute the total cost for each revenue-generating area using the algebraic method.

46. *(Algebraic method)* Colleague Press has two revenue-producing divisions (College Textbooks and Professional Publications) and two service departments (Administration and Personnel). Direct costs and allocation bases for each of these areas are presented below:

		ALLOCATION BASES	
Department	Direct Costs	Number of Employees	Dollars of Assets Employed
Administration	$ 225,000	10	$310,000
Personnel	175,000	5	75,000
College Textbooks	1,125,000	50	600,000
Professional Publications	475,000	30	525,000

Company management has decided to allocate administration and personnel costs on the basis of dollars of assets employed and number of employees, respectively. Use the algebraic method to allocate the service department costs and determine the final costs of operating the College Textbooks and Professional Publications Departments.

47. *(Transfer pricing)* Motchip Division, a decentralized plant of Pazazz Motor Company, is considering what transfer price to charge the Engine Division for transfers of computer chips to that division. The following data on production cost per computer chip have been gathered:

Direct material	$1.50
Direct labor	4.00
Variable overhead	1.70
Fixed overhead	2.40
Total	$9.60

The Motchip Division sells the computer chips to external buyers for $21.75. Managers of the Engine Division have received external offers to provide the division comparable chips, ranging from $15 at one company to $23 at another.

a. Determine the upper and lower limits for the transfer price between the Motchip Division and the Engine Division.

b. If the Motchip Division is presently selling all the chips it can produce to external buyers, what is the minimum price it should set for transfers to the Engine Division?

48. *(Transfer pricing)* Keeler Enterprises is decentrally organized. One of its divisions, Trustypad Division, manufactures truck and trailer brake pads for sale to other company divisions as well as to outside entities. Corporate management treats Trustypad Division as a profit center. The normal selling price for a pair of Trustypad's brake pads is $12; costs for each pair are:

Direct material	$2.00
Direct labor	1.40
Variable overhead	0.80
Fixed overhead (based on production of 700,000 pairs)	2.75
Variable selling expense	0.50

Another division of Keeler, the Trailer Division, wants to purchase 25,000 pairs of brake pads from Trustypad Division during next year. No selling costs are incurred on internal sales.

a. If Trustypad's manager can sell all the brake pads it produces externally, what should the minimum transfer price be? Explain.

b. Assume that Trustypad Division is experiencing a slight slowdown in external demand and will be able to sell only 600,000 pairs of brake pads

to outsiders next year at the $12 selling price. What should be the minimum selling price to the Trailer Division under these conditions? Explain.

c. Assume that Mr. Leon, the manager of Trailer Division, offers to pay Trustypad Division's production costs plus 25 percent for each pair of brake pads. He receives an invoice for $217,187.50, and he was planning on a cost of $131,250. How were these amounts determined? What created the confusion? Explain.

49. *(Transfer pricing)* Two investment centers of Jones Products Company are the Electronics Division and the Appliance Division. The Electronics Division manufactures an electronic computer chip that can be sold externally and is also used by the Appliance Division in making motors for its appliances. The following information is available about the computer chip:

Total production annually: 200,000 units; internal requirements: 150,000 units; all others are sold externally
List selling price: $25.60
Variable production costs: $12
Fixed overhead: $300,000; allocated on the basis of units of production
Variable selling costs: $3; includes $1 per unit in advertising cost
Fixed selling costs: $400,000

Determine the transfer price under each of the following methods:

a. Total variable cost
b. Full production cost
c. Total variable production cost plus necessary selling costs
d. Market price

50. *(Transfer pricing and management motivation)* Franklin Food Stores operates 12 large supermarkets in New England. Each store is evaluated as a profit center, and store managers have complete control over purchases and their inventory policy. The policy is that if a store runs short of an item and a sister store has a sufficient supply, a transfer will be made between stores. Company policy requires that all such transfers be made at cost.

During a recent period of rapid increases in food prices, company management officials have noted that transfers between stores have decreased sharply. Store managers have indicated that if they ran short of a particular item, they could not locate a sister store with sufficient inventory to make the transfer.

