

Chapter

11

Financial Control

After completing this chapter, you will be able to:

1. Understand and be able to explain the nature and scope of financial control and its important roles both inside and outside organizations.
2. Understand why organizations decentralize decision-making responsibility, the control and motivation issues that arise from this choice, and how organizations approach these control and motivation issues.
3. Understand why organizations use responsibility centers, the type of responsibility center that is appropriate in a given setting, the limitations of the responsibility center approach to evaluating performance, and what performance measures senior management uses to evaluate responsibility center performance.
4. Be able to design and interpret appropriate performance measures to evaluate the performance of each type of responsibility center.
5. Understand why organizations use transfer prices and the types of transfer prices that organizations use.
6. Be able to determine and compute the appropriate transfer price in a particular setting.
7. Understand the nature and scope of return on investment and economic value added approaches to evaluating economic performance and be able to compute return on investment and residual income measures.

Adrian's Home Services

Adrian's Home Services (AHS) provides heating, air conditioning, plumbing, and electrical services to residential customers. AHS is very successful because of its outstanding reputation for quality work. In fact, AHS often has to turn work away because demand exceeds the available capacity. Exhibit 11-1 provides a pretax segment report for the most recent year.

Exhibit 11-1

Adrian's Home Services: Pretax Segment Report

	HEATING	AIR CONDITIONING	PLUMBING	ELECTRICAL	UNALLOCATED	CORPORATE TOTAL
Sales	\$1,546,000	\$2,344,670	\$5,340,000	\$3,423,000		\$12,653,670
Cost of goods sold	870,000	1,384,000	3,245,000	2,198,000		7,697,000
Gross margin	\$676,000	\$960,670	\$2,095,000	\$1,225,000		\$4,956,670
Selling, general, and administrative	134,500	456,000	1,324,500	654,000	2,980,000	5,549,000
Income	\$541,500	\$504,670	\$770,500	\$571,000		(\$592,330)
Assets	876,000	958,000	2,176,000	1,127,000	547,000	5,684,000
Shareholders' equity						2,875,000

In view of AHS's outstanding reputation and the heavy demand for its services, Adrian Rose, the primary shareowner and general manager, is unhappy about the business profitability and wonders how it might be improved.

THE ENVIRONMENT OF FINANCIAL CONTROL

What is meant by *financial control*? **Financial control** involves the use of measures based on financial information to assess organization and management performance. The focus of attention could be a product, a product line, an organization department, a division, or the entire organization. Financial control, which focuses on financial results, provides a counterpoint to the Balanced Scorecard view, which links financial results to their presumed drivers. In for-profit organizations, financial control looks at the drivers of profit such as the organization's ability to use its assets effectively and control costs for a given level of sales. In not-for-profit organizations, financial control looks at the organization's ability to use its resources in the most effective way to accomplish its service objectives.

Financial control thus plays an important role in the plan–do–check–act cycle we first discussed in Chapter 1. Financial control summarizes the financial results of operations and compares them to planned results. The purpose is to identify why plans were not achieved and to make the appropriate adjustment.

In Chapter 2 we explored the important role of the Balanced Scorecard as a means to quantify strategy and drive strategy down through the organization's hierarchy. The Balanced Scorecard's cause-and-effect structure reflects management's assessment of what drives success in achieving organizational objectives. In for-profit organizations, success is ultimately measured by generating good financial returns to capital suppliers, using metrics such as return on investment, earnings per share, market share growth, and profit growth.

Because external stakeholders such as investors, stock analysts, and creditors have traditionally relied on financial performance measures to assess an organization's potential, organizations have developed and exploited financial measures to assess performance and target areas for improvement. Recall from the Balanced Scorecard discussion that shortfalls in financial measures signal poor performance but do not identify what has gone wrong. They identify that expectations were not met and that attention, explanation, and possibly even action are needed. For example, falling

profits may reflect falling sales, which in turn may reflect customer dissatisfaction with poor quality, poor service, or high prices. Financial measures will highlight the falling profit and sales but not why—that is the role of the nonfinancial measures discussed in Chapter 2.

Financial control is part of the broader topic of organization control we considered in Chapter 9. Financial control is treated separately in this text because of its widespread use in our market-based economy.

FINANCIAL CONTROL

In Chapter 10 we studied variance analysis, which is one of the oldest and most widely used forms of financial control. This chapter focuses on broader issues in financial control, including the evaluation of organization units and of the entire organization.

When managers apply financial control tools to evaluate organization units—for example, to evaluate the profitability of a product or product line—the resulting information is usually used internally and is not distributed to outsiders. Managers, particularly at General Motors during the 1920s, developed this form of **internal financial control** to support decentralizing of decision-making information in large organizations.

Outside analysts developed financial control tools to assess various aspects of organization performance, such as solvency, efficiency, and profitability. Because financial measures reflect how outsiders view the organization, these external financial control tools are relevant for management use and evaluation.

THE MOTIVATION FOR DECENTRALIZATION

Decentralization, the process of delegating decision-making authority to frontline decision makers, evolved for two reasons. First, as organizations became larger, it became increasingly difficult for a central decision maker, or core of decision makers, to make all organizational decisions. Second, as organizations became larger and more geographically dispersed, it became increasingly difficult to gather and transmit information about the organization's environment for evaluation and processing at the organization's center. Therefore, decentralization was a natural development reflecting the need for large organizations to respond more quickly and effectively to important changes in their environment. In turn, decentralization was the phenomenon that prompted the development and use of internal financial control in organizations in the early 1900s.

Because of the difficulty involved in gathering and transmitting information quickly to a central decision maker, most highly centralized organizations are unable to respond effectively or quickly to their environments; therefore, centralization is best suited to organizations that are well adapted to stable environments. Observers of industry practice used to cite power, gas, and telephone utilities and companies such as couriers, fast-food operations, financial institutions, and natural resource industries as examples of organizations facing stable environments. A stable environment meant there were no major information differences between the corporate headquarters and the employees who were responsible for dealing with customers or running the operations that made the organization's goods and services and no changes in the organization's environment that required the organization to adapt. Therefore, there was no need for a rapid response to a changing environment or for

Organizations often delegate important customer service functions to frontline employees. These employees should be well trained so that they can make appropriate choices when dealing with customer complaints.

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delegation of decision making to local managers, and organizations could develop standard operating procedures for its well-understood environment that it expected employees to implement.

In such organizations, technology and customer requirements were well understood, and the product line consisted mostly of commodity products for which the most important attributes were price and quality. When price is critical, so is cost control. To accomplish this, organizations often develop standard operating procedures to ensure that (1) they are using the most efficient technologies and practices to promote both low cost and consistent quality, and (2) there are no deviations from the preferred way of doing things.

For example, McDonald's Corporation has honed its use of standard operating procedures almost to a science. Its kitchen layout, product design, form of raw materials, and prescribed operating procedures are all designed to keep cost low and consistency and quality high. McDonald's is not looking for a chef who wants to be creative either in preparing food or in introducing new menu items. Rather, it wants

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Standard Operating Procedures at Mercedes-Benz USA

When Mercedes-Benz built its SUV plant in Tuscaloosa, Alabama, it implemented a manufacturing system that included standard methods and procedures (SMPs). These SMPs specified the exact method in minute detail

that workers had to use to complete every task. No variations were permitted—effectively preventing workers from exercising any individual initiative.

someone who can follow standardized procedures to promote consistent quality and low costs. In response to today's increasing competitive pressures and the opening of former monopoly markets to competition, many organizations—even utilities, couriers, and financial institutions that were once thought to face stable environments—are changing the way they are organized and the way they do business. This is necessary because they must be able to adapt quickly in a world where technology, customer tastes, and competitors' strategies are constantly changing. McDonald's is a good example—in the face of increasing health consciousness, during 2003–2005, it experienced franchisee losses and store closures for the first time in its history and had to undertake important changes in its menu, including introducing restaurants that stayed open 24 hours a day.

In the past, banks developed rigid and authoritarian management systems to protect assets and meet regulatory requirements. Although these systems have helped to meet such goals, in many cases they have not served customers well. Providing high-quality customer service means remaining open in the evenings, installing automated teller machines to provide 24-hour banking services, offering online or web-based banking that customers can access via telephone or personal computer, offering new products and services such as credit and debit cards, and responding more quickly, even immediately, to customer requests for car loans, lines of credit, and mortgages.

Being adaptive usually requires that the organization's senior management delegate or decentralize decision-making responsibility to more people in the organization. Decentralization allows motivated and well-trained organization members to identify changing customer requirements quickly and gives frontline employees the authority and responsibility to develop plans to react to these changes.

We can identify many degrees of decentralization. Some organizations restrict most decisions to senior and middle management. Others delegate important decisions about how to make products and serve customers to the employees who perform these activities. The amount of decentralization reflects the organization's trust in its employees, the employees' level of skill and training, the increased risk from delegating decision making, and the employees' ability to make the right choices. It also reflects the organization's need to have people on the front lines who can make good decisions quickly.

To summarize, in decentralization, control moves from task control—where people are told what to do—to results control—where people are told to use their skills, knowledge, and creativity to achieve organization objectives. In financial control, those results are measured in financial terms. For example, a production supervisor would be asked to reduce costs by improving the manufacturing processes.

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Evaluating Performance at McDonald's Corporation Restaurants

To promote consistency, McDonald's Corporation develops a SQC (service, quality, and cleanliness) score for each store. Franchises can be terminated if a store fails to maintain an agreed-on SQC performance level. The SQC criteria used to evaluate the store consider performance

levels and compliance with standard operating procedures. These criteria include how the customer is greeted, how much time the customer spends in line and at the counter, property cleanliness, and whether products are prepared in the prescribed manner.

RESPONSIBILITY CENTERS AND EVALUATING UNIT PERFORMANCE

A **responsibility center** is an organization unit for which a manager is held accountable. Examples of responsibility centers include a hotel in a chain of hotels, a work station in a production line that makes computer control units, a department in a university or college, the data processing group in a government office that handles claims for payment from suppliers, a claims processing unit in an insurance company, and a shipping department in a mail-order business.

A responsibility center is like a small business, and its manager is asked to run that small business to achieve the objectives of the larger organization. The manager and supervisor establish goals for the responsibility center. Goals provide employees with focus and should therefore be specific and measurable. They also should promote both the long-term interests of the larger organization and the coordination of each responsibility center's activities with the efforts of all the others. The following section explores how this coordination is accomplished for goals that are financial.

Coordinating Responsibility Centers

For an organization to be successful, the activities of its responsibility units must be coordinated. Suppose we divided the operations in a fast-food restaurant into three groups: order taking, order preparation, and order delivery. Imagine the chaos and customer ill will that would be created if the communication links between any two of these organization groups were severed. Unfortunately, in large organizations, sales, manufacturing, and customer service activities are often disjointed, resulting in

Corporate management will delegate many important operating decisions to the manager of this property and, in turn, will hold the manager accountable for achieving specified profit and customer service objectives.

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diminished performance. This need for coordination explains the interest that organizations have in enterprise resource planning systems that focus not only on integrating the organization's activities but also on linking the organization with its suppliers and customers.

Mail and package couriers, such as Federal Express, establish local stations or collection points (called terminals) from which they dispatch trucks to pick up and deliver shipments. Shipments that are bound for other terminals are sent to the Federal Express hub in Memphis, Tennessee, where they are sorted and redirected. The formula for success in the courier business is simple and has two key elements: (1) meeting the service commitment to the customer (i.e., the shipper), politely, on time, and without damage, and (2) controlling costs. The only way to achieve success is to ensure that all pieces of the system work together effectively and to achieve these two critical elements of performance.

Suppose the management of a courier company decided that each terminal is to be treated as a responsibility center. How should the company measure the performance of each terminal, its managers, and its employees?

First, the company can measure efficiency in each terminal. To focus on efficiency, it may measure the number of parcels picked up, sorted, or delivered per route, per employee, per vehicle, per hour, or per shift. To focus on efficiency and customer satisfaction, it may count—for productivity purposes—only those shipments that meet customer requirements, for example, on-time pickup and on-time delivery of an undamaged parcel to the right address.

Second, the organization's ability to meet its service commitment to customers in such a highly integrated operation as a courier business reflects how well the pieces fit together. The company should measure how much each group contributes to the organization's ability to meet its commitments to customers. The following are the two important elements of terminal–hub interaction for a courier:

1. The proportion of the time that the terminal meets its deadlines, that is, whether the trucks and containers are packed and ready to leave for the hub when they are required to leave (this is often called a *percent correct measure*).
2. When terminals are required to sort shipments, the number of shipments sorted to the wrong destination or that travel by the wrong mode (often called a *percent defect measure*).

Third, the company must assess its service to the customer at a more detailed level. For example, it might measure the following:

1. The number of complaints (or percentage of shipments with complaints) the terminal operations group receives.
2. The average time taken by the operations group to respond to complaints.

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The High Cost of Coordination

Many organizations invest huge amounts of money in enterprise resource planning (ERP) systems, which are complex and sophisticated computer systems that coordinate the activities of organization units. The goal of ERP systems is to smooth the flow of an order through the credit approval, scheduling, production, and shipping processes so that the customer is provided

with a high level of service. Some analysts have put the average cost of an ERP system at about \$15 million with one system reputedly costing \$400 million. And not all ERP implementations are successful. In 2001, Sobey's, a Canadian grocery chain, reported a \$60 million write-off of a failed ERP system.

3. The number of complaints of poor or impolite service received by the company's customer service line.
4. Customer satisfaction.

In general, controlling the activities of responsibility centers requires measuring the nonfinancial elements of performance, such as quality and service, that create financial results in the long run. The key message is that properly chosen nonfinancial measures anticipate and explain financial results. For example, increased employee training that improves operating performance in this period should improve customer satisfaction and therefore revenues and profits in subsequent periods. Focusing on nonfinancial measures of performance such as innovation and employee morale motivates managers to avoid sacrificing long-run performance for short-run performance gains. For example, if we focus only on short-run financial performance, a manager might be motivated to reduce spending on research and development, investment in equipment to improve product quality and customer service, and employee training—thereby impairing long-run performance potential. Therefore, we must always be careful to use financial results as aggregate measures of performance and rely on nonfinancial results to identify the causes or drivers of the financial results.

Responsibility Centers and Financial Control

Organizations use financial control to provide a summary measure of how well their systems of operations control are working. When organizations use a single index to provide a broad assessment of operations, they frequently use a financial number, such as revenue, cost, profit, or return on investment, because these are the measures that their shareholders use to evaluate the company's overall performance.

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Nonfinancial Performance Measures at Federal Express: The Service Quality Indicator

Federal Express has developed a measure called its service quality indicator (SQI). The SQI is based on what Federal Express believes are nine key customer requirements. Each of these nine requirements is given

a weight indicating the perceived importance of a failure of this requirement to the customer. The nine requirements and their respective weights are:

SERVICE FAILURE	PENALTY AMOUNT
Lost package	50
Damaged package	30
Complaint unresolved	10
Wrong day, late	10
Invoice adjustment required	3
Traces	3
Late pickup stop	3
Missing proof of delivery	1
Right day, late delivery	1

Federal Express tabulates these scores weekly and distributes them throughout the organization.

