STUDY UNIT EIGHT
RESPONSIBILITY ACCOUNTING AND
FINANCIAL MEASURES

Introduction

The objective of U.8 present a variety of tools that top managers (such as CFOs) use to evaluate mid-level managers and the organization as a whole. Mid-level managers include plant managers, product-line managers, heads of research and development (R&D) departments, and regional sales managers. They all have significant responsibility in helping the organization achieve its strategic goals.

We introduce the concept of responsibility accounting and a performance evaluation framework that consists of the following organizational subunits: cost centers, revenue centers, profit centers, and investment centers. Tied to the concept of controllability, different mechanisms are used to evaluate the short-term financial performance of each of these subunits of the organization.

The coverage in U.8 has a strong strategic focus since mid-level managers have a significant responsibility for achieving strategic goals, and it is critical that the performance evaluation be aligned with these strategic goals. Transfer pricing, covered in U.8, is an important topic for the assessment of both profit centers and investment centers. When buying and selling exist between units within the organization, the determination of the transfer price will affect the performance evaluation of both the buying unit and the selling unit. Therefore, we cover the topic of transfer pricing both as an incentive issue (having the right incentive for the unit managers to choose to trade inside or outside the firm in a manner that achieves the firm's strategic and financial goals) and as a motivation issue (the choice of a transfer price should result in a fair measure of performance for both units).

This chapter covers the measures used to evaluate management performance. These measures include the balanced scorecard, the contribution income statement, and cost allocation. These topics are covered here in the important role they play in management performance evaluation. We begin with an explanation of the broad concepts underlying performance evaluation.

Management control refers to the evaluation by upper-level managers of the performance of mid-level managers.

Management control,
- focuses on higher-level managers and long-term, strategic issues.
- is more consistent with the management-by-objectives approach, in which long-term objectives such as growth and profitability are determined and performance is periodically measured against these goals.
- has a broader and more strategic objective:
  - to evaluate the unit’s overall profitability as well as the performance of its manager,
  - to decide whether the unit should be retained or closed, and
  - to motivate the manager to achieve, top management’s goals.
Because of this broader focus, various objectives for management control generally have multiple measures of performance rather than a single financial or operating measure, as is sometimes true in operational control.

**Objectives of Management Control**

In a management-by-objectives approach, top management assigns a set of responsibilities to each mid-level manager. These areas of responsibility are often called *strategic business units* (SBUs). The concept of a strategic business unit is particularly useful for diversified firms that need performance measures to rationalize and manage the different business units.

Strategic performance measurement systems are implemented in four different forms, depending on the nature of the manager's responsibilities: the revenue center, cost center, profit center, and investment center.

A *strategic business unit* consists of a well-defined set of controllable operating activities over which the SBU manager is responsible.

**The objectives of management control are to:**

1. **Motivate** managers to exert a high level of effort to achieve the goals set by top management.
2. Provide the right incentive for managers to make decisions consistent with the goals set by top management, that is, to align managers’ efforts with desired strategic goals. The alignment of managers’ goals with those of top management is also referred to as *goal congruence*.
3. Determine *fairly* the rewards earned by managers for their effort and skill and the effectiveness of their decision making.

**Characteristics of effective management control systems**

(a) closely aligned to the organization's strategy,
(b) fit the organization's structure, and
(c) motivate managers and employees to give effort to achieve the organization's goals.

(a) To be effective, management control systems should be closely aligned to the company's strategies and goals.

Examples of strategies are developing innovative products-to increase market share in key product areas, or maximizing short-run income by reducing costs and forgoing risky long-run investments in R&D. Suppose management decides, wisely or unwisely, to maximize short-run income. The management control system must then reinforce this goal. The control system should provide managers with information – such as contribution margins on individual products-that will help them make short-run decisions. The control system should also tie managers' rewards to short-run income.

(b) Management control systems should be designed to fit the company's structure and the decision-making responsibility of individual managers.

For example: Consider the R&D manager at GlaxoSmithKline, a pharmaceutical company. The management control system for this manager should focus on:
• the R&D activities required for different drug projects,
• the number of scientists needed,
• the scheduled dates for completing different projects, and
• the preparation of reports comparing actual and budgeted performance.

Now consider a product-line manager responsible for the manufacture, sale, and distribution of ketchup at Heinz, a food products company.

• The company's management control system should
• provide this manager with information about customer satisfaction, market share, manufacturing costs and product-line profitability-information that helps the manager plan and control the operations better.