Company management officials have observed several recent cases in which a store manager inquired about the availability of a particular item and was told that the sister store did not have sufficient inventory to make a transfer. Further checking indicated that the sister store had more than sufficient inventory to make the transfer.

a. Why were the store managers reluctant to make the transfers?
b. How could the transfer pricing policy be changed to avoid this situation?

51. *(Transfer pricing in service departments)* Indicate whether each of the following statements constitutes a potential advantage (A), disadvantage (D), or neither (N) of using transfer prices for service department costs.

a. Can make a service department into a profit center
b. Can reduce goal congruence
c. Can make users and providers more cost conscious
d. Can increase resource waste
e. Can increase disagreements among departments
f. Can put all service departments on an equal footing
g. Can cause certain services to be under- or overutilized
h. Can improve ability to evaluate performance
i. Can increase communication about what additional services are needed and which may be reduced or eliminated
j. Can require additional organizational data and employee time

52. *(Transfer pricing for services)* Reliable Insurance Company's computer department is developing a transfer price for its services. Capacity is defined as minutes of computer time. Expected capacity for 2001 is 350,000 minutes and full capacity is 450,000 minutes. Costs of the computer area for 2001 are expected to total $280,000.

a. What is the transfer price based on expected capacity?
b. What is the transfer price based on full capacity?
c. Assume the actual cost of operating the computer area in 2001 is $297,500. What is the total variance from budget of that department? What are some possible causes of that variance?

PROBLEMS

53. *(Profit center performance)* Jane Booth, head of the accounting department at Pacific State University, has felt increasing pressure to raise external funds to compensate for dwindling state financial support. Accordingly, in early January 2001, she conceived the idea of offering a three-day accounting workshop on income taxation for local CPAs. She asked Jim Cost, a tenured tax professor, to supervise the planning process for the seminar, which was to be held in late February 2001. In mid January, Professor Cost presented Ms. Booth with the following budget plan:

Revenues ($400 per participant)		$40,000
Expenses		
Speakers ($500 each)	$ 5,000	
Rent on facilities	3,600	
Advertising	2,100	
Meals and lodging	18,000	
Departmental overhead allocation	3,500	(32,200)
Profit		$ 7,800

Explanations of budget items: The facilities rent of $3,600 is a fixed rental, which is to be paid to a local hotel for use of its meeting rooms. The advertising is also a fixed budgeted cost. Meal expense is budgeted at $5 per person per meal (a total of nine meals are to be provided for each participant); lodging is budgeted at the rate of $45 per participant per night. The departmental overhead includes a specific charge for supplies costing $10 for each participant as well as a general allocation of $2,500 for use of departmental secretarial resources. After reviewing the budget, Ms. Booth gave Professor Cost approval to proceed with the seminar.

a. Recast the above income statement in a segment margin income statement format.
b. Assume the actual financial results of the seminar were as follows:

Revenues (120 participants)		$38,500
Expenses		
Speakers ($750 each)	$ 7,500	
Rent on facilities	4,200	
Advertising	2,900	
Meals and lodging	21,600	
Departmental overhead allocation	3,700	(39,900)
Loss		$ (1,400)

Explanation of actual results: Because sign-ups were running below expectations, the seminar fee was reduced from $400 to $300 for late enrollees and

advertising expense was increased. In budgeting for the speakers, Professor Cost neglected to include airfare, which averaged $250 per speaker. After the fees were reduced and advertising increased, the number of participants grew and was larger than expected; therefore, a larger meeting room had to be rented from the local hotel. Recast the actual results in a segment margin income format.

c. Compute variances between the budgeted segment margin income statement and the actual segment income statement. Identify and discuss the factors that are primarily responsible for the difference between the budgeted profit and the actual loss on the tax seminar.

54. *(Responsibility accounting reports)* Hartz Mountain Inc. manufactures small industrial tools and has an annual sales volume of approximately $3.5 million. Sales growth has been steady during the year and there is no evidence of cyclical demand. The company's market has expanded only in response to product innovation; therefore, R&D is very important to the company.