Rewards to senior managers are based on these scores.

Responsibility Center Types

The accounting report prepared for a responsibility center should reflect the degree to which the responsibility center manager controls revenue, cost, profit, or return on investment. When preparing accounting summaries, accountants usually classify responsibility centers into one of four types:

1. Cost centers.
2. Revenue centers.
3. Profit centers.
4. Investment centers.

Cost Centers

Cost centers are responsibility centers in which employees control costs but do not control revenues or investment levels. Virtually every processing group in service operations (such as the cleaning plant in a dry-cleaning business, front-desk operations in a hotel, or the check-clearing department in a bank) or in manufacturing operations (such as the lumber-sawing department in a sawmill or the steelmaking department in a steel mill) is a candidate to be treated as a cost center.

Organizations evaluate the performance of cost center employees by comparing the center's actual costs with budgeted cost levels for the amount and type of work done. Therefore, cost standards and variances figure prominently in cost center reports. Moreover, because organizations often use standards and variances to assess performance, the process of setting standards and interpreting variances has profound behavioral effects on employees, particularly relating to misrepresenting performance potential and performance results.



This machine operator will likely have been given cost, scheduling, and quality targets to achieve. Achieving these targets are the important contributions that this employee makes to the organization's success.

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Other Cost Control Approaches

When an organization unit's mix of products and production levels is constant, it is possible to compare current cost levels with those in previous periods to promote an environment of continuous cost improvement. Interperiod cost comparisons can be misleading when the production mix or the production level is changing. Under such conditions, cost levels between periods are not comparable; however, when circumstances warrant, organizations are often able to plot cost levels on a graph and look for downward cost trends, which imply improved efficiencies in the processes that are creating costs.

Addressing Other Issues in Cost Center Control

Many organizations make the mistake of evaluating a cost center solely on its ability to control and reduce costs. Quality, response time, the ability to meet production schedules, employee motivation, employee safety, and respect for the organization's ethical and environmental commitments are other critical measures organizations often use to assess cost center performance. If management evaluates cost center performance only on the center's ability to control costs, its members may ignore unmeasured attributes of performance such as quality and customer service. Therefore, organizations should never evaluate cost centers using only the center's cost performance.

Revenue Centers

Revenue centers are responsibility centers whose members control revenues but do not control either the manufacturing or the acquisition cost of the product or service they sell or the level of investment made in the responsibility center. Examples are the appliance department in a department store, a regional sales office of a national or multinational corporation, and a restaurant in a large chain of restaurants.

Some revenue centers control price, the mix of stock on hand, and promotional activities. In such centers, revenue will measure most of their value-added activities and will suggest in a broad way how well they carried out their various activities.

Consider the activities of a gasoline and automobile service station owned by a large oil refiner. The service center manager has no control over the cost of items such as fuel, depreciation on the building, power and heating, supplies, and salary rates, but the manager has a minor influence, through scheduling and staffing decisions, on total labor costs. Levels of gasoline sales and repair activities determine all other costs. The service manager also has no control over the wages paid to employees: The head office staff controls them, and the central marketing staff controls all product pricing and promotional activities. The major controllable item in this service station is customer service, which distinguishes its gasoline sales and repair services from those offered in similar outlets and helps to determine the service station's sales levels.

The revenue center approach evaluates the responsibility center based only on the revenues it generates. Most revenue centers incur sales and marketing costs, however, and have varying degrees of control over those costs. Therefore, it is common in such situations to deduct the responsibility center's traceable costs, such as salaries, advertising costs, and selling costs, from its sales revenue to compute the center's net revenue.

Critics of the revenue center approach argue that basing performance evaluation on revenues can create undesirable consequences. For example, sales staff rewarded solely on sales (1) may promote or agitate for a wide product line that in

turn may create excessive inventory management costs, or (2) may offer excessive customized services. In general, focusing only on revenues causes organization members to increase their use of activities that create costs to promote higher revenue levels.

Profit Centers

Profit centers are responsibility centers in which managers and other employees control both the revenues and the costs of the products or services they deliver. A profit center is like an independent business, except that senior management, not the responsibility center manager, controls the level of investment in the responsibility center. For example, if the manager of one outlet in a chain of discount stores has responsibility for pricing, product selection, purchasing, and promotion but not for the level of investment in the store, the outlet meets the conditions to be evaluated as a profit center.

Most individual units of chain operations, whether they are stores, motels, or restaurants, are treated as profit centers. It is doubtful, however, that a unit of a corporate-owned fast-food restaurant, such as Burger King, or a corporate-owned hotel, such as Holiday Inn, meets the conditions to be treated as a profit center because the head office makes most purchasing, operating, pricing, and promotional decisions. These units are sufficiently large, however, such that costs can vary because of differences in controlling labor costs, food waste, and the schedule for the facility's hours. Revenues also can shift significantly, depending on how well staff manages the property. Therefore, although these organizations do not seem to be candidates to be treated as profit centers, local discretion often affects revenues and costs enough so that they can be.

Numerous organizations evaluate units as profit centers even though the corporate office controls many facets of their operations. The profit reported by these units is a broad index of performance that reflects both corporate and local decisions. If unit performance is poor, it may reflect (1) an unfavorable condition that no one in the organization can control, (2) poor corporate decisions, or (3) poor local decisions. For these reasons, organizations should not rely only on profit center financial results for performance evaluations. Instead, detailed performance evaluations should include quality, material use (yield), labor use (yield), and service measures that the local units can control.

Investment Centers

Investment centers are responsibility centers in which the managers and other employees control revenues, costs, and the level of investment. The investment center is like an independent business. Perhaps the best example of an organization that uses investment centers is General Electric.

Because these GE units are so diverse, senior management uses return on investment to evaluate each of these business units and their subunits. For example GE Infrastructure includes the subbusinesses of Energy, Technology Infrastructure, GE Capital, Home & Business Solutions, and NBC Universal, while NBC Universal includes the subunit businesses of Network, Film, Television Stations, Entertainment Cable, Television Production, Sports/Olympic Games, and Theme Parks. These are truly diverse portfolios of businesses that must be evaluated in terms of the return on investment each provides.

Exhibit 11-2 summarizes the characteristics of the various types of responsibility centers.

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Investment Centers at General Electric in 2010

GE is made up of five businesses, each of which includes a number of units aligned for growth. Here is an organization chart showing those businesses and their subbusinesses.

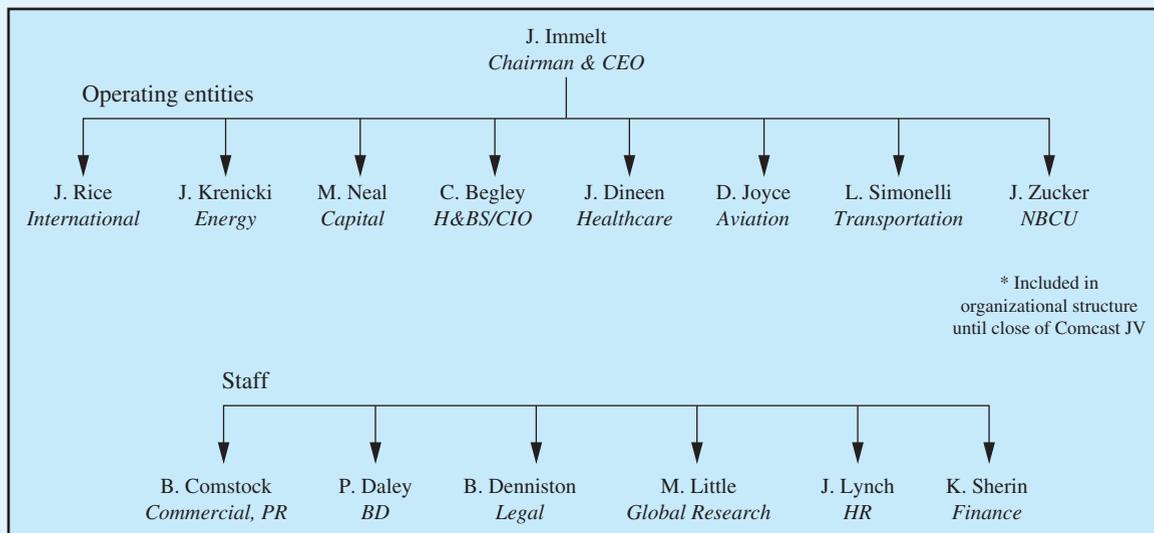


Exhibit 11-2

Responsibility Center Summary

FACTORS	TYPE OF RESPONSIBILITY CENTER			
	COST CENTER	REVENUE CENTER	PROFIT CENTER	INVESTMENT CENTER
Controlled by center management	Costs	Revenues	Costs, revenues	Cost, revenues, and significant control over investment
Not controlled by center management	Revenues, investment in inventory, and fixed assets	Costs, investment in inventory, and fixed assets	Investment in inventory and fixed assets	
Measured by the accounting system	Costs relative to a budget	Revenue relative to a budget	Profit relative to a budget	Return on investment relative to a budget
Not measured by the accounting system	Performance on critical success factors other than cost	Performance on critical success factors other than revenue	Performance on critical success factors other than profit	Performance on critical success factors other than return on investment

Evaluating Responsibility Centers

Using the Controllability Principle to Evaluate Responsibility Centers

Underlying the accounting classifications of responsibility centers is the concept of controllability. The **controllability principle** states that the manager of a responsibility center should be assigned responsibility only for the revenues, costs, or investments responsibility center personnel control. Revenues, costs, and investments that people outside the responsibility center control should be excluded from the assessment of that center's performance. For example, the manager of a production line in a factory should be evaluated based on labor and machine hours used and not based on labor cost and machine cost because labor wage rates and machine costs were determined elsewhere in the organization. Although the controllability principle sounds appealing and fair, it can be difficult, often misleading, and undesirable to apply in practice.

A significant problem in applying the controllability principle is that in most organizations many revenues and costs are jointly earned or incurred. Consider the operations of an integrated fishing products company that is divided into three responsibility centers: harvesting, processing, and marketing and distribution. The harvesting group operates ships that go out to sea to catch various species of fish. The ships return to one of the company's processing plants to unload their catches. The plants process the fish into salable products. The marketing and distribution group sells products to customers.

As in most organizations, the activities that create the final product in this company are sequential and highly interdependent. The product must be of the right species, quality, and cost to be acceptable to the customer. The performance of the harvesting, processing, and marketing and distribution groups jointly determine the organization's success.

Evaluating the individual performance of harvesting, processing, and marketing and distribution requires the firm to consider many facets of performance. For example, it is possible to evaluate harvesting's operations by measuring its ability to do the following:

1. Catch the entire quota allowed.
2. Minimize the waste and damage done to the fish caught.
3. Minimize equipment failures.
4. Control the costs associated with operating the ships.

Appropriate measures can also be developed for processing, and the evaluation of marketing and distribution may be based on their ability to meet delivery schedules and improve market share.

As part of the performance evaluation process, the organization may want to prepare accounting summaries of the performance of harvesting, processing, and marketing and distribution to support some system of financial control. The management accountant undertaking this task immediately confronts the dilemma of how to account for highly interrelated organization centers as if they were individual businesses. For example, costs of harvesting are easy to determine, but what are the harvesting revenues? Harvesting does not control sales or prices—its role is to catch the fish, maintain raw material and product quality, and meet the schedules determined jointly with processing and marketing and distribution.

If the company evaluates harvesting as a cost center, what about indirect organization costs, such as corporate administration, that reflect overhead resources used by the cost center? What about other important performance facets, such as maintaining quality, catching the full quota of fish, and delivering the required species of fish, at the required time, to the processing group? Should harvesting be asked to bear some of the

costs of head office groups, such as personnel, planning, and administration, whose services it uses? If so, how should its share of the costs of those services be determined?

We could probably conclude that processing should be evaluated as a cost center, but what about the marketing and distribution group, which, through its general marketing efforts, likely has the greatest impact on sales? What costs does this group control? It does not control harvesting and processing costs. The only costs controlled by marketing and distribution are marketing and distribution costs, which in most integrated fishing products companies are less than 10% of total costs. The harvesting group, through its ability to catch fish and maintain their quality, and the processing group, through its ability to produce quality products, are also influential in determining the organization's sales level. However, some people do not agree that the controllability principle is the best way to view performance evaluation.

Using Performance Measures to Influence versus Evaluate Decisions

Some people argue that controllability is not a valid criterion to use in selecting a performance measure. Rather, they suggest that the choice of the performance measure should influence decision-making behavior.

Consider a dairy that faced the problem of developing performance standards in an environment of continuously rising costs. Because the costs of raw materials, which were between 60% and 90% of the final costs of the various products, were market determined and, therefore, thought to be beyond the control of the various product managers, managers argued that their evaluation should depend on their ability to control the quantity of raw materials used rather than the cost.

The dairy's senior management announced, however, that it planned to evaluate managers on their ability to control total costs. The managers quickly discovered that one way to control raw materials costs was to make judicious use of long-term fixed price acquisition contracts for raw materials. These contracts soon led to declining raw materials costs. Moreover, the company could project product costs several quarters into the future, thereby achieving lower costs and stability in planning and product pricing.

This example shows that managers, even when they cannot control costs entirely, can take steps to influence final product costs. When more costs or even revenues are included in performance measures, managers are more motivated to find actions that can influence incurred costs or generated revenues.

Using Segment Margin Reports

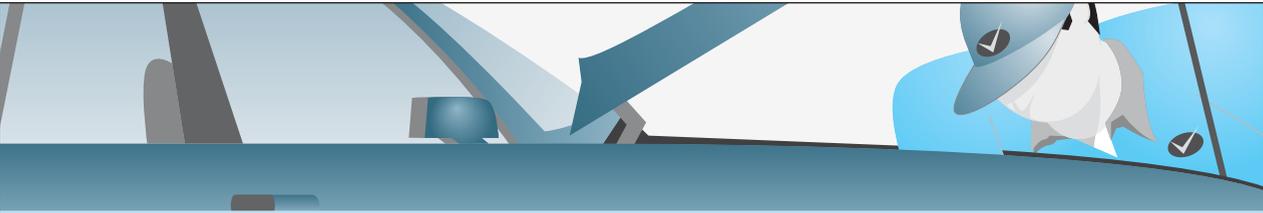
Many problems can occur when organizations treat responsibility centers as profit centers. These problems concern identifying responsibility for the control of sales and costs. In particular, this means deciding how to assign the responsibility for jointly earned revenues and jointly incurred costs. Therefore, as we now consider the form of the accounting reports that accountants prepare for responsibility centers, remember the assumptions and limitations that underlie these reports.