The manager of the Heinz ketchup product line requires very different information than the information required by the R&D manager at GlaxoSmithKline. But, in both cases, the information provided is designed to aid the manager's decision making.

(c) Effective management control systems should also motivate managers and employees. Motivation is the desire to attain a selected goal (the goal-congruence aspect) combined with the resulting pursuit of that goal (the effort aspect).

Goal congruence exists when individuals and groups work toward achieving the organization's goals—that is, managers working in their own best interest take actions that align with the overall goals of top management.

For example, in capital budgeting, making decisions based on discounting long-run cash flows at the required rate of return best achieves company goals. But if the management control system evaluates managers on the basis of short-run accrual accounting income, managers will be tempted to make decisions to maximize accrual accounting income, which may not be in the long-run best interest of the organization as a whole.

Management control systems must fit an organization's structure. An organization whose structure is decentralized has additional issues to consider for its management control system to be effective.

**Responsibility accounting**

**Responsibility accounting**: is a system that measures the plans - by budgets - and actions - by actual results- of each responsibility center, also called a strategic business unit.

Strategic performance measurement is a system used by top management to evaluate SBU managers. It is used when responsibility can be effectively delegated to SBU managers and adequate measures for evaluating the performance of the managers exist. Before designing strategic performance measurement systems, top managers determine when delegation of responsibility (called decentralization) is desirable.

**Decentralization**
A firm is decentralized if it has chosen to delegate a significant amount of responsibility to SBU managers. In contrast, a centralized firm reserves much of the decision making at the top management level.
Types of responsibility centers (Strategic Business Units)

Four types of responsibility centers are

1. **Cost center**—the manager is accountable for costs only.
   - **Cost SBU** Production or support SBUs within the firm that have the goal of providing the best quality product or service at the **lowest cost**.
   - Example: The maintenance department of a Marriott hotel is a cost center because the maintenance manager is responsible only for costs, so this budget is based on costs.

2. **Revenue center**—the manager is accountable for revenues only.
   - **Revenue SBU** An SBU with responsibility for sales, defined either by product line or by geographical area.

3. **Profit center**—the manager is accountable for revenues and costs.
   - **Profit SBU** An SBU that generates revenues and incurs the major portion of the cost for producing these revenues.

4. **Investment center**—the manager is accountable for investments, revenues, and costs.
   - **Investment SBU** An SBU that includes assets employed by the SBU as well as profits in performance evaluation.

A responsibility center can be structured to promote better alignment of individual and company goals.

Which type of responsibility centers will be applied?

The choice of a profit, cost, or revenue SBU depends on the nature of the production and selling environment in the firm.

- **Products that have little need for coordination** between the manufacturing and selling functions are good candidates for cost centers. These include many commodity products such as food and paper products.
  - For such products, the production manager rarely needs to adjust the functionality of the product or the production schedule to suit a particular customer. For this reason, production managers should focus on reducing cost while sales managers focus on sales; this is what cost and revenue SBUs accomplish.

- **In contrast**, sometimes **close coordination** is needed between the production and selling functions. For example, high-fashion and consumer products require close coordination so that consumer information coming into the selling function reaches the design and manufacturing function. Cost and revenue SBUs could fail to provide the incentive for coordination; in this case, production managers would be focusing on cost and not listening to the ever-changing demands coming from the selling function.
  - A preferred option is to use the profit center for both the revenue and production managers so that both coordinate efforts to achieve the highest overall profit.

When a firm has many different profit SBUs because it has many different product lines, comparing their performance could be difficult because they vary greatly in size and in the nature of their products and services. A preferred approach is to use **investment SBUs**, which include assets employed by the SBU as well as profits in the performance evaluation.
Objectives and applications of strategic performance measurement in three common strategic business units: cost centers, revenue centers, and profit centers.

COST STRATEGIC BUSINESS UNITS
Cost SBUs include direct manufacturing departments such as assembly and finishing and manufacturing support departments such as materials handling, maintenance, and engineering. The direct manufacturing and manufacturing support departments are often evaluated as cost SBUs since these managers have significant direct control over costs but little control over revenues or decision making for investment in facilities.

Strategic Issues Related to Implementing Cost SBUs
- cost shifting,
- excessively focusing on short-term objectives, and
- the tendency of managers and top management to miscommunicate because of the pervasive problem of budget slack.

Cost Allocation and SBU evaluation
A pervasive issue when using cost SBUs is how to allocate the jointly incurred costs of service departments, such as IT, engineering, human resources, or maintenance, to the departments using the service. The choice of method affects the amount of cost allocated to each cost SBU and therefore is critical in effective cost SBU evaluation.