Janice Bennett, controller, has designed and implemented a new budget system. An annual budget has been prepared and divided into 12 equal segments to use for monthly performance evaluations. The vice president of operations was upset upon receiving the following responsibility report for the Machining Department for October 2000:

MACHINING DEPARTMENT—RESPONSIBILITY REPORT
FOR THE MONTH ENDED OCTOBER 31, 2000

	Budget	Actual	Variance
Volume in units	3,000	3,185	185F
Variable manufacturing costs:			
Direct material	$24,000	$ 24,843	$ 843U
Direct labor	27,750	29,302	1,552U
Variable factory overhead	33,300	35,035	1,735U
Total	$85,050	$ 89,180	$4,130U
Fixed manufacturing costs:			
Indirect labor	$ 3,300	$ 3,334	$ 34U
Depreciation	1,500	1,500	0
Tax	300	300	0
Insurance	240	240	0
Other	930	1,027	97U
Total	$ 6,270	$ 6,401	$ 131U
Corporate costs:			
Research and development	$ 2,400	$ 3,728	$1,328U
Selling and administration	3,600	4,075	475U
Total	$ 6,000	$ 7,803	$1,803U
Total costs	$97,320	$103,384	$6,064U

a. Identify the weaknesses in the responsibility report for the Machining Department.

b. Prepare a revised responsibility report for the Machining Department that reduces or eliminates the weaknesses indicated in part (a).

c. Deviations in excess of 5 percent of budget are considered material and worthy of investigation. Should any of the variances of the Machining Department be investigated? Regardless of materiality, is there any area that the vice president of operations might wish to discuss with the manager of the Machining Department? *(CMA adapted)*

55. *(Revenue center performance)* Juan Louis manages the sales department at the Boulder Lighting Company. Juan is evaluated based on his ability to meet budgeted revenues. For June 2001, Juan's revenue budget was as follows:

	Price per Unit	Unit Sales
Floor lamps	$120	1,600
Hanging lamps	65	2,150
Ceiling fixtures	80	4,200

The actual sales generated by Mr. Louis's sales department in June were as follows:

	Price per Unit	Total Sales in Dollars
Floor lamps	$115	$195,500
Hanging lamps	70	141,400
Ceiling fixtures	75	311,250

a. Compute the revenue price variance.
b. Compute the revenue mix variance.
c. Compute the revenue volume variance.
d. Based on your answers to parts (a) through (c), evaluate the performance of Mr. Louis.
e. If Mr. Louis is to be held accountable for meeting the revenue budget, why might it be advisable to also give him the authority to set the salesperson salary and commission structure?

56. *(Direct method)* The management of Santa Fe Community Hospital (SFCH) has decided to allocate the budgeted costs of its three service departments (Administration, Public Relations, and Maintenance) to its three revenue-producing programs (Surgery, In-Patient Care, and Out-Patient Services). Budgeted information for 2000 follows:

Budgeted costs:	
Administration	$2,000,000
Public Relations	700,000
Maintenance	500,000
Allocation bases:	
Administration	Dollars of assets employed
Public Relations	Number of employees
Maintenance	Hours of equipment operation

	EXPECTED UTILIZATIONS		
	Dollars of Assets Employed	Number of Employees	Hours of Equipment Operation
Administration	$ 740,090	4	1,020
Public Relations	450,100	7	470
Maintenance	825,680	5	1,530
Surgery	1,974,250	10	12,425
In-Patient Care	1,229,250	18	8,875
Out-Patient Services	521,500	22	14,200

Using the direct method, allocate the expected service department costs to the revenue-producing areas.