Despite the problems of responsibility center accounting, the profit measure is so comprehensive and pervasive that organizations prefer to treat many of their organization units as profit centers. Because most organizations are integrated operations, the first problem that designers of profit center accounting systems must confront is handling the interactions among the various profit center units.

To address this issue, consider the activities at Earl's Motors, a full-service automobile dealership organized into five responsibility centers: new car sales, used car sales, body shop, service department, and leasing. Each responsibility center has a manager responsible for the profit reported for that unit. The responsibility center managers report to Earl, using the quarterly reports format shown in Exhibit 11-3.

Exhibit 11-3

Earl's Motors: Quarterly Segment Margin Report for the Period of July 1 to September, 2011



Item	New Car Sales	Used Car Sales	Body Shop	Service Department	Lease Sales	Total
Revenue	\$976,350	\$1,235,570	\$445,280	\$685,210	\$635,240	\$3,977,650
Variable costs	764,790	954,850	235,450	427,400	517,360	2,899,850
Contribution margin	\$211,560	\$280,720	\$209,830	\$257,810	\$117,880	\$1,077,800
Other costs	75,190	58,970	126,480	185,280	46,830	492,750
Segment margin	\$136,370	\$221,750	\$83,350	\$72,530	\$71,050	\$585,050
Allocated avoidable costs	69,870	74,650	64,540	65,290	22,490	296,840
Income	\$66,500	\$147,100	\$18,810	\$7,240	\$48,560	\$288,210
Unallocated costs						325,000
Dealership profit						(\$36,790)

Exhibit 11-3 illustrates a common form of the **segment margin report** for an organization that is divided into responsibility centers. One column is devoted to each profit center. The revenue attributed to each profit center is the first entry in each column. Variable costs are deducted from revenue to determine the contribution margin, which is the contribution made by operations to cover revenue center costs that are not proportional to volume (see “Other costs” in Exhibit 11-3). Examples of these costs are equipment and buildings that the segment uses exclusively.

Next, the segment’s fixed costs are deducted from its contribution margin to determine that unit’s segment margin, which is the performance measure for each responsibility center. The unit’s segment margin measures its controllable contribution to the organization’s profit and other indirect costs. Allocated avoidable costs are the organization’s administrative costs, such as personnel-related costs and committed costs for facilities. The underlying assumption is that these corporate-level costs can be avoided if the unit is eliminated and the organization has time to adjust its capacity levels by selling excess facilities or by reducing the number of administrative staff. Allocated avoidable costs are deducted from the unit’s segment margin to compute its income. Finally, the organization’s unallocated costs (sometimes called *shutdown costs*), which represent the administrative and overhead costs incurred regardless of the scale of operations, are deducted from the total of the five profit center incomes to arrive at the dealership’s profit.

Evaluating the Segment Margin Report

What can we learn from the segment margin report for Earl’s Motors? First, we know that conventional accrual accounting reports a loss of \$36,790 for this quarter. This loss may signal a long-term problem, or it may have been expected. Perhaps this quarter is a traditionally slow quarter, and operations in the year’s other three quarters make up the deficiency. Perhaps there is a disproportionate amount of committed costs incurred in this quarter, and they will be lower in subsequent quarters.

IN PRACTICE

Financial Statement Business Segment Reporting

Many countries have external reporting standards that require organizations to report the financial results for important business segments. Here is part of Honda Motor Co. Ltd.'s segment report that appeared in its

financial statements for the year ended March 31, 2010. The business segment information has been prepared in accordance with the Ministerial Ordinance under the Securities and Exchange Law of Japan.

	YEN (MILLIONS)						
	MOTORCYCLE BUSINESS	AUTOMOBILE BUSINESS	FINANCIAL SERVICES BUSINESS	POWER PRODUCT AND OTHER BUSINESSES	SEGMENT TOTAL	RECONCILING ITEMS	CONSOLIDATED
Net sales and other operating revenue:							
External customers	¥1,558,696	¥9,489,391	¥533,553	¥421,194	¥12,002,834	¥ —	¥12,002,834
Intersegment	—	—	15,499	21,571	37,070	(37,070)	—
Total	<u>1,558,696</u>	<u>9,489,391</u>	<u>549,052</u>	<u>442,765</u>	<u>12,039,904</u>	<u>(37,070)</u>	<u>12,002,834</u>
Cost of sales, SG&A and R&D expenses	<u>1,407,409</u>	<u>8,827,726</u>	<u>431,254</u>	<u>420,406</u>	<u>11,086,795</u>	<u>(37,070)</u>	<u>11,049,725</u>
Segment income	151,287	661,665	117,798	22,359	953,109	—	953,109

What Do Segment Margin Statements Tell the Reader?

As we look at the statements for the individual responsibility centers at Earl's Motors, we can see that each showed a positive income. The contribution margin for each responsibility center is the value added by the manufacturing or service-creating process before the costs that are not proportional to volume.

A unit's contribution margin represents the immediate negative effect on corporate income if the unit is shut down. The unit's segment margin is an estimate of the long-term effect of the responsibility center's shutdown on the organization after the fixed capacity used by the unit is either redeployed or sold off. The unit's income is the long-term effect on corporate income after corporate-level fixed capacity is allowed to adjust. For example, if the lease sales operation is discontinued, the immediate effect is to reduce the profit at Earl's Motors by \$117,880. After some period of time, however, perhaps a year or even several years, when segment-level capacity has been sold off and corporate-level capacity has been allowed to adjust for this loss of activity, the estimated net effect of closing the lease operation would be to reduce corporate profits by \$48,560. The difference between the unit's segment margin and income reflects the effect of adjusting for business-sustaining costs, which are committed in the short run but can be reduced in the long run as the facilities that they reflect are scaled back.

Good or Bad Numbers?

Organizations use different approaches to evaluate whether the segment margin numbers are good or bad. Following are the most popular sources of comparative information:

1. *Past performance*—Is performance this period reasonable, given past experience?
2. *Comparable organizations*—How does performance compare with similar organizations?

Evaluations include comparisons of absolute amounts, such as cost levels and revenue levels, and relative amounts, such as each item's percentage of revenue. For example, in evaluating the performance of Earl's Motors, the manager of the service department may note that variable costs are about 62% of revenue. This may compare favorably with past relationships of variable costs to revenue. By joining an industry group that provides comparative information for dealerships in similar-size communities, however, Earl's Motors may find that, on average, variable costs in automobile dealerships are only 58% of revenue. This suggests that Earl's Motors should investigate why its variable costs are higher than the industry average. Management could make similar evaluations for all cost items in this report.

Interpreting Segment Margin Reports with Caution

The segment margin statement may seem to be a straightforward and interesting approach to financial control. Segment margin statements should be interpreted carefully however, because they reflect many assumptions that disguise underlying issues.

First, like all approaches to financial control, segment margins present an aggregated summary of each organization unit's past performance. It is important to consider other facets relating to critical success factors, such as quality and service, that will affect future profits. For example, companies may use customer surveys to establish a customer satisfaction index for each department, or they might compute quality statistics that report errors or recall rates for each department.

Second, the segment margin report contains arbitrary numbers because they rely on subjective revenue and cost allocation assumptions over which there can be legitimate disagreement. (Accountants often call these arbitrary numbers *soft numbers*). Each subsequent amount shown down each column becomes less controllable by the responsibility center's manager and is affected more by the assumptions used in allocating costs. Although a unit's segment margin is assumed to be controllable, the manager may have less than complete control over the costs used to compute it, and the manager may have almost no control over the costs allocated to compute the unit's income. In a typical refinery, for example, joint use of facilities creates problems when managers attempt to allocate the costs of expensive processes, such as those of the crude distillation unit, to the outputs that it produces (naphtha, distillate, gas, oil, and residuals) (see Exhibit 11-4).

Third, and perhaps most important, the revenue figures reflect important assumptions and allocations that sometimes can be misleading. These assumptions relate to the transfer pricing issue, which focuses on how the revenues the organization earns are divided among the responsibility centers that contribute to earning those revenues.

Cost Allocations to Support Financial Control

Despite the difficulties of measuring responsibility center performance, many organizations want to develop responsibility center income statements. In effect, although revenue and cost allocation rules are arbitrary, people seem satisfied as long as the ones chosen and put in place appear to be fair and consistently applied. Organizations need to design and present responsibility center income statements so that they isolate the discretionary components included in the calculation of each center's reported income. (Exhibit 11-3 presents one possible format.)

The format shown in Exhibit 11-3 helps to identify what the center controls directly. It shows the revenue and variable costs separately from the other costs in the profit calculation, which are the indirect or joint costs that are allocated. Like the allocation of jointly earned revenues, the allocation of indirect or joint costs can cause considerable distortions and can misdirect decision making.

Exhibit 11-4

The Operation of a Typical Mobil Corporation U.S. Oil Refinery

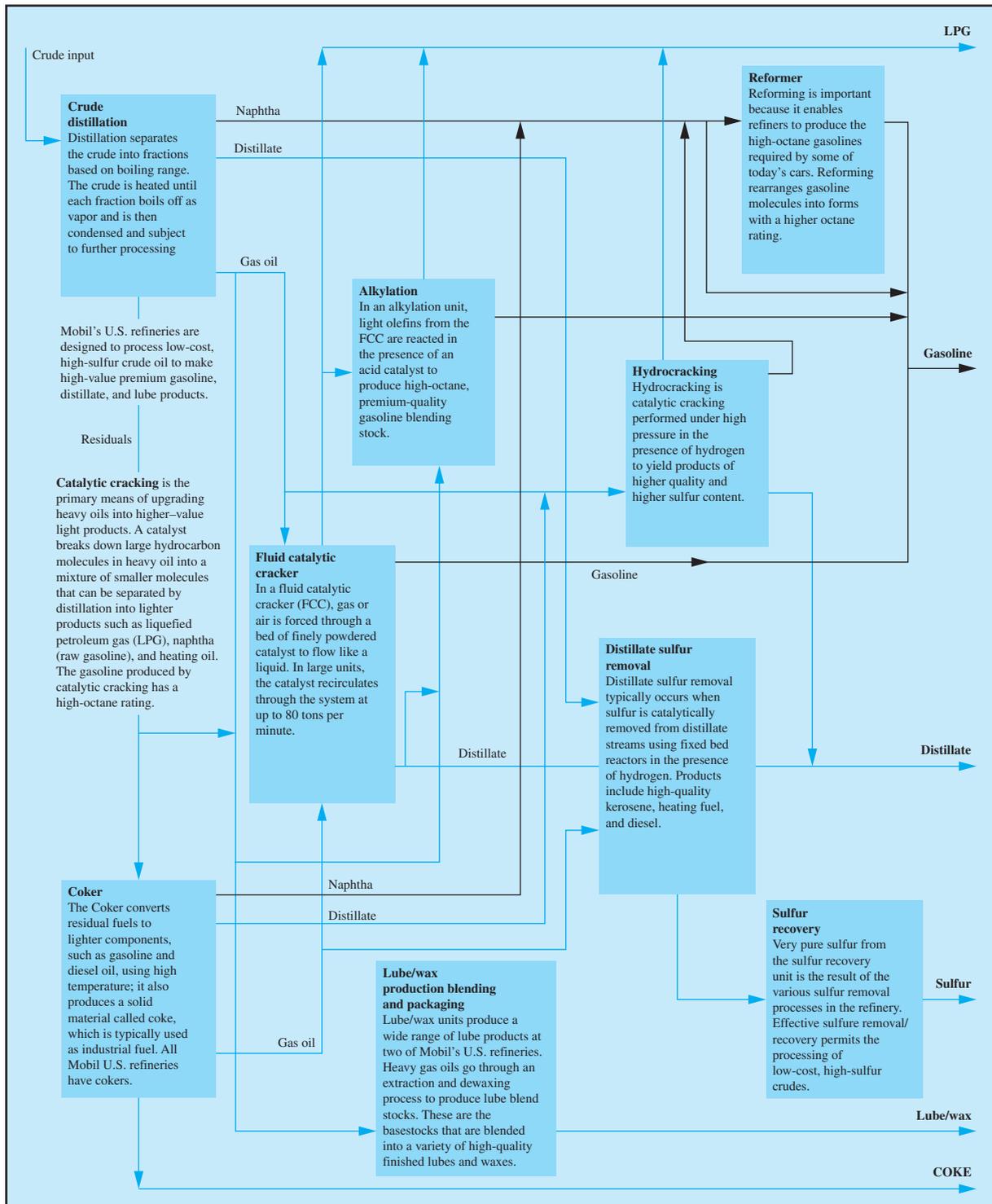


Exhibit 11-5
Shirley's Grill and Bar Responsibility Center Income Statement: Indirect Cost Allocation Based on Benefit

	RESTAURANT	BILLIARDS	BAR	TOTAL
Attributed revenue	\$354,243	\$32,167	\$187,426	\$573,836
Segment costs	<u>243,987</u>	<u>12,965</u>	<u>127,859</u>	<u>384,811</u>
Segment margin	\$110,256	\$19,202	\$59,567	\$189,025
Allocated costs	<u>87,791</u>	<u>15,289</u>	<u>47,430</u>	<u>150,510</u>
Segment income	\$22,465	\$3,913	\$12,137	\$38,515

Consider the operations of Shirley's Grill and Bar, which has three operating units: a restaurant, a billiards room, and a bar (see Exhibit 11-5). The segment margin of \$110,256 reported for the restaurant includes all revenues from selling food, all food costs, all costs of kitchen and serving staff, and all costs of equipment and supplies relating to the kitchen and the seating area. These revenues and costs are directly attributable to the operation of the restaurant. Indirect costs of \$87,791 allocated to the restaurant operations include depreciation and taxes on the building, advertising, and franchise fees.

In general, the restaurant's accountant can choose among many different activity bases to allocate indirect costs, for example, a responsibility center's direct costs, floor space, and number of employees. Suppose Shirley's decides to allocate indirect costs in proportion to the presumed benefit, as measured by segment margin, provided by the capacity reflected by these allocated costs. Many people believe that allocating indirect costs in proportion to benefit is fair. It is a widely used criterion to evaluate an indirect cost allocation method.

The segment incomes reported in Exhibit 11-5 may seem straightforward and reasonable, but as in the case with all results involving indirect cost allocations, the numbers need careful interpretation. Suppose a cost analysis revealed the following:

1. A significant portion of total indirect costs reflects depreciation on the building.
2. Allocating building costs based on floor space is considered to be the most reasonable approach to handling building costs.
3. The amount of floor space occupied by the restaurant, billiards, and bar operations is 40%, 25%, and 35%, respectively.