For example, if the cost of maintenance is allocated based on the square feet of space in each production department, the departments with more space have higher costs. The incentives of such an allocation method are not clear because the production departments likely cannot control the amount of space they occupy. Alternatively, if maintenance costs are allocated on the basis of the number of maintenance jobs requested, the production departments can control their allocated maintenance costs by controlling usage.

The criteria for choosing the cost allocation method, are the same as the objectives for management control: to
1. motivate managers to exert a high level of effort,
2. provide an incentive for managers to make decisions consistent with top management's goals, and
3. provide a basis for a fair evaluation of managers' performance.

For example, when management wants to encourage production departments to reduce the amount of maintenance, allocation based on usage provides the desired incentive. In contrast, if management wants the departments to increase the use of maintenance to improve the serviceability of the equipment, the most effective incentive might be not to allocate the maintenance cost or perhaps to subsidize it in some way.

A useful guide in choosing the cost allocation method, in addition to the three criteria just explained, is to use dual allocation. Dual allocation is a cost allocation method that separates fixed and variable costs. Variable costs are directly traced to user departments, and fixed costs are allocated on some logical basis.

For example, the variable costs of maintenance, such as supplies, labor, and parts, can be traced to each maintenance job and charged directly to the user department. This approach is both fair and positively motivating. In contrast, the fixed costs of the maintenance department (training, manuals, equipment, etc.) that cannot be traced to each maintenance job should be allocated to the user departments using a basis that fairly
reflected each department’s use of the service. For example, those departments whose maintenance jobs require more expensive equipment might be allocated a higher proportion of the maintenance department’s fixed costs. To improve on dual allocation, indirect costs could be traced to cost SBUs using activity-based costing. This approach tends to produce the most accurate cost assignment and therefore would be the most motivating and fairest to the SBU managers.

Separate Fixed and Variable Costs: Dual Allocation

Variable Costs

Allocate budgeted amounts to user departments in proportion to the capacity demanded by the user department.

Fixed Costs

Charge to user departments at a budgeted rate times the actual usage of the allocation base.

Budgeted costs should be allocated to avoid passing on inefficiencies from the service departments.

Separate Fixed and Variable Costs: Dual Allocation

Ace Co. has a maintenance department and two operating departments: cutting and assembly. Variable maintenance costs are budgeted at $0.60 per machine hour. Fixed maintenance costs are budgeted at $200,000 per year. Data relating to the current year are:

<table>
<thead>
<tr>
<th>User Departments</th>
<th>Percent of Capacity Demanded</th>
<th>Actual Hours Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting</td>
<td>60%</td>
<td>80,000</td>
</tr>
<tr>
<td>Assembly</td>
<td>40%</td>
<td>40,000</td>
</tr>
<tr>
<td>Total hours</td>
<td>100%</td>
<td>120,000</td>
</tr>
</tbody>
</table>

Allocate maintenance costs to the two operating departments.
### Variable costs are allocated based on hours used.

<table>
<thead>
<tr>
<th></th>
<th>Cutting Department</th>
<th>Assembly Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable cost allocation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0.60 \times 80,000 hours used</td>
<td>$48,000</td>
<td>$24,000</td>
</tr>
<tr>
<td>$0.60 \times 40,000 hours used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed cost allocation</td>
<td>120,000</td>
<td></td>
</tr>
<tr>
<td>60% of $200,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total allocated cost</td>
<td>$168,000</td>
<td></td>
</tr>
</tbody>
</table>

### Variable costs are allocated based on hours used. Fixed costs are allocated based on capacity demanded.

<table>
<thead>
<tr>
<th></th>
<th>Cutting Department</th>
<th>Assembly Department</th>
</tr>
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<tr>
<td>Variable cost allocation:</td>
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<tr>
<td>$0.60 \times 80,000 hours used</td>
<td>$48,000</td>
<td>$24,000</td>
</tr>
<tr>
<td>$0.60 \times 40,000 hours used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed cost allocation</td>
<td>120,000</td>
<td></td>
</tr>
<tr>
<td>60% of $200,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40% of $200,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total allocated cost</td>
<td>$168,000</td>
<td>$104,000</td>
</tr>
</tbody>
</table>

Variable costs are allocated based on hours used. Fixed costs are allocated based on capacity demanded.
RESPONSIBILITY AND CONTROLLABILITY

Controllability is the degree of influence that a specific manager has over costs, revenues, and related items for which he or she is responsible. A controllable cost is any cost that is primarily subject to the influence of a given responsibility center manager for a given period.