57. *(Step method)* McDougle Real Estate classifies its operations into three departments: Commercial Sales, Residential Sales, and Property Management. The owner, William McDougle, wants to know the full cost of operating each

department. Direct costs of each department, along with several allocation bases associated with each, are as follows:

	AVAILABLE ALLOCATION BASES			
	Direct Costs	Number Employees/ Salespersons	Dollars of Assets Employed	Dollars of Revenue
Administration	$ 750,000	10	$1,240,000	n/a
Accounting	495,000	5	682,000	n/a
Promotion	360,000	6	360,000	n/a
Commercial Sales	5,245,000	21	500,000	$4,500,000
Residential Sales	4,589,510	101	725,000	9,500,000
Property Management	199,200	13	175,000	500,000

The service departments are shown in a benefits-provided ranking. McDougle has also selected the following allocation bases: number of employees/salespersons for Administration; dollars of assets employed for Accounting; and dollars of revenue for Promotion.

a. Using the step method, allocate the service department costs to the revenue-generating departments.

b. Which department is apparently the most profitable?

58. *(Transfer prices)* In each of the following cases, the Speaker Division can sell all of its production of audio speakers to outside customers or it can sell some of it to the Sound System Division and the remainder to outside customers. Speaker Division's speaker production capacity is 200,000 units annually. The data related to each independent case are as follows:

	SPEAKER DIVISION	
	Case 1	Case 2
Production costs per unit:		
Direct material	$30	$20
Direct labor	10	8
Variable overhead	3	2
Fixed overhead (based on capacity)	1	1
Other variable selling and delivery costs per unit*	6	4
Selling price to outside customers	75	60

*In either case, $1 of the selling expenses will not be incurred on intracompany transfers.

	SOUND SYSTEM DIVISION	
Number of speakers needed annually	40,000	40,000
Current unit price being paid to outside supplier	$65	$52

a. For each case, determine the upper and lower limits for a transfer price for speakers.

b. For each case, determine a transfer price for the Speaker Division that will provide a $10 contribution margin per unit.

c. Using the information developed for part (b), determine a dual transfer price for Case 1 assuming that Sound System will be able to acquire the speakers from the Speaker Division at $10 below Sound System's purchase price from outside suppliers.

59. *(Transfer price)* Two of the divisions of Construction Equipment Company are the Engine Division and the Mobile Systems Division. The Engine Division produces engines used by both the Mobile Systems Division and a variety of external industrial customers.

For external sales, sales orders are generally produced in 50-unit lots. Using this typical lot size, the cost per engine is as follows:

Variable production cost	$1,050
Fixed manufacturing overhead	450
Variable selling expense	150
Fixed selling expense	210
Fixed administrative expense	320
Total unit cost	$2,180

The Engine Division normally earns a profit margin of 20 percent by setting the external selling price at $2,616. Because a significant number of sales are being made internally, Engine Division managers have decided that $2,616 is the appropriate price to use for all transfers to the Mobile Systems Division.

When the managers in the Mobile Systems Division heard of this change in the transfer price, they became very upset because the change would have a major negative impact on Mobile Systems' net income figures. Because of competition, Mobile Systems has asked the Engine Division to lower its transfer price; by reducing the transfer price, Engine's profit margin will be 15 percent. Mobile Systems' managers have asked Construction Equipment top management whether the Division can buy engines externally. Bud Dawkins, Construction Equipment's president, has gathered the following price information to help the two divisional managers negotiate an equitable transfer price:

Current external sales price	$2,616
Total variable production cost plus a 20% profit margin ($1,050 × 1.2)	1,260
Total production cost plus a 20% profit margin ($1,500 × 1.2)	1,800
Bid price from external supplier (if motors are purchased in 50-unit lots)	2,320

a. Discuss advantages and disadvantages of each of the above transfer prices to both the selling and buying divisions and to Construction Equipment.
b. If the Engine Division could sell all of its production externally at $2,616, what is the appropriate transfer price and why?

60. *(Journal entries)* Athlete's Companion Division makes top-of-the-line sports travel bags that are sold to external buyers and are also being used by the Travel America Division. During the month just ended, Travel America acquired 2,000 bags from Athlete's Companion Division. Athlete's Companion's standard unit costs are

Direct material	$10
Direct labor	3
Variable factory overhead	4
Fixed factory overhead	6
Variable selling expense	2
Fixed selling and administrative expense	3

Travel America can acquire comparable bags externally for $40 each. Give the entries for each division for the past month if the transfer is to be recorded
a. at Travel America's external purchase price.
b. at a negotiated price of variable cost plus 15 percent of production cost.
c. by Athlete's Companion at Travel America's external price and by Travel America at Athlete's Companion's variable production cost.
d. at Athlete's Companion's absorption cost.