Allocating costs based on floor space occupied yields the results summarized in Exhibit 11-6. Do these alternative results have any meaning? On one hand, we might argue that the indirect cost allocations based on floor space provide more meaningful

Exhibit 11-6
Shirley's Grill and Bar Responsibility Center Income Statement: Indirect Cost Allocation Based on Floor Space Occupied

	RESTAURANT	BILLIARDS	BAR	TOTAL
Attributed revenue	\$354,243	\$32,167	\$187,426	\$573,836
Segment costs	<u>243,987</u>	<u>12,965</u>	<u>127,859</u>	<u>384,811</u>
Segment margin	\$110,256	\$19,202	\$59,567	\$189,025
Allocated costs	<u>60,204</u>	<u>37,627</u>	<u>52,679</u>	<u>150,510</u>
Segment income	\$50,052	(\$18,425)	\$6,888	\$38,515

economic results because the floor space allocation reflects depreciation—the major component of indirect costs, and its driver, floor space. On the other hand, even if floor space is the cost driver for indirect costs in the short term, the revised results may suggest nothing significant because the allocated depreciation cost is likely to be a committed cost that cannot be avoided in the short term.

The allocations based on floor space may imply that the contribution to profit per square foot of floor space is lowest in the billiard operation and that Shirley's should reduce the scope of the billiard operations in favor of adding more floor space to the bar or restaurant. This conclusion, however, does not necessarily follow. Suppose that without the billiard operation to attract customers, the bar sales would be cut in half. How could the responsibility center income statements reflect this? They probably cannot. With this supplementary information, it would be possible to determine the economic effect of closing the billiards operation. Conventional segment margin statements cannot capture the interactive effects of such actions.

The message here is that responsibility center income statements have to be interpreted with considerable caution and healthy skepticism. They may include arbitrary and questionable revenue and cost allocations and often disguise interrelationships among the responsibility centers.

TRANSFER PRICING

Transfer pricing is the set of rules an organization uses to allocate jointly earned revenue among responsibility centers. For ease in exposition in the rest of this chapter, we will refer to domestic transfer pricing as simply transfer pricing. Transfer pricing rules can be arbitrary when a high degree of interaction exists among the individual responsibility centers. Exhibit 11-7 shows the possible interactions among the responsibility centers at Earl's Motors.

To understand the issues and problems associated with allocating revenues in a simple organization such as Earl's Motors, consider the activities that occur when a customer purchases a new car. The new car department sells the new car and takes in a used car as a trade. Then Earl's must transfer the used car to the used car department, where it may undergo repairs and service to make it ready for sale, or it may be sold externally, as in the wholesale market.

The value placed on the used car transferred between the new and used car departments is critical in determining the profits of both departments. The new car department would like the value assigned to the used car to be as high as possible because that makes its reported revenues higher; the used car department would like the value to be as low as possible because that makes its reported costs lower.

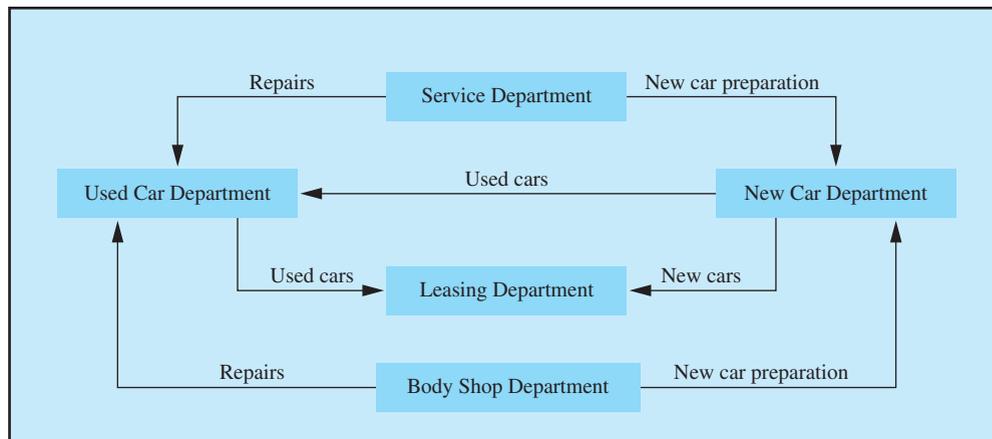
The same considerations apply for any product or service transfer between any two departments in the same organization. The rule that determines the values of the internal transfers will allocate the organization's jointly earned revenues to the individual profit centers and, therefore, will affect each center's reported profit.

Approaches to Transfer Pricing

There are four main approaches to transfer pricing:

1. Market-based transfer prices.
2. Cost-based transfer prices.

Exhibit 11-7
Earl's Motors:
Transfer Pricing
Interrelationships



3. Negotiated transfer prices.
4. Administered transfer prices.

It is worthwhile to recall here that the relevance and purpose of transfer prices depend on whether the transfer price has the intended effect on organization decision makers. Transfer prices can have different forms; however, *the goal of using transfer prices is always to motivate the decision maker to act in the organization's best interests.* Accountants must always remember that the primary purpose of producing management accounting numbers is to motivate desirable behavior regarding managers' planning, decision making, and resource allocation activities, not to create accounting reports that meet some aesthetic accounting criteria.

Market-Based Transfer Prices

If external markets exist for the intermediate (transferred) product or service, **market-based transfer prices** are the most appropriate basis for pricing the transferred good or service between responsibility centers. The market price provides an independent valuation of the transferred product or service and how much each profit center has contributed to the total profit earned by the organization on the transaction. For example, the selling division, instead of transferring the good internally, could sell it externally. Similarly, the buying division could purchase externally rather than receiving the internal transfer.

IN PRACTICE

International Transfer Pricing

Under the EU's current tax regimes, the foreign subsidiary of a multinational corporation must pretend to be a stand-alone company. It must account for everything its parent gives it—parts, money, expertise—as if it were bought and sold at arm's length on the market. But the implicit "transfer prices" between different bits

of a company are arbitrary and manipulable. A 2002 study by Trade Research Institute, a Miami consultancy, found American firms buying plastic buckets for \$973 each and tweezers for \$4,896. By overpaying or overcharging its foreign affiliates, a company can spirit losses and profits from one part of the world to another.

Source: *The Economist*, November 10, 2005.

Unfortunately, such competitive markets with well-defined prices seldom exist. Consider Earl's Motors. Dealers trade used cars in well-organized markets that publish prices. A given used car could be valued using this information. The wholesale value of a used car depends, however, on its mechanical condition, which is only imperfectly observable and at a cost. In addition, the used car's value depends on its visible condition, which is a matter of subjective evaluation. Therefore, it is not clear that it is possible to easily determine an objective wholesale price for a given used car.

Some automobile dealerships avoid this problem by asking the used car manager to value any used car being taken in on trade. This value becomes the transfer price. Because people often react to risk and uncertainty by requiring a margin of safety, the used car manager may discount the perceived value of the used car to provide a margin of safety that covers the repair of any hidden problems that become evident when the car is prepared for resale. If the value is excessively low, however, the new car manager may complain that this impedes the ability of the new car department to sell new cars. Therefore, the new car manager may be given the option to shop a potential trade-in to other used car dealers or sell it at an auction to find a better price. This allows the transfer price to better reflect market forces.

Cost-Based Transfer Prices

When the transferred good or service does not have a well-defined market price, one alternative to consider is a transfer price based on cost. Some common transfer prices are variable cost, variable cost plus some percent markup on variable cost, full cost, and full cost plus some percent markup on full cost. In this context, markups, when used, are intended to provide a return for unallocated corporate-level costs and investment deemed to be supporting product production.

For example, consider a product that has a variable manufacturing cost of \$5.00 and allocated fixed manufacturing cost of \$3.00. Suppose that the target markup, when used, is 10%. The different possible cost based transfer prices are as follows:

Variable cost	\$5.00
Variable cost plus markup	\$5.50
Full cost	\$8.00
Full cost plus markup	\$8.80

The appropriate choice of **cost-based transfer price** is guided by the same criterion underlying the choice of any transfer price, namely does it provide the incentive for profit center managers to make decisions that are in the organization's best interests?

Proponents of each type of transfer price have arguments to support their respective choices. Economists argue, however, that any cost-based transfer price other than marginal cost (assuming that it can be computed) leads organization members to choose a lower-than-optimal level of transactions, causing an economic loss to the overall organization. For example, if the transfer price is higher than the marginal cost, the supplying unit wants to sell more than the optimal quantity, and the purchasing unit wants to buy less than the optimal quantity. Because supply and demand must be equal and because no organization unit can be forced to buy or sell more than it wants, the amount that is ordered and supplied is always equal to the lesser of what

is offered and what is wanted. The dilemma here, however, is that if the supplying division charges marginal cost as the transfer price and marginal costs decline with volume, the marginal cost will be less than average cost, and the supplying division will always show a loss.

Other problems arise when using cost-based transfer prices. Cost-based approaches to transfer pricing do not promote the goal of having the transfer pricing mechanism support the calculation of unit incomes. Moreover, organization units like to be treated as profit centers, not cost centers, because profit centers are considered more prestigious.

Transfer prices based on actual costs provide no incentive to the supplying division to control costs, since the supplier can always recover its costs. This is a well-known problem in government contracting and utility regulation, where prices or rates are often based on actual costs. One solution is to use a standard cost as the transfer price. Under this approach, the difference between the actual costs that a center incurs and the standard costs that are charged out become a measure of the unit's operating efficiency.

Using a cost-based transfer price assumes that the organization can compute a product's cost in a reasonably accurate way. Chapters 4, 5, and 6 showed that developing and operating accurate costing systems present quite a challenge. People are likely to complain and become frustrated if they believe the organization is using an inaccurate costing system for transfer-pricing purposes.

A final problem with cost-based approaches is that they do not provide the proper economic guidance when operations are capacity constrained. When an organization is operating at capacity, production decisions should reflect the most profitable use of the capacity rather than cost considerations only. In this case, the transfer price should be the sum of the marginal cost and the opportunity cost of capacity, where opportunity cost reflects the profit of the best alternative use of the capacity.

One interesting approach to transfer pricing is the so-called dual rate approach, in which the receiving division is charged only for the total variable costs to the point of transfer of producing the unit supplied and the supplying division is credited with the net realizable value (which equals the product's eventual final selling price less all the variable costs needed to complete the product) of the unit supplied. To illustrate, suppose that Fyfe Company produces a product that is started in Division 1 and completed in Division 2. Division 1 incurs a variable cost of \$5 to start the product, and Division 2 incurs a variable cost of \$3 to complete the product, which is then sold for \$20. The transfer price charged to Division 2 when the partially completed product is transferred from Division 1 is \$5. The price received by Division 1 is \$17. This approach to transfer pricing has the desirable effect of letting marginal cost influence the decisions of the buying division while, at the same time, giving the selling division credit for an imputed profit on the transferred good or service.

Another interesting cost-based approach charges the buying division with the target variable cost in addition to an assignment of the supplying division's committed costs. The assignment should reflect the buying division's share of the supplying division's capacity. For example, if the service department acquired capacity, expecting that 10% of its capacity would be supplied to the new car department, the new car department would receive a lump-sum assignment of 10% of the service department's capacity costs, regardless of the amount of work actually done for the new car department during the period. In this situation, the service department's income is the difference between the actual and target cost of the work it completes.

Cost-based transfer prices raise complex performance measurement, equity, and behavioral issues. Such issues are addressed more thoroughly in advanced texts.

Negotiated Transfer Price

In the absence of market prices, some organizations allow supplying and receiving responsibility centers to negotiate transfer prices among themselves. **Negotiated transfer prices** reflect the controllability perspective inherent in responsibility centers since each division is ultimately responsible for the transfer price it negotiates. Negotiated transfer prices—and therefore production decisions—may, however, reflect the relative negotiating skills of the two parties rather than economic considerations.

Problems arise when negotiating transfer prices because this type of bilateral bargaining situation causes the supplying division to want a price higher than the optimal price and the receiving division to want a price lower than the optimal price. When the actual transfer price is different from the optimal transfer price, the organization as a whole suffers because it transfers a smaller than best number of units between the two divisions.

Administered Transfer Price

An arbitrator or a manager who applies some transfer pricing policy sets **administered transfer prices**, for example, market price less 10% or full cost plus 5%. Organizations often use administered transfer prices when a particular transaction occurs frequently. However, such prices reflect neither pure economic considerations, as market-based or cost-based transfer prices do, nor accountability considerations, as negotiated transfer prices do. Exhibit 11-8 summarizes the four major approaches to transfer pricing.

Transfer Prices Based on Equity Considerations

Administered transfer prices are usually based on cost; that is, the transfer price is cost plus some markup on cost or market. Thus, the transfer price is some function, such as 80%, of the market price. However, sometimes administered transfer prices

Exhibit 11-8
Summary of Transfer Pricing Approaches

APPROACH	MARKET-BASED	COST-BASED	NEGOTIATED	ADMINISTERED
MEASURE USED	MARKET PRICE	PRODUCT COST	DIRECT NEGOTIATIONS	APPLICATION OF A RULE
Advantage	If a market price exists, it is objective and provides the proper economic incentives.	This is usually easy to put in place because cost measures are often already available in the accounting system.	This reflects the accountability and controllability principles underlying responsibility centers.	This is simple to use and avoids confrontations between the two parties to the transfer-pricing relationships.
Problems	There may be no market or it may be difficult to identify the proper market price because the product is difficult to classify.	There are many cost possibilities but any cost other than the marginal cost will not provide the proper economic signal.	This can lead to decisions that do not provide the greatest economic benefits.	This tends to violate the spirit of the responsibility approach.

are based on equity considerations that are designed around some definition of what constitutes a reasonable division of a jointly earned revenue or a jointly incurred cost.

For example, consider the situation in which three responsibility center managers need warehouse space. Each manager has undertaken a study to determine the cost for an individual warehouse that meets the responsibility center's needs. The costs are as follows: manager A—\$3 million; manager B—\$6 million; and manager C—\$5 million. A developer has proposed that the managers combine their needs into a single large warehouse, which would cost \$11 million. This represents a \$3 million savings from the total cost of \$14 million if each manager were to build a separate warehouse. The issue is how the managers should split the cost of this warehouse.

One alternative, sometimes called the *relative cost method*, is for each manager to bear a share of the warehouse cost that is proportional to that manager's alternative opportunity. This would result in the following cost allocations:

$$\text{Manager A's share} = \$11,000,000 \times \$3,000,000/\$14,000,000 = \$2,357,143$$

$$\text{Manager B's share} = \$11,000,000 \times \$6,000,000/\$14,000,000 = \$4,714,286$$

$$\text{Manager C's share} = \$11,000,000 \times \$5,000,000/\$14,000,000 = \$3,928,571$$

This process is fair in the sense of being symmetrical. All parties are treated equally, and each allocation reflects what each individual faces. Another approach, which reflects the equity criterion of ability to pay, is to base the allocation of cost on the profits that each manager derives from using the warehouse. Still another approach, which reflects the equity criterion of equal division, is to assign each manager a one-third share of the warehouse cost. Thus, each of the many different approaches to cost allocation reflects a particular view of equity.