61. *(Internal versus external sale)* Providence Products Inc. consists of three decentralized divisions: Park Division, Quayside Division, and Ridgetop Division. The president of Providence Products has given the managers of the three divisions the authority to decide whether to sell internally at a transfer price

determined by the division managers, or externally. Market conditions are such that sales made internally or externally will not affect market or transfer prices. Intermediate markets will always be available for Park, Quayside, and Ridgetop to purchase their manufacturing needs or sell their product. Division managers attempt to maximize their contribution margin at the current level of operating assets for the division.

The Quayside Division manager is considering the following two alternative orders.

The Ridgetop Division needs 3,000 units of a motor that can be supplied by the Quayside Division. To manufacture these motors, Quayside would purchase components from the Park Division at a transfer price of $600 per unit; Park's variable cost for these components is $300 per unit. Quayside Division would further process these components at a variable cost of $500 per unit.

If the Ridgetop Division cannot obtain the motors from the Quayside Division, the motors will be purchased from Essex Company for $1,500 per unit. Essex Company would also purchase 3,000 components from Park at a price of $400 for each of these motors; Park's variable cost for these components is $200 per unit.

The Saxon Company wants to buy 3,500 similar motors from the Quayside Division for $1,250 per unit. Quayside would again purchase components from the Park Division at a transfer price of $500 per unit; Park's variable cost for these components is $250 per unit. Quayside Division would further process these components at a variable cost of $400 per unit.

The Quayside Division's plant capacity is limited and, as such, the company can accept either the Saxon contract or the Ridgetop order, but not both. The president of Providence Products and the manager of Quayside Division agree that it would not be beneficial in the short or long run to increase capacity.

a. If the Quayside Division manager wants to maximize short-run contribution margin, determine whether the Quayside Division should (1) sell motors to the Ridgetop Division at the prevailing market price or (2) accept the Saxon Company contract. Support your answer with appropriate calculations.

b. Without prejudice to your answer to part (a), assume that the Quayside Division decides to accept the Saxon Company contract. Determine whether this decision is in the best interest of Providence Products Inc. Support your answer with appropriate calculations. *(CMA adapted)*

62. *(Transfer prices)* Robert Brown, CPA, has three revenue departments: Auditing and Accounting (A&A), Tax (T), and Consulting (C). In addition, the company has two support departments: Administration and EDP. Administration costs are allocated to the three revenue departments on the basis of number of employees. The EDP Department's fixed costs are allocated to revenue departments on the basis of peak hours of monthly service expected to be used by each revenue department. EDP's variable costs are assigned to the revenue departments at a transfer price of $40 per hour of actual service. Following are the direct costs and the allocation bases associated with each of the departments:

	Direct Costs (Before Transfer Costs)	Number of Employees	ALLOCATION BASES	
			Peak Hours	EDP Hours Used
Administration	$450,000	4	30	290
EDP—Fixed	300,000	2	n/a	n/a
EDP—Variable	90,000	2	n/a	n/a
A&A	200,000	10	80	1,220
T	255,000	5	240	650
C	340,000	3	25	190

a. Was the variable EDP transfer price of $40 adequate? Explain.
b. Allocate the other service department costs to A&A, T, and C using the direct method.
c. What are the total costs of the revenue-producing departments after the allocation in part (b)?

CASES

63. *(Interdivisional transfers; deciding on alternatives)* Carolyn Williams, a management accountant, has recently been employed as controller in the Fashions Division of Deluxe Products, Inc. The company is organized on a divisional basis with considerable vertical integration.

Fashions Division makes several luggage products, including a slim leather portfolio. Sales of the portfolio have been steady, and the marketing department expects continued strong demand. Carolyn is looking for ways the Fashions Division can contain its costs and thus boost its earnings from future sales. She discovered that the Fashions Division has always purchased its supply of high-quality tanned leather from another division of Deluxe Products, the LeatherWorks Division. LeatherWorks Division has been providing the three square feet of tanned leather needed for each portfolio for $9 per square foot.

Carolyn wondered whether it might be possible to purchase Fashions' leather needs from a supplier other than LeatherWorks at a lower price for comparable quality. Top management at Deluxe Products reluctantly agreed to allow the Fashions Division to consider purchasing outside the company.

The Fashions Division will need leather for 100,000 portfolios during the coming year. Fashions management has requested bids from several leather suppliers. The two best bids are $8 and $7 per square foot from Koenig and Thompson, respectively. Carolyn has been informed that another subsidiary of Deluxe Products, Ridley Chemical, supplies Thompson with chemicals that have been an essential ingredient of the tanning process for Thompson. Ridley Chemical charges Thompson $2 for enough chemicals to prepare three square feet of leather. Ridley's profit margin is 30 percent.

The LeatherWorks Division wants to continue supplying Fashions' leather needs at the same price per square foot as in the past. Tom Reed, LeatherWorks' controller, has made it clear that he believes Fashions should continue to purchase all its needs from LeatherWorks to preserve LeatherWorks' healthy profit margin of 40 percent of sales.

You, as Deluxe Products' vice president of finance, have called a meeting of the controllers of Fashions and LeatherWorks. Carolyn is eager to accept Thompson's bid of $7. She points out that Fashions' earnings will show a significant increase if the division can buy from Thompson.

Tom Reed, however, wants Deluxe Products to keep the business within the company and suggests that you require Fashions to purchase its needs from LeatherWorks. He emphasizes that LeatherWorks' profit margin should not be lost to the company.

From whom should the Fashions Division buy the leather? Consider both Fashions' desire to minimize its costs and Deluxe Products' corporate goal of maximizing profit on a companywide basis. *(IMA adapted)*

64. *(Transfer prices; discussion)* Southeast Products Inc. is a decentralized company. Each division has its own sales force and production facilities and is operated as an investment center. Top management uses return on investment

(ROI) for performance evaluation. The Hazlett Division has just been awarded a contract for a product that uses a component manufactured by the Andalusia Division as well as by outside suppliers. Hazlett used a cost figure of $3.80 for the component when the bid was prepared for the new product. Andalusia supplied this cost figure in response to Hazlett's request for the average variable cost of the component.

Andalusia has an active sales force that is continually soliciting new customers. Andalusia's regular selling price for the component Hazlett needs for the new product is $6.50. Sales of the component are expected to increase. Andalusia management has the following costs associated with the component:

Standard variable manufacturing cost	$3.20
Standard variable selling and distribution cost	0.60
Standard fixed manufacturing cost	1.20
Total	$5.00

The two divisions have been unable to agree on a transfer price for the component. Corporate management has never established a transfer price because interdivisional transactions have never occurred. The following suggestions have been made for the transfer price:

- regular selling price,
- regular selling price less variable selling and distribution expenses,
- standard manufacturing cost plus 15 percent, or
- standard variable manufacturing cost plus 20 percent.

a. Compute each of the suggested transfer prices.
b. Discuss the effect each of the transfer prices might have on the Andalusia Division management's attitude toward intracompany business.
c. Is the negotiation of a price between the Hazlett and Andalusia Divisions a satisfactory method to solve the transfer price problem? Explain your answer.
d. Should the corporate management of Southeast Products Inc. become involved in this transfer controversy? Explain your answer.

(CMA adapted)

65. *(Effect of service department allocations on reporting and evaluation)* Shiell Corporation is a diversified manufacturing company with corporate headquarters in Tampa, Florida. The three operating divisions are the Kennedy Division, the Plastic Products Division, and the Outerspace Products Division. Much of the manufacturing activity of the Kennedy Division is related to work performed for the government space program under negotiated contracts.