Returning to the example of Earl's Motors, Earl may require that the transfer price for body shop work done for the new and used car departments will be charged out at 80% of the normal market rate. This may seem reasonable and may reflect a practical approach to dealing with the issues associated with market-based and cost-based transfer prices, but this rule is arbitrary and, therefore, provides an arbitrary distribution of revenues and costs among the body shop and the units with which it deals. Administered transfer prices inevitably create cross subsidies among responsibility centers. Subsidies obscure the economic interpretation of responsibility center income and may provide a negative motivational effect if members of some responsibility centers believe that the application of such rules is unfair.

ASSIGNING AND VALUING ASSETS IN INVESTMENT CENTERS

When companies use investment centers to evaluate responsibility center performance, accountants confront all the problems associated with profit centers and some new problems unique to investment centers. The additional problems concern how to identify and value the assets used by each investment center. This task presents troubling questions that have no clear answers.

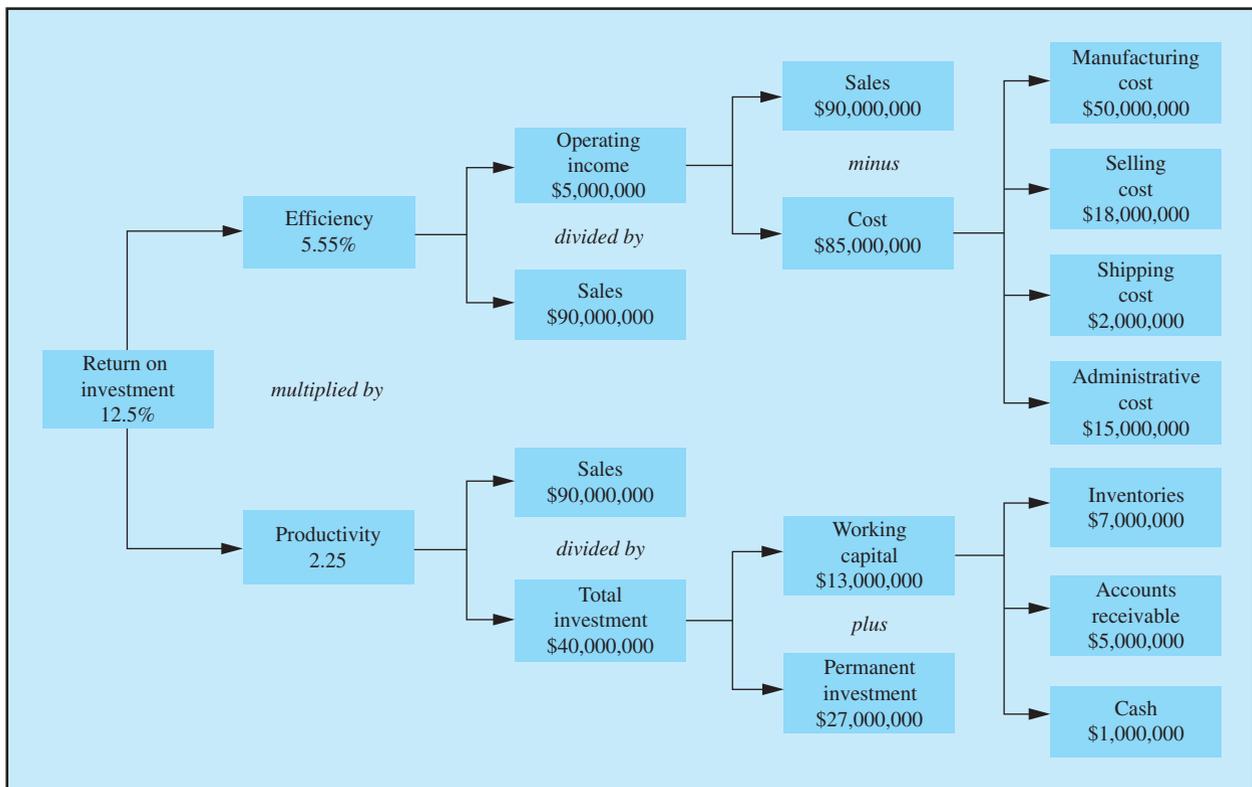
In determining the level of assets that a responsibility center uses, management must assign the responsibility for (1) jointly used assets, such as cash, buildings, and equipment, and (2) jointly created assets, such as accounts receivable. Once management has assigned the organization's assets to investment centers, they must determine the value of those assets. What cost should be used: historical cost, net book value, replacement cost, or net realizable value? These are all costing alternatives for which supporting arguments can be made (for a more in-depth explanation, see advanced cost accounting texts).

The culmination of the allocation of revenues, costs, and assets to operating divisions is the calculation of the division's return on investment. To consider this, we will consider the DuPont Company, one of the earliest and most prolific users of the return on investment criterion, which is the ratio organizations most often use to evaluate investment center performance.

THE EFFICIENCY AND PRODUCTIVITY ELEMENTS OF RETURN ON INVESTMENT

One of DuPont Company's major challenges as the organization was growing quickly in the late 19th century was to develop a way to manage the complex structure caused by its diverse activities and operations. At this time, most organizations were single-product operations. These organizations approached the evaluation of the investment level of the organization by considering the ratio of profits to sales and the percentage of capacity used. DuPont, however, being a multiproduct firm, pioneered the systematic use of return on investment to evaluate the profitability of its different lines of business. Exhibit 11-9 summarizes DuPont's approach to financial control. At DuPont, the actual exhibit used to summarize operations was extremely detailed and contained as many as 350 large charts that were updated monthly and permanently displayed in a large chart room in the headquarters building.

Exhibit 11-9
The DuPont Company: Return on Investment Control System



Return on investment, one of the most widely quoted and used financial ratios, is the ratio of income to investment, with varying definitions of income and investment.

$$\begin{aligned}\text{Return on investment} &= \frac{\text{Income}}{\text{Investment}} \\ \text{Return on investment (ROI)} &= \frac{\text{Income}}{\text{Investment}} \\ \text{Return on investment} &= \frac{\text{Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment}}\end{aligned}$$

The ratio of operating income to sales (also called *return on sales*, or *sales margin*) is a measure of efficiency; it reflects the ability of the organization or organization unit to control costs at a given level of sales activity. The ratio of sales to investment (often called *turnover*) is a measure of productivity; it reflects the ability to generate sales for a given level of investment.

Shareholders will likely compute the firm's return on investment as return on equity, and may separate this ratio into components as follows:

$$\text{Return on equity (ROE)} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

The ratio of sales to assets (often called *asset turnover*) is a measure of **productivity**; it reflects the ability to generate sales for a given level of assets. The ratio of assets to equity is a measure of financial leverage.

The ratio of assets to equity is usually dropped when evaluating the performance of operating managers and the return on equity measure becomes a return on assets measure.

$$\text{Return on assets (ROA)} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}}$$

For an investment center manager, other definitions of income or investment may be used in judging how well the manager has generated returns on the investment center's capital under control. The DuPont system of financial control for investment centers used operating income in the calculation of return on investment and separated the ratio into two components: a return measure that assesses efficiency and a turnover measure that assesses productivity. The following equations focusing on the investment in the center and its sales and operating income illustrate this idea:

$$\begin{aligned}\text{Return on investment} &= \frac{\text{Operating income}}{\text{Investment}} \\ \text{Return on investment} &= \frac{\text{Operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment}}\end{aligned}$$

The DuPont approach to financial control develops increasingly more detailed subcomponents for the efficiency and productivity measures by focusing on more detailed calculations of costs and different groups of assets. The upper portion of Exhibit 11-9 shows the efficiency measure factored into its components; and the lower portion shows the productivity measure factored into its components. For example, to determine whether each is improving, we can look at the efficiency ratio of operating income to sales and can examine the various components of costs (manufacturing, selling, shipping, and administrative), their relationship to sales, and their individual trends. It is then possible to discover where to make improvements by comparing these individual and group efficiency measures with those of similar organization units or competitors.

The productivity ratio of sales to investment allows development of separate turnover measures for the key items of investment: the elements of working capital (inventories, accounts receivable, and cash) and the elements of permanent investment (equipment and buildings). Comparisons of these turnover ratios with those of similar units or those of competitors can suggest where improvements are required.

Assessing Productivity Using Financial Control

The most widely accepted definition of productivity is the ratio of output over input. For example, if a worker produces 50 items in a 7-hour shift, the worker's productivity (often called *labor productivity*) is 7.1 ($= 50 \div 7$) units per hour. Labor-intensive industries such as consultancies, public accounting firms, hospitals, and trades organizations, monitor their labor productivity obsessively because labor costs are a big fraction of total costs.

Organizations develop productivity measures for all factors of production, including people, raw materials, and equipment. For example, in the fishing industry, the ratio of weight of salable final products to the weight of the raw fish is typically around 30%. This ratio of raw material in the finished product to the total quantity of raw material acquired is called *raw material productivity* or *yield*. Most organizations in the natural resource industry keep a close watch on raw material productivity because the cost of raw materials is a large proportion of total costs. For example, Weirton Steel, a U.S. steel products manufacturer, once estimated that each percentage point increase in its raw material yield was equivalent to a \$4.7 million decrease in operating costs. This gives a practical example of how organizations can use a financial control number, such as raw material yield, to make inferences about how well the underlying manufacturing operations are working and their effect on income.

Finally, many organizations in continuous process industries, such as paper manufacturing, monitor their machine productivity ratios (output per hour or per shift of machine time). Investment in the machine represents a huge fixed cost invested in capacity, and profitability depends on how well that capacity is used. Again, a measure like machine productivity provides organizations with an effective method to relate process results and financial results.

Questioning the Return on Investment Approach

Despite its popularity, some analysts have criticized return on investment as a means of financial control. Some critics argue that the sole use of any financial measure is too narrow for effective control. They argue that the most effective approach to control is to monitor and assess the organization's critical success factors, such as quality, service, and designing and making products that customers want.

IN PRACTICE

Labor Productivity in a Consultancy

Consultancies track and manage labor costs carefully since they are not only their major costs but these costs are often controllable. A measure consultancies often use is the ratio of labor hours billed to labor hours paid, which is effectively a productivity measure because it

divides an output measure (hours billed) by an input measure (hours paid). There are many variations on this theme, but all are focused on the same objective: using resources effectively to achieve the organization's financial objectives.

IN PRACTICE

Managing Productivity in Airlines

Fleet costs, such as lease payments and depreciation on aircraft, are major costs in the airline industry. For this reason, airlines focus on what the airline industry calls load factor, which is a productivity measure. Load factor equals the ratio of seats occupied on flights (see the Traffic item in the following table) divided by seats available on flights (see the Capacity item in the following table). The problem with this measure is that it can be increased dramatically by heavy discounting. For this reason, the airline industry focuses on the

average revenue earned per passenger mile flown. Here is an excerpt from a financial update issued by the Air France/KLM Group on May 9, 2010. The “Unit Revenue per RPK” is the average revenue (in euros) per passenger kilometer flown and the “Unit Revenue per ASK” is the average revenue (in euros) per available seat kilometer flown. Note carefully the last two numbers in the table. The unit cost per seat kilometer exceeds the unit revenue per seat kilometer which is clearly an undesirable situation for any airline.

	FULL YEAR TO 31ST MARCH		
	2010	2009	CHANGE
Traffic (RPK millions)	202,455	209,060	(3.20)%
Capacity (ASK millions)	251,012	262,356	(4.30)%
Load factor	80.70%	79.70%	1.0 pt
Total passenger revenues (€ m)	16,267	18,832	(13.60)%
Revenues from scheduled passenger business (€ m)	15,489	17,937	(13.60)%
Unit revenue per RPK (€ cts)	7.65	8.58	(10.80)%
Unit revenue per ASK (€ cts)	6.17	6.84	(9.70)%
Unit cost per ASK (€ cts)	6.46	6.78	(4.60)%

Others who accept the need for financial measures still find weaknesses with the return on investment measure. They observe that profit-seeking organizations should make investments in order of declining profitability until the marginal cost of capital of the last dollar invested equals the marginal return generated by that dollar. Unfortunately, financial control based on return on investment may not yield this result.

For example, consider a manager who is evaluated based on return on investment. Suppose that the current average return on investment is 15% and that the manager is contemplating an investment that is expected to return 12%. The manager would be motivated to reject this investment opportunity because accepting it would lower the division’s total return on investment and, thus, conflict with what is in the organization’s best interests. For example, if the organization’s cost of capital were only 10%, the manager should accept the investment because its expected return exceeds the investment’s cost of capital.

Using Residual Income

People have responded to this criticism of return on investment by creating a different investment criterion. **Residual income** equals reported accounting income less the economic cost of the investment used to generate that income. For example, if a division’s income is \$13.5 million and the division uses \$100 million of capital, which has an average cost of 10%, residual income can be computed as follows:

$$\begin{aligned}\text{Residual income} &= \text{Income} - \text{Cost of capital} \\ &= \$13,500,000 - (\$100,000,000 \times 10\%) \\ &= \$3,500,000\end{aligned}$$



In 2007, Siemens reported that it tied performance bonuses for some of its senior executives to the EVA[®] measure for the operating unit they managed.
Alamy Images

Like return on investment, residual income evaluates income relative to the level of investment required to earn that income. Unlike return on investment, however, residual income does not motivate managers to turn down investments that are expected to earn more than their cost of capital. Under the residual income criterion, managers are asked to do whatever they think is necessary to make residual income as large as possible. For example, recall the previous situation in which the manager faced an investment opportunity with an expected return of 12% when the cost of capital was 10%. If the project requires an investment of \$100 million, the residual income if the investment is made and the expected return is realized is \$2 million [$\$100,000,000 \times (12\% - 10\%)$]. Therefore, if rewarded based on residual income, the manager will accept this investment opportunity.

Stern Stewart, a consultancy, developed a proprietary tool they call **economic value added (EVA[®])**, which is a refinement of the residual income idea. The economic value-added tool adjusts reported accounting income and asset levels for what many consider the biasing effects on current results of the financial accounting doctrine of conservatism. For example, GAAP requires the immediate expensing of research and development costs; yet, when shareholder value analysis income is computed, research and development costs are capitalized and expensed over a certain time period, such as five years. The intent of the adjustments prescribed to compute shareholder value-added income from GAAP income is to develop an income number that better reflects the organization's long-run earnings potential. Many organizations have adopted the economic value-added criterion to evaluate their investments in product lines, divisions, even entire companies.

Organizations can use economic value added to identify products or product lines that are not contributing their share to organization return, given the level of investment they require. These organizations use activity-based costing analysis to assign assets and costs to individual products, services, or customers. This allows them to calculate the EVA by product, product line, or customer.

Organizations can also use economic value added to evaluate operating strategies. Quaker Foods & Beverages, a food manufacturer, used EVA to support its decision in June 1992 to cease *trade loading*, which is the food industry's practice of using promotions to obtain orders for a two- or three-month supply of food from customers.

IN PRACTICE

Organizations Adopt Economic Value Added for Different Reasons

SPX Corporation supplies specialty service tools and original equipment components to the automotive industry. In its 1995 annual report, SPX identified the following reasons for adopting shareholder value analysis:

- It treats the interests of shareholders and management the same, encouraging SPX people to think and act like owners.
 - It is easily understood and applied.
 - It fits into operational improvement efforts because success requires continuous improvement of EVA[®].
 - It correlates closer with market value than any other operating performance measure.
 - It links directly to investor expectations through EVA[®] improvement targets.
- It focuses on long-term performance by using a bonus bank and predetermined improvement targets.
 - It provides a common language for performance measurement, decision support, compensation, and communication.

The notion of a bonus bank, mentioned in the sixth point, is particularly interesting. In years when performance exceeds the economic value-added target, two-thirds of all bonuses are set aside in a bonus bank that is carried forward and is payable only if the manager achieves economic value-added targets in subsequent years. When performance falls below target, the bonus is negative and is deducted from the bonus bank. The bonus bank turns what is nominally a short-run performance measure and reward into a longer run measure.

Trade loading causes quarterly peaks in production and sales that, in turn, require huge investments in assets, including the inventory itself, warehouses, and distribution centers. Through higher prices, customers pay the costs of the higher inventory levels created by this cyclical pattern of inventory. An article in *Fortune* magazine¹ estimated that trade loading was primarily responsible for the \$75 to \$100 billion in groceries that were always in transit between manufacturers and consumers and that supporting this inventory “adds some \$20 billion to the \$400 billion that U.S. consumers annually spend on groceries.”

This economic value-added analysis suggests that even though sales levels may be reduced by eliminating price reductions associated with trade loading, it is more profitable for the company and its trading partners to forgo the large inventories and the required warehouse space. Also, to produce food at even levels rather than in peaks reduces the level of production capacity needed. Quaker Foods & Beverages motivated managers to end trade loading by basing bonuses on efficiency and cycle times rather than on annual sales.

A measure of the increasing importance of economic value added in organizations is the seniority of people who are usually appointed to manage EVA implementation projects in organizations. For example, in 1995, Olin Corporation’s new president and chief executive officer was heading the company’s EVA steering team at the time of his appointment. The results of economic value added suggest interesting insights into financial control applied at all levels of the organization. However, they should be treated with caution. To be an effective motivational and evaluation tool, EVA analysis, like return on investment calculations, requires complex and potentially problematic allocations of assets, revenues, and costs to divisions, product lines, products, or customers, depending on the focus of the analysis. However, many organizations believe that these problems can be solved and that the insights provided by EVA analyses are well worth the effort.

¹ Patricia Seller, “The Dumbest Marketing Ploy,” *Fortune* (October 5, 1992): 88–94.

Although financial control is widely practiced, many people have questioned its true insights and effectiveness. Critics have argued that financial information is delayed—and highly aggregated—information about how well the organization is doing in meeting its commitments to its shareholders and that this information measures neither the drivers of the financial results nor how well the organization is doing in meeting its stakeholders' requirements, a leading indicator of future financial performance.

Financial control may be an ineffective control scorecard for three reasons:

1. Financial control focuses on financial measures that do not measure the organization's other important attributes, such as product quality, the speed at which the organization develops and makes products, customer service, the ability to provide a work environment that motivates employees, and the degree to which the organization meets its legal and social obligations to society. Because these elements and others promote the organization's long-term success, they also need to be measured and monitored. The argument is that financial control measures only the financial results and not how those results were achieved. This limitation of financial control led to the development of the Balanced Scorecard (discussed in Chapter 2). Recall that the Balanced Scorecard uses a range of nonfinancial measures of performance in the area of customer requirements, process characteristics, and learning and growth to both explain and predict financial results. Therefore, the Balanced Scorecard provides a means of managing financial results, which is something not possible when the organization focuses exclusively on financial results since these are an aggregate measure of *what* happened, not *why* it happened.
2. Financial control measures the financial effect of the overall level of performance achieved on the critical success factors, and it ignores the performance achieved on the individual critical success factors. For this reason, many people believe that financial control does not suggest how to improve performance on the critical success factors or on financial performance. Critics argue that, at best, financial results act only as a broad signal of how well the organization manages the tasks that create success on the critical success factors that, in turn, create financial returns. The argument is that effective control begins with measuring and managing the elements or processes that create financial returns rather than measuring the financial returns themselves. The Balanced Scorecard addresses this problem (as discussed in Chapter 2) by focusing on both financial results (such as return on investment) and measures of process performance (such as employee skills, knowledge, and satisfaction; customer satisfaction; cycle times; the rate of process improvement and innovation; and quality) that create the financial results.
3. Financial control is usually oriented to short-term profit performance. It seldom focuses on long-term improvement or trend analysis but instead considers how well the organization or one of its responsibility centers has performed this quarter or this year. This is a result of the misuse of financial control rather than an inherent fault of financial control itself. However, the preoccupation with short-term financial results is debilitating. It motivates an atmosphere of managing short-term financial results that provides disincentives for the types of management and employee initiatives that promote long-term success, particularly in the area of investing in training, equipment, and process changes. One major reason given for taking public organizations private is to provide senior management with the opportunity to manage for long-term results rather than being forced into inappropriate concerns with short-term performance caused by financial analysts who have that preoccupation.

The fundamental issue is that the financial accounting model assumes that all consequences from spending made during the period are reflected in the end-of-period financial metrics. This is fine for spending on operating resources, but breaks down when companies spend to improve their “intangible assets,” such as customer relationships, process quality and reliability, new products, employee capabilities and motivation, and databases and information. The expenses get recorded but most of the benefits show up in future periods. So the financial summary is inadequate for measuring the value created during the period (because some or much of the benefits show up in future periods). The converse is also true. Companies can cut back on spending for their intangible assets. The financial results for the period improve – because of reduced spending – but the loss in value will show up in future periods with customer attrition, process breakdowns, lack of new products, and surly, alienated employees. This, of course, is the significant contribution of the Balanced Scorecard, which, by tracking the drivers of future financial performance, provides the opportunity to reflect investments in intangible assets in the current year.

In summary, how should we interpret these facets of financial control? Financial control is an important tool for effective organization control. If used properly, financial results provide crucial help in assessing the organization’s long-term viability and in identifying processes that need improvement. It is a tool to be supported by other tools since it is only a summary of performance.

Financial control does not try to measure other facets of performance that may be critical to the organization’s stakeholders and vital to the organization’s long-term success. It can, however, provide an overall assessment of whether the organization’s strategies and decisions are providing acceptable financial returns. Organizations can also use financial control to compare one unit’s results with another. This financial benchmarking signal indicates whether the organization’s operations control systems, which seek to monitor, assess, and improve performance on the critical success factors, are operating well enough to deliver the desired financial results.

EPILOGUE TO ADRIAN’S HOME SERVICES

Adrian asked Pat Rubinoff, the senior analyst at AHS, to study Exhibit 11-1 and identify how profitability might be improved. After some work Pat returned with the following observations related to getting a better picture of the underlying profitability of the AHS business activities:

1. One of the assets included in Exhibit 11-1 was a residence that Adrian leased for \$1 per year from AHS. Pat argued that this property which was carried at book value of \$250,000, should be eliminated from the Heat Department’s asset base. The cost of maintaining this home was approximately \$65,000, which was part of the AHS’s unallocated costs. All matters relating to the home and its associated costs were documented and considered part of Adrian’s remuneration. Pat recommended eliminating the property from the business statement and the costs from the unallocated costs.
2. AHS donated \$400,000 annually to various community charities. These donations were allocated equally to each of the four business areas and were included in the selling, general, and administrative costs for each of the businesses. Pat suggested that \$100,000 of costs should be eliminated from each of the operating units.
3. Included in the unallocated selling general and administrative expenses was an amount of \$500,000 representing an out-of-court settlement with someone who

had been injured during a fall at AHS's truck compound. Pat argued that this should be eliminated from Exhibit 11-1 to reflect ongoing profit potential since insurance had now been acquired to cover such incidents and the compound was now secured by a locked gate.

4. Finally Pat observed that included in the Heating Division asset base was \$250,000 of idle assets relating to oil heating services that the Heating Division no longer provided. Pat believed that these assets could be sold for their book value.

Exhibit 11-10 reflects the results of the changes Pat recommended and the resulting financial ratios.

After studying Exhibit 11-10, Pat reached some important conclusions about the gross margin figures. In all four businesses the ratio of income to sales was about 5% less than the industry standard. Pat attributed this to the higher costs of labor and materials that underlay AHS's quality reputation. Combined with the observation that demand often exceeded capacity, Pat recommended that Adrian implement an across-the-board price increase of 7% to bring the income to sales ratio closer to the industry standards. Exhibit 11-11 summarizes the expected results of the 7% price increase.

Finally when studying the sales to assets ratio for the four businesses, all seemed to be in line with industry standards except for the Electrical Division, which was considerably below the industry average of 4.00. After some investigation Pat discovered that part of the Electrical Division's work was a low-margin business that required considerable investment in assets. Pat recommended exiting this part of the Electrical Division business. This would result in lost sales of approximately \$500,000 with an associated gross margin of 25%. Exiting this business would allow the Electrical Division to sell off \$200,000 of assets at their book value. Therefore, the reduction of sales, cost of goods sold, and assets would be \$500,000, \$375,000 [$\$500,000 \times (1 - 0.25)$], and \$200,000, respectively, resulting in the numbers shown in Exhibit 11-12.

Adrian was impressed by this analysis, planned to implement Pat's suggestions, and looked forward to the expected financial results.

Exhibit 11-10

Adrian's Home Services: Reanalysis and DuPont Analysis

	HEATING	AIR CONDITIONING	PLUMBING	ELECTRICAL	UNALLOCATED	CORPORATE TOTAL
Sales	\$1,546,000	\$2,344,670	\$5,340,000	\$3,423,000		\$12,653,670
Cost of goods sold	870,000	1,384,000	3,245,000	2,198,000		7,697,000
Gross margin	\$676,000	\$960,670	\$2,095,000	\$1,225,000		\$4,956,670
Selling, general, and administrative	34,500	356,000	1,224,500	554,000	2,480,000	4,649,000
Income	\$641,500	\$604,670	\$870,500	\$671,000		\$307,670
Assets	626,000	958,000	2,176,000	1,127,000	297,000	5,184,000
Shareholders' equity						2,875,000
Income to sales	41.49%	25.79%	16.30%	19.60%		2.43%
Sales to assets	2.47	2.45	2.45	3.04		2.44
ROA	102.48%	63.12%	40.00%	59.54%		5.93%
Assets to equity						1.80
ROE						10.70%

Exhibit 11-11**Adrian's Home Services: Price Increases and DuPont Analysis**

	AIR					CORPORATE TOTAL
	HEATING	CONDITIONING	PLUMBING	ELECTRICAL	UNALLOCATED	
Sales	\$1,654,220	\$2,508,797	\$5,713,800	\$3,662,610		\$13,539,427
Cost of goods sold	<u>870,000</u>	<u>1,384,000</u>	<u>3,245,000</u>	<u>2,198,000</u>		<u>7,697,000</u>
Gross margin	\$784,220	\$1,124,797	\$2,468,800	\$1,464,610		\$5,842,427
Selling, general, and administrative	<u>34,500</u>	<u>356,000</u>	<u>1,224,500</u>	<u>554,000</u>	2,480,000	<u>4,649,000</u>
Income	\$749,720	\$768,797	\$1,244,300	\$910,610		\$1,193,427
Assets	626,000	958,000	2,176,000	1,127,000	297,000	5,184,000
Shareholders' equity						2,875,000
Income to sales	45.32%	30.64%	21.78%	24.86%		8.81%
Sales to assets	2.64	2.62	2.63	3.25		2.61
ROA	119.76%	80.25%	57.18%	80.80%		23.02%
Assets to equity						1.80
ROE						41.51%

Exhibit 11-12**Adrian's Home Services: Results of Dropping Part of Electrical Division**

	AIR					CORPORATE TOTAL
	HEATING	CONDITIONING	PLUMBING	ELECTRICAL	UNALLOCATED	
Sales	\$1,654,220	\$2,508,797	\$5,713,800	\$3,162,610		\$13,039,427
Cost of goods sold	<u>870,000</u>	<u>1,384,000</u>	<u>3,245,000</u>	<u>1,823,000</u>		<u>7,322,000</u>
Gross margin	\$784,220	\$1,124,797	\$2,468,800	\$1,339,610		\$5,717,427
Selling, general, and administrative	<u>34,500</u>	<u>356,000</u>	<u>1,224,500</u>	<u>554,000</u>	2,480,000	<u>4,649,000</u>
Income	\$749,720	\$768,797	\$1,244,300	\$785,610		\$1,068,427
Assets	626,000	958,000	2,176,000	927,000	297,000	4,984,000
Shareholders' equity						2,875,000
Income to sales	45.32%	30.64%	21.78%	24.84%		8.19%
Sales to assets	2.64	2.62	2.63	3.41		2.62
ROA	119.76%	80.25%	57.18%	84.75%		21.44%
Assets to equity						1.73
ROE						37.16%

SUMMARY

This chapter explored the scope and nature of financial control—an approach to evaluating operations and management that relies on financial information from internal and external perspectives.

Organizations use financial control information to evaluate how well processes and organization units are fulfilling their objectives. Chapter 10 presented how organizations use budgets and variances

to evaluate operating unit and process performance. This chapter considered the different types of responsibility centers and the role of financial information in evaluating organization unit performance. When evaluating an organization unit's profit contribution, organizations use transfer prices to allocate jointly earned revenues to each of the contributing units.