Shiell Corporation headquarters provides general administrative support and computer services to each of the three operating divisions. The computer services are provided through a computer time-sharing arrangement. The central processing unit (CPU) is located in Tampa, and the divisions have remote terminals that are connected to the CPU by telephone lines. One standard from the Cost Accounting Standards Board provides that the cost of general administration may be allocated to negotiated defense contracts. Further, the standards provide that, in situations in which computer services are provided by corporate headquarters, the actual costs (fixed and variable) of operating the computer department may be allocated to the defense division based on a reasonable measure of computer usage.

The general managers of the three divisions are evaluated based on the before-tax performance of each division. The November 2000 performance evaluation reports (in millions of dollars) for each division are presented below:

	Kennedy Division	Plastics Products Division	Outerspace Products Division
Sales	$23	$15	$55
Cost of goods sold	(13)	(7)	(38)
Gross profit	$10	$ 8	$17
Selling and administrative:			
Division selling and administration costs	$ 5	$ 5	$ 8
Corporate general administration costs	1	—	—
Corporate computing	1	—	—
Total	$ 7	$ 5	$ 8
Profit before taxes	$ 3	$ 3	$ 9

Without a charge for computing services, the operating divisions may not make the most cost-effective use of the Computer Systems Department's resources. Outline and discuss a method for charging the operating divisions for use of computer services that would promote cost consciousness by the operating divisions and operating efficiency by the Computer Systems Department.

(CMA adapted)

REALITY CHECK

66. *(Selection of type of transfer pricing)* A multiple-division company is considering the effectiveness of its transfer pricing policies. One of the items under consideration is whether the transfer price should be based on variable production cost, absorption production cost, or external market price. Describe the circumstances in which each of these transfer prices would be most appropriate.

67. *(Transfer pricing and performance measurement)* Appleby Industries consists of eight divisions that are evaluated as profit centers. All transfers between divisions are made at market price. Precision Regulator is a division of Appleby that sells approximately 20 percent of its output externally. The remaining 80 percent of the output from Precision Regulator is transferred to other divisions within Appleby. No other division of Appleby Industries transfers internally more than 10 percent of its output.

Based on any profit-based measure of performance, Precision Regulator is the leading division within Appleby Industries. Other divisional managers within Appleby always find that their performance is compared to that of Precision Regulator. These managers argue that the transfer pricing situation gives Precision Regulator a competitive advantage.

a. What factors may contribute to any advantage that the Precision Regulator Division might have over the other divisions?

b. What alternative transfer price or performance measure might be more appropriate in this situation?

68. *(Multinational company transfers)* The Arizona Instruments Company (AIC) is considering establishing a division in Ireland to manufacture integrated circuits. Some of the circuits will be shipped to the United States and incorporated into the firm's line of computers. The remaining output from the Ireland division will be sold in the European Union. AIC plans to operate the Ireland division as a profit center. Compose a report describing some of the problems related to transfer pricing that AIC must consider in establishing the Ireland division.

69. A large American corporation participates in a highly competitive industry. To meet the competition and achieve profit goals, the company has chosen the decentralized form of organization. Each manager of a decentralized center is measured on the basis of profit contribution, market penetration, and return on investment. Failure to meet the objectives established by corporate management for these measures is not accepted and usually results in demotion or dismissal of a center manager.

An anonymous survey of managers in the company revealed that the managers felt pressure to compromise their personal ethical standards to achieve the corporate objectives. For example, certain plant locations felt pressure to reduce quality control to a level that could not ensure that all unsafe products would be rejected. Also, sales personnel were encouraged to use questionable sales tactics to obtain orders, including offering gifts and other incentives to purchasing agents.

The chief executive officer is disturbed by the survey findings. In her opinion, the company cannot condone such behavior. She concludes that the company should do something about this problem.

a. Discuss what might be the causes for the ethical problems described.

b. Outline a program that could be instituted by the company to help reduce the pressures on managers to compromise personal ethical standards in their work. *(CMA adapted)*

70. Search the Internet to identify three decentralized companies. Based on the information you find on each, either determine directly or infer from the information given the types of responsibility centers used by these companies. Further, determine or speculate about whether the companies use transfer prices or allocation of costs for intracompany transfers of services. Prepare a report on your findings and inferences. In cases for which you had to infer, explain what information or reasoning led you to that inference.