KEY TERMS

administered transfer price 485	financial control, 463	residual income, 490
controllability principle, 474	internal financial controls, 464	responsibility center, 467
cost-based transfer prices, 483	investment centers, 472	return on investment, 488
cost centers, 470	market-based transfer prices, 483	revenue centers, 471
decentralization, 464	negotiated transfer price, 485	segment margin report, 476
domestic transfer pricing, 481	productivity, 488	transfer pricing, 481
economic value added (EVA [®]), 491	profit centers, 472	

ASSIGNMENT MATERIALS

Questions

- 11-1 What does financial control mean? (LO 1)
- 11-2 What is the difference between internal financial control and external financial control? (LO 1)
- 11-3 What is decentralization? (LO 2)
- 11-4 What does control mean in a decentralized organization? (LO 2)
- 11-5 What is a responsibility center? (LO 2)
- 11-6 What is a cost center? (LO 3)
- 11-7 What is the assigned responsibility in a revenue center? (LO 3)
- 11-8 When do organizations use profit centers? (LO 3)
- 11-9 What is an investment center? (LO 3)
- 11-10 What does the controllability principle require? (LO 4)
- 11-11 How do responsibility centers interact? (LO 3, 4)
- 11-12 What does segment margin mean? (LO 4)
- 11-13 What is a soft number in accounting? (LO 4)
- 11-14 What is a transfer price? (LO 5)
- 11-15 What are the four bases for setting a transfer price? (LO 5)
- 11-16 Why do organizations allocate revenues to responsibility centers? (LO 3, 6)
- 11-17 Why do organizations allocate costs to responsibility centers? (LO 3, 6)
- 11-18 What is return on investment? (LO 7)
- 11-19 How does efficiency (the ratio of income to sales) affect return on investment? (LO 7)
- 11-20 How does productivity (the ratio of sales to investment) affect return on investment? (LO 7)
- 11-21 How is residual income computed? (LO 7)
- 11-22 How does *economic value added* differ from residual income? (LO 7)
- 11-23 Describe specific examples of how firms are using economic value added to evaluate their investments in product lines or divisions, or to evaluate operating strategies. (LO 7)
- 11-24 What are three reasons financial control alone may provide an ineffective control scorecard? (LO 1, 2)

Exercises

- LO 2 11-25 *Issues in decentralization* What control problem does decentralization create in organizations?
- LO 2 11-26 *University responsibility centers* Give an example of a responsibility center in a university.
- LO 3 11-27 *Cost centers* Give an example of a responsibility center that is properly treated as a cost center.
- LO 3 11-28 *Revenue centers* Give an example of a responsibility center that is properly treated as a revenue center.
- LO 3 11-29 *Investment centers* Based on your understanding of how chains are managed, would you agree or disagree that an outlet of a large department store chain should be treated as an investment center? What about the maintenance department within that outlet? What about a single department within the store?

- LO 3 11-30 *Multinational companies and investment centers*** Many multinational companies create wholly owned subsidiaries to do business in the countries or regions where they operate. Are these wholly owned subsidiaries examples of investment centers? Explain.
- LO 3 11-31 *Responsibility centers*** Identify three responsibility centers in a fast-food restaurant and explain how they may interact.
- LO 4 11-32 *Controllability*** Based on your understanding, which of the following does the manager of a cinema control: costs, revenues, profits, and investment?
- LO 4 11-33 *Computing division income*** A home services company offers renovations, as well as heating, air conditioning, and plumbing services, to its customers. Imagine that you are in the process of computing the income for the renovations division. What problems might you encounter in computing this income?
- LO 4 11-34 *Controllability and evaluation*** Suppose you are the manager of a fitness center that is one of many in a chain. Give one example of a cost that you control and one example of a cost you do not control. Why is it important in this setting to distinguish between costs that are controllable and costs that are not controllable?
- LO 4 11-35 *Controllability and motivation*** Give an example of a situation for which invoking the controllability principle would have a desirable motivational effect. Also give an example of a situation for which suspending the controllability principle would have a desirable motivational effect.
- LO 6 11-36 *Effects of transfer price choices*** McCann Company has two divisions, Division C and Division D. Division C manufactures Part C82 and sells it to Division D, and also sells the same part to the outside market for \$50 per unit. Division C has capacity to make 400,000 units of C82 per year. The division's fixed costs are \$5,000,000 per year and its variable costs per unit are as follows:

Direct materials	\$20
Direct labor	12
Variable overhead	8

Part C82 is an essential component for Division D's only product; the division sells 200,000 units per year at a price of \$120 per unit. Division D's fixed costs are \$4,000,000 per year and its variable costs per unit, excluding the cost of Part C82, are as follows:

Direct materials	\$10
Direct labor	25
Variable overhead	10

Required

Suppose Division C's demand for C82 from the outside market is currently 150,000 units per year. By how much will McCann's income decrease if Division D purchases its desired 200,000 units of C82 at \$50 per unit from the market rather than from Division C? What transfer price(s) would you suggest to induce both divisions to want Division D to purchase from Division C instead of from the market?

- LO 5,6 11-37 *Domestic and international transfer pricing*** Organizations might desire to use one transfer pricing system designed to support international transfer pricing and another domestic transfer pricing system designed to achieve motivational objectives. Give a reason why you think organizations would

not use two transfer pricing systems—one for international tax purposes and one for motivational purposes.

- LO 6** 11-38 *Choosing transfer prices* How might a transfer price for logs be chosen in an organization that cuts down trees and processes the logs either in a sawmill to make lumber or in a pulp mill to make paper?
- LO 6** 11-39 *Choosing transfer prices* In a fishing products company, the harvesting division catches and delivers the fish to the processing division that, in turn, delivers the processed fish to the selling division to sell to customers. How can you determine the appropriate transfer price between harvesting and processing and between processing and selling?
- LO 6** 11-40 *Using market-based transfer prices* What is the main advantage and the main obstacle in using market-based transfer prices?
- LO 4, 6** 11-41 *Soft numbers* Why did accountants develop the expression “soft number”?
- LO 4, 6** 11-42 *Allocating costs* A store is divided into four departments: automotive products, home products, paint, and lumber. How would you assign the building costs, such as depreciation, to each of these departments?
- LO 7** 11-43 *Return on investment measurement issues* Green Company has prepared the following information for three of its divisions:

DIVISION	HISTORICAL COST OF INVESTMENTS	DIVISION OPERATING INCOME
X	\$560,000	\$66,500
Y	532,000	64,400
Z	350,000	43,120

Required

- (a) Compute each division’s return on investment and residual income, assuming a 10% cost of capital.
- (b) Suppose the net book value of each division’s investments is half of the historical cost. Using net book value as the measure of investment, compute each division’s return on investment and residual income, assuming a 10% cost of capital.
- (c) Comment on the division rankings in parts a and b.
- (d) If the division managers are rewarded on the basis of return on investment or residual income, will they find it attractive to invest in new, more costly equipment?

- LO 7** 11-44 *Return on investment components* Eta Company would like to examine the sales margin and asset components of return on investment for three of its divisions and has accordingly prepared the following information:

DIVISION	INVESTMENT	DIVISION OPERATING INCOME	SALES
E	\$575,000	\$75,000	\$500,000
F	700,000	91,000	542,000
G	1,000,000	176,000	763,000

Required

- (a) Compute each division’s return on investment, sales margin, and turnover.
- (b) Comment on the divisions’ relative rankings on the ratios computed in part a.
- (c) Compute each division’s residual income, assuming a required return on investment of 8%.

- LO 7** 11-45 *Changes in return on investment components* Division Q’s current turnover is 2 and its return on sales ratio is 0.8. The division is considering a sales promotion that would increase its current return on sales ratio by 20%, but decrease its turnover by 20%.

Required

- (a) If the division undertakes this promotion, by what percentage would the return on investment increase or decrease?
- (b) If the division undertakes this promotion, by what percentage will the return on sales ratio need to increase in order for the return on investment to increase by 10%?

LO 7 11-46 *Return on investment and residual income* The following information pertains to VI Division, which has \$1,400,000 in investments.

Division sales revenue	\$900,000
Less division expenses	<u>480,000</u>
Division income	\$420,000

The company's cost of capital is 10%.

Required

- (a) What is the division's return on investment?
- (b) What is the division's residual income?

LO 7 11-47 *Characteristic return on investment ratios* For-profit organizations face a requirement to earn at least a minimum-level return on investment. Some businesses rely on high ratios of income to sales; other businesses rely on high ratios of sales to investment. Give an example of each of these types of businesses and explain what this characteristic implies about the business.

LO 7 11-48 *Productivity ratio* Give an example of why using units, rather than the value of the products produced, in the numerator of a productivity ratio may give a misleading picture of the process that produced that output.

LO 7 11-49 *Computing residual income* A business whose investors require a return on investment of 8% reports an income of \$1 million on an investment of \$20 million. What is the residual income for this business?

LO 7 11-50 *Residual income in a multiproduct company* Based on an analysis of operations, a company making sporting goods has determined that the income provided by its golf, ski, tennis, and football product lines are \$3.5 million, \$7.8 million, \$2.6 million, and \$1.7 million, respectively. The accountant believes that the investment levels in these product lines are \$35 million, \$50 million, \$45 million, and \$23 million, respectively. Use a residual income analysis to evaluate the performance of each of these product lines, assuming that the organization requires a 10% return on investment.

Problems

- LO 2, 3, 4 11-51** *Choosing responsibility center type* For each of the following units, identify whether the most appropriate responsibility center form is a cost center, a profit center, or an investment center and why you have made that choice.
- A laboratory in a hospital
 - A restaurant in a department store
 - The computer services group in an insurance company
 - A maintenance department in a factory
 - A customer service department in a mail-order company
 - A warehouse used to store goods for distribution in a large city
 - A publishing company acquired by a diversified corporation.

- LO 4 11-52 *Allocating common costs to cost centers*** You have decided to divide a factory into cost centers. How would you allocate depreciation expense on the factory building to its individual cost centers?
- LO 4 11-53 *Implementing the controllability principle*** One of the most widely accepted and longest held beliefs is the controllability principle, which says that organization units and people should be held accountable only for things that they can control.

Required

- (a) For any job you choose, give one example of something you should be expected to control and one example of something you should not be expected to control.
- (b) Can you think of an example in which making yourself responsible for something that you cannot control would promote a desirable activity?

- LO 4 11-54 *Segment margins*** Following is the information on Paragon Company's three product lines:

	PRODUCT LINE		
	1	2	3
Revenue	\$7,160,000	\$1,900,000	\$4,200,000
Variable cost percentage of sales	60%	50%	40%
Other costs	\$859,200	\$237,500	\$693,000
Allocated avoidable corporate costs	\$349,000	\$156,000	\$698,000
Allocated unavoidable corporate costs	\$570,800	\$206,500	\$24,000

Required

- (a) Construct a segment margin statement for Paragon Company.
- (b) Explain why the segment margins reported for an organization unit must be interpreted carefully.

- LO 4 11-55 *Drop unprofitable segments*** Perform an Internet search on "close underperforming stores" or similar phrase to locate an example of a company that has closed unprofitable stores or other segments. Explain what issues the company considered in dropping the unprofitable segments and improving profitability of the remaining segments.
- LO 5, 6 11-56 *Transfer prices and division autonomy*** You are a government controller. A division manager being audited objects to the transfer price he is being charged by the audit group for the audit services. The manager observes, "If I have to pay for these services, I should be allowed to buy them from an outside supplier who is prepared to offer them to me at a lower price." You have been asked to mediate this dispute. What would you do?
- LO 5, 6 11-57 *Transfer pricing and outside opportunities*** Deseronto Electronics manufactures motherboards for computers. The company is divided into two divisions: manufacturing and programming. The manufacturing division makes the board, and the programming division makes the adjustments required to meet the customer's specifications.

The average total cost per unit of the boards in the manufacturing division is about \$450, and the average total cost per board incurred in the programming division is about \$100. The average selling price of the boards is \$700. The company is now operating at capacity, and increasing the volume of production is not a feasible alternative.

In the past, the managers of the two divisions have negotiated a transfer price. The average transfer price has been about \$500, resulting in the manufacturing division recognizing a profit of about \$50 per board and the programming division recognizing a profit of about \$100 per board. Each of the managers receives a bonus that is proportional to the profit reported by his or her division.

Karen Barton, the manager of the manufacturing division, has announced that she is no longer willing to supply boards to the programming division. Sam Draper, the senior purchasing executive for Koala Electronics, a computer manufacturer, has indicated that he is willing to purchase, at \$650 per unit, all the boards that Karen's division can supply and is willing to sign a long-term contract to that effect. Karen indicated that she offered the boards to the programming division at \$625 per board on the grounds that selling and distribution costs would be reduced by selling inside. Neil Wilson, the manager of the programming division, refused the offer on the grounds that the programming division would show a loss at this transfer price.

Neil has appealed to Shannon McDonald, the general manager, arguing that Karen should be prohibited from selling outside. Neil has indicated that a preliminary investigation suggests that he cannot buy these boards for less than about \$640 outside. Therefore, allowing Karen to sell outside would effectively doom Neil's division.

Required

- (a) What transfer price would you recommend? Why?
- (b) What recommendations do you have for the programming division?

LO 7 11-58 Return on investment Michelle Gutierrez, manager of the Components Division of FX Corporation, is considering a new investment for her division. The division has an investment base of \$4,000,000 and operating income of \$600,000. The new investment of \$500,000 supports corporate strategy and is expected to increase operating income by \$50,000 next year, an acceptable level of return from corporate headquarters' point of view.

Required

- (a) What is the current return on investment (ROI) for the Components Division?
- (b) What will the ROI be if Michelle undertakes the new investment?
- (c) Suppose Michelle's compensation consists of a salary plus a bonus proportional to her division's ROI. Is Michelle's compensation higher with or without the new investment?
- (d) Suggest changes to FX Corporation's management that will better align performance evaluation and compensation with corporate goals.

LO 7 11-59 Return on investment and residual income The Newburg Flyers operate a major sports franchise from a building in downtown Newburg. The building was built in 1940 at a cost of \$5,000,000 and is fully depreciated so that it is shown on the company's balance sheet at a nominal value of \$1. The land on which the building was built in 1940 was purchased in 1935 for \$10,000 and is valued at this amount for balance sheet purposes. The franchise, which is the company's only other major investment, cost \$100,000 in 1940. Following GAAP at the time of the purchase, the franchise cost has now been fully amortized.

The current assessed value of the building is \$200,000. The assessed value of the land, which is located in a prime urban area, is \$20,000,000 and reflects the

net value of the property if the current building is demolished and replaced with an office and shopping complex. The current value of the franchise, assuming that the league owners would approve a franchise sale, is \$50,000,000.

Required

- (a) Ignoring taxes in this calculation, if the team earns an income of approximately \$3,000,000 per year, what is the return on investment using net book value and historical cost as the measures of investment?
- (b) Ignoring taxes in this calculation and assuming that the organization's cost of capital is 15%, if the team earns approximately \$3,000,000 per year, what is the residual income using net book value and historical cost as the measures of investment?

LO 7 11-60 *Problems in computing economic value added* A bank is thinking of using economic value added to identify services that require improvement or elimination. What problems may the bank have in computing the economic value added of any of the services that it offers to its customers?

LO 7 11-61 *Evaluating the potential of economic value added* The owner of a chain of fast-food restaurants has decided to use economic value added to evaluate the performance of the managers of each of the restaurants. What do you think of this idea?

LO 7 11-62 *Using residual income* As a result of a residual income analysis, the owner of a company that makes and installs swimming pools has decided to shut down the manufacturing operations that show a negative residual income for the current year. Is this necessarily the proper response to this information? Why or why not?

LO 7 11-63 *Conflicting organization and individual objectives* Strathcona Paper rewards its managers on the basis of the after-tax return on investment of the assets that they manage—the higher the reported return on investment, the higher the reward. The company uses net book value to value the assets employed in the return on investment calculation. The company's cost of capital is assessed as 12% after taxes. The organization's tax rate is 35%.

The manager of the logistics division is faced with an opportunity to replace an aging truck fleet. The current net income after taxes of the logistics division is \$7 million, and the current investment base is valued at \$50 million. The current net income after taxes and the current investment base, absent any investment in new trucks, are expected to remain at their existing levels.

The investment opportunity would replace the existing fleet of trucks, which have a net book value of about \$100,000, with new trucks costing about \$50 million net of the trade-in allowance for the old trucks. If kept, the old trucks would last another 5 years and would have no salvage value. The new trucks would last 5 years, have zero salvage value, and increase cash flow relative to keeping the old trucks (through increased revenues and decreased operating costs) by about \$16 million per year. If purchased, the new trucks would be depreciated for both accounting and tax purposes on a straight-line basis.

Required

- (a) From the point of view of the company, should this investment be made? Support your conclusion with net present value calculations.
- (b) From the point of view of the manager, should this investment be made?
- (c) If the manager were rewarded on the basis of after-tax residual income, would the manager want to make the investment? Show why or why not.

- LO 1, 2, 3, 4** 11-64 *Strategy and control* Many people believe that the focus of control in a successful organization reflects the strategic initiatives in the organization. For each of the following organizations, identify what you think are the three most important items assessed by the organization's financial control system and why each is important. For each organization, what critical information is not assessed by the financial control system?
- A company selling cable television services to its subscribers
 - A symphony orchestra
 - An organization selling canned soup
 - A government agency responsible for finding jobs for its clients
 - An auditing firm
 - A company selling high-fashion clothing.
- LO 2** 11-65 *Organic and mechanistic organizations* Researchers have defined two extreme forms of organizations. Organic organizations are highly decentralized with few rules. Most people agree that software development companies are very organic. Mechanistic organizations are highly centralized and use many rules to prescribe behavior. Most people agree that government agencies are very mechanistic.
- Do you agree with these examples? Give your own examples of each of these types of organizations, along with your reason for giving each organization the chosen classification.
- LO 2, 3, 4** 11-66 *Group and individual conflict* Think of an example of an organization in which it is important that the various functional areas be closely coordinated to promote the organization's overall success. Show how performance measures that focus solely on the performance of an individual unit could create problems in this organization.
- LO 2, 3, 4** 11-67 *Coordinating divisional activities* For many years, automobile companies were highly decentralized in terms of functions. The most obvious effect of this heavy decentralization of function was apparent when all the groups needed to work together to accomplish a goal. The highest order of integration occurs in the design of a new automobile.
- Reflecting the functional decentralization of automobile manufacturers, the traditional approach to automobile design was for the marketing group to identify a concept. The design group then created an automobile that reflected the marketing group's idea but incorporated engineering requirements and aesthetics identified by the design group. The purchasing group then identified the parts required by the design and made further modifications to it to incorporate parts that could be made or purchased. Finally, the manufacturing group modified the design to reflect the nature and capabilities of the production process. This process took up to four years and usually resulted in a vehicle that was far removed from the initial design.
- What was wrong here? How could the process be improved?
- LO 1, 2, 3, 4** 11-68 *Choices in financial control* Bennington Home Products sells home products. It buys products for resale from suppliers all over the world. The products are organized into groups. A few examples of these groups are floor care products, kitchen products, tool products, and paper products. The company sells its products all over the world from regional offices and warehouses in every country where it operates. Because of differences in culture and taste, the product lines and products within those lines vary widely among countries.

The regional offices have administrative staff that manage the operations, place orders to the corporate office, and undertake the usual office administrative functions, and they have sales staff that do the selling directly to stores within each region. The regional offices are evaluated as investment centers because they have responsibility for revenues, costs, and investment levels. The regional offices make suggestions for new products.

The corporate office manages the regional offices and places the orders received from the regional offices with suppliers. The corporate office does the ordering for three reasons. First, the company believes that one ordering office eliminates duplication in ordering activities. Second, it believes that one office ordering for all of the regional offices gives the organization more power when dealing with suppliers. Third, it is believed that one office can develop the expertise to find and negotiate with suppliers of unique and innovative products.

Required

- (a) Describe an appropriate system of financial control at the regional level.
- (b) Describe an appropriate system of financial control at the corporate office level.
- (c) Explain why the systems of financial control should or need not mesh.

LO 4 11-69 *Assigning responsibility for uncontrollable events* Some people and organizations believe that the discussion of controllable and uncontrollable events is distracting in the sense that it encourages finger-pointing and an excessive preoccupation with assigning blame. These observers argue that it is more important to find solutions than to identify responsibility for unacceptable or acceptable events.

Required

- (a) What do you think of this argument?
- (b) As an organization moves away from assessing and rewarding controllable performance, what changes would you expect to see in its organization structure?

LO 6 11-70 *New product opportunities and transfer pricing* Plevna Manufacturing makes and distributes small prefabricated homes in kits. The kits contain all pieces needed to assemble the home. All that is required is that the builder erect the home on a foundation.

Plevna Manufacturing is organized into two divisions: the manufacturing division and the sales division. Each division is evaluated on the basis of its reported profits. The transfer price between the manufacturing division, where the kits are made, and the selling division, which sells the kits, is variable cost plus 10%, a total of about \$33,000. The selling price per kit is about \$40,000, and selling and distribution costs are about \$5,000 per home kit.

The total costs that do not vary in proportion with volume at Plevna Manufacturing amount to about \$2,000,000 per year: about \$1,500,000 in manufacturing and about \$500,000 in the selling division. The company is currently operating at capacity, which is dictated by the machinery in the manufacturing division. Each kit requires about 10 hours of machine time, and the total available machine time is 5,000 hours per year. Plevna Manufacturing is making and selling about 500 kits per year. Increasing the plant capacity is not a viable option in the foreseeable future.

Willie Scott is the firm's salesperson. Willie has been approached a number of times recently by people wanting to buy cottages to erect on recreational properties. The cottages would be made by modifying the existing home product. The modification process would begin with a completed home kit. The manufacturing division would then incur additional materials and labor costs of \$3,000 and three hours of machine time to convert a home kit into a cottage kit.

Willie is proposing that the company split the sales division into two divisions: home sales and cottage sales. The new divisional structure would have no effect on existing administrative, personnel, or selling costs.

Required

Suppose the new division is created. Discuss the issues in choosing a transfer price in this situation. What transfer price for each of the two products, home and cottage kits, would you recommend and why? (If you feel that the appropriate transfer price for each product can be within a range, specify the range.)

LO 1,7 11-71 Decision making with return on investment You are the controller of a chain of dry-cleaning establishments. You are computing the return on investment for each outlet.

Outlet A, located in a city core, reported a net profit of \$130,000. The land on which Outlet A is located was essentially rural when it was purchased for \$100,000. Since then, the city has expanded, and the land is now located in the population center. Comparable undeveloped land in the immediate area of the outlet is worth \$2,000,000. The net book value of the outlet building and equipment is \$400,000. The replacement cost of the building and equipment is \$1,200,000. If the outlet building, equipment, and land were sold as a going concern, the sale price would be \$1,500,000. It would cost \$250,000 to demolish the building and clear the property for commercial development.

Required

- What is the return on this investment?
- How would you decide whether this outlet should continue to be operated, sold as a going concern, or demolished and the land sold?

Cases

LO 4 11-72 Segment analysis, commitment, and consumption of activity resources Shellie's Lawn and Gardening performs various lawn and garden maintenance activities, including lawn mowing, tree and shrub pruning, fertilizing, and treating for pests. Unlike other lawn and garden businesses in the city, Shellie also specializes in landscape design and planting. Shellie is pleased that her design specialty is so much in demand. However, she is concerned because profits have been falling, even though sales have been growing during the past few years. In an effort to better understand why profits are falling, Shellie prepared the following product-line income statement:

	LAWN MOWING	LAYOUT DESIGN	OTHER MAINTENANCE	TOTAL
Revenues	\$287,500	\$218,750	\$312,500	\$818,750
Direct costs	\$156,250	\$70,000	\$181,250	\$407,500
Allocated costs	<u>\$131,679</u>	<u>\$100,191</u>	<u>\$143,130</u>	<u>\$375,000</u>
Profit	-\$429	\$48,559	-\$11,880	\$36,250

The lawn mowing business involves mowing lawns and trimming edges for customers who generally sign up for the season and pay a flat fee based on the surface area mowed and trimmed. The layout design business involves both designing a garden and lawn layout and installing the design. Other maintenance includes tree and shrub pruning and application of chemicals. The direct costs for each line of business are the costs of the materials and wages of the people who work in that line of business. The remaining costs consist mainly of equipment costs but also include office costs. After some deliberation, Shellie decided to allocate the remaining costs of \$375,000 on the basis of revenue, reasoning that revenue is a measure of equipment use.

Required

- (a) Based on this product-line income statement, which business is Shellie likely to focus her efforts on? What is the likely result?

A further analysis of the allocated costs produced the information in the following table. General business costs are \$50,000, and the remaining \$325,000 represents equipment costs. The trucks are shared equally by all segments, but the other equipment is used by only the indicated segment.

SHELLIE'S LAWN AND GARDEN RESOURCE USE INFORMATION				
	COST	PRACTICAL CAPACITY HOURS	COST DRIVER RATE PER HOUR	HOURS USED
Trucks and related costs	\$50,000	800	\$62.50	600
Lawn mowing equipment	37,500	1,500	25.00	1,200
Layout design equipment	150,000	400	375.00	400
Other maintenance equipment	<u>87,500</u>	700	125.00	500
	\$325,000			

- (b) For each equipment category in the table above, calculate the cost allocated to Shellie's service orders based on the number of hours used, and calculate the cost associated with unused capacity.
- (c) Prepare a new product-line income statement with a column for each product line and a column for the total company. For each product line, include the cost of used equipment capacity and the cost of unused capacity that is attributable only to that product line.
- (d) Based on your new product-line income statement, what advice do you have for Shellie? How does this advice compare to your response in part a?

LO 2, 3, 4, 7 11-73 Choosing an organization structure You are a senior manager responsible for overall company operations in a large courier company. Your company has 106 regional offices (terminals) scattered around the country and a main office (hub) located in the geographical center of the country. Your operations are strictly domestic. You do not accept international shipments.

The day at each terminal begins with the arrival of packages from the hub. The packages are loaded onto trucks for delivery to customers during the morning hours. In the afternoon, the same trucks pick up packages that are returned to the terminal in late afternoon and then shipped to the hub, where shipments arrive from the terminals into the late evening and are sorted for delivery early the next day for the terminals.

Each terminal in your company is treated as an investment center and prepares individual income statements each month. Each terminal receives 30% of the revenue from packages that it picks up and 30% of the revenue from the packages it delivers. The remaining 40% of the revenue from each transaction goes to the hub. Each terminal accumulates its own costs. All costs related to travel to and from the hub are charged to the hub. The revenue per package is based on size and service type and not the distance that the package travels. (There are two types of service, overnight and ground delivery, which take between one and seven days, depending on the distance traveled.)

All customer service is done through a central service group located in the hub. Customers access this service center through a toll-free telephone number. The most common calls to customer service include requests for package pickup, requests to trace an overdue package, and requests for billing information. The company has invested in complex and expensive package tracking equipment that monitors the package's trip through the system by scanning the bar code placed on every package. The bar code is scanned when the package is picked up, enters the originating terminal, leaves the originating terminal, arrives at the hub, leaves the hub, arrives at the destination terminal, leaves the destination terminal, and is delivered to the customer. All scanning is done by handheld wands that transmit the information to the regional and then central computer.

The major staff functions in each terminal are administrative (accounting, clerical, and executive), marketing (the sales staff), courier (the people who pick up and deliver the shipments and the equipment they use), and operations (the people and equipment who sort packages inside the terminal).

This organization takes customer service very seriously. The revenue for any package that fails to meet the organization's service commitment to the customer is not assigned to the originating and destination terminals.

All company employees receive a wage and a bonus based on the terminal's residual income. This system has promoted many debates about the sharing rules for revenues, the inherent inequity of the existing system, and the appropriateness of the revenue share for the hub. Service problems have arisen primarily relating to overdue packages. The terminals believe that most of the service problems relate to mis-sorting in the hub, resulting in packages being sent to the wrong terminals.

Required

- (a) Explain why you believe an investment center is or is not an appropriate organization design for this company.
- (b) Assuming that this organization is committed to the current design, how would you improve it?
- (c) Assuming that this organization has decided that the investment center approach is unacceptable, what approach to performance evaluation would you recommend?

LO 1, 2, 3, 4 11-74 *Computing objectives and organization responsibility* Baden is a city with a population of 450,000. It has a distinct organization group, called the Public Utilities Commission of the city of Baden, or Baden PUC, whose responsibility is to provide the water and electrical services to the businesses and homes in the city. Baden PUC's manager is evaluated and rewarded on the basis of the profit that Baden PUC reports.

Baden PUC buys electricity from a privately owned hydroelectric facility several hundred miles away for resale to its citizens. Baden PUC is responsible for acquiring, selling, billing, and servicing customers. The maintenance and moving of electric wires within the city are, however, the responsibility of the city of Baden maintenance department, or Baden Maintenance. Baden PUC pays Baden Maintenance for work done on its electrical wires.

Over the years, many squabbles have occurred between Baden Maintenance and Baden PUC. These squabbles have usually involved two items: complaints by customers about delays in restoring disrupted service and complaints by Baden PUC that the rates charged by Baden Maintenance are too high. However, the most recent quarrel concerns a much more serious issue.

On July 12, at about 10:30 A.M., a Baden City employee working in the parks and recreation department noticed an electrical wire that seemed to be damaged. The employee reported the problem to Baden Maintenance at about 12:15 P.M., during his lunch break. At 1:15 P.M., the report was placed on the maintenance supervisor's desk, where it was found at 2:05 P.M., when the supervisor returned from lunch. The maintenance supervisor then called the Baden PUC dispatch office to report the problem and request permission to investigate the report and make any required repairs. The request for repair was placed on the Baden PUC service manager's desk for

approval at 2:25 P.M. The service manager received the message at 4:00 P.M., when he returned from a meeting. He approved the work and left a memo for a subordinate to call in the request. The request was then mistakenly called in by a clerk at 4:50 P.M. as a request for routine service and logged by the dispatcher in Baden Maintenance. A truck was dispatched at 3:50 P.M. the following day. When the repair crew arrived at the scene, it discovered that the wire was indeed damaged and that if any of the children playing in the park had touched it, it would have caused instant death.

The incident went unreported for several days until a reporter for the *Baden Chronicle* received an anonymous tip about the episode, verified that it had happened, and reported the incident on the front page of the newspaper as an example of bureaucratic bungling. The public was outraged and demanded an explanation from the mayor, who asked the city manager to respond. The initial response from Baden's city manager—that "everyone had followed procedure"—only fanned the furor.

Required

- (a) Was what happened inevitable, given the city of Baden's organization structure? Explain.
- (b) Given the existing organization structure, how might this incident have been avoided?
- (c) How would you deal with this situation now that it has happened?
- (d) Would a change in the organization structure help prevent a similar situation from occurring in the future? Explain.