A responsibility accounting system could either exclude all uncontrollable costs from a manager's performance report or segregate such costs from the controllable costs. For example, a machining supervisor's performance report might be confined to quantities not costs - of direct materials, direct manufacturing labor, power, and supplies.

In practice, controllability is difficult to pinpoint for at least two reasons:

1. Few costs are clearly under the sole influence of one manager. For example, prices of direct materials may be influenced by a purchasing manager, but these prices also depend on market conditions beyond the manager's control. Quantities used may be influenced by a production manager, but quantities used also depend on the quality of materials purchased. Moreover, managers often work in teams. How can individual responsibility be evaluated in a team situation?

2. With a long enough time span, all costs will come under somebody's control. However, most performance reports focus on periods of a year or less. A current manager may have inherited a predecessor's problems and inefficiencies. For example, present managers may have to work under undesirable contracts with suppliers or labor unions that were negotiated by their predecessors. How can we separate what the current manager actually controls from the results of decisions made by others? Exactly what is the current manager accountable for? Answers may not be clear-cut.

Executives differ in how they embrace the controllability notion when evaluating those reporting to them. Some company presidents regard the budget as a firm commitment that must be met. Failure to meet the budget is viewed unfavorably. Other presidents believe a more risk-sharing approach with managers is preferable, in which noncontrollable factors and performance relative to competitors are taken into account when judging the performance of managers who fail to meet their budgets.

Controllable cost. A cost that a manager or employee has discretion in choosing to incur or can significantly influence the amount of within a given, usually short, period of time. In other words, Controllable cost. Any cost that is primarily subject to the influence of a given responsibility center manager for a given period.

Controllability. Degree of influence that a specific manager has over costs, revenues, and related items for which he or she is responsible.

PROFIT STRATEGIC BUSINESS UNITS

The profit SBU manager's goal is to earn profits. A key advantage of the profit SBU is that it brings the manager's incentives into congruence with those of top management: to improve the firm's profitability. Moreover, the profit SBU should also motivate individual managers because by earning profits, the managers are contributing directly to the firm's success. For these reasons, the profit SBU meets the management control objectives of motivation and decision making explained earlier.

Strategic Role of Profit SBUs

Three strategic issues cause firms to choose profit SBUs rather than cost or revenue SBUs.

- First, profit SBUs provide the incentive for the desired coordination among the marketing, production, and support functions. The handling of rush orders is a good example

- A second reason that firms use profit SBUs rather than cost SBUs is to motivate managers to consider their product as marketable to outside customers.

- The third reason for choosing profit SBUs is to motivate managers to develop new ways to make profit from their products and services
The Contribution Income Statement

The contribution margin approach to performance evaluation is emphasized in responsibility accounting because it focuses on controllability, as opposed to the gross margin approach which is used for external reporting. The contribution margin approach lends itself to relevant revenue and relevant cost analysis.

**Contribution margin** = Revenues – Variable costs, both manufacturing and S&A

**Gross margin** = Revenues – Manufacturing costs, both variable and fixed

A segment is a product line, geographical area, or other meaningful subunit of the organization.

Allocation of central administration costs is a fundamental issue in responsibility accounting. It is usually made based on budgeted revenue or contribution margin. If central administrative or other fixed costs are not allocated, responsibility centers might reach their revenue or contribution goals without covering all fixed costs.

The following comparison illustrates this difference:

<table>
<thead>
<tr>
<th>GAAP Approach</th>
<th>Contribution Margin Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales</strong></td>
<td>$xxx,xxx</td>
</tr>
<tr>
<td>Production costs only:</td>
<td></td>
</tr>
<tr>
<td>Variable production costs</td>
<td>$xx,xxx</td>
</tr>
<tr>
<td>Fixed production costs</td>
<td>(xx,xxx)</td>
</tr>
<tr>
<td>Gross margin</td>
<td>$ xx,xxx</td>
</tr>
<tr>
<td><strong>Variable costs only:</strong></td>
<td></td>
</tr>
<tr>
<td>Variable production costs</td>
<td>$xx,xxx</td>
</tr>
<tr>
<td>Variable S&amp;A expenses</td>
<td>(xx,xxx)</td>
</tr>
<tr>
<td>Contribution margin</td>
<td>$ 90,000</td>
</tr>
<tr>
<td>Controllable fixed costs:</td>
<td></td>
</tr>
<tr>
<td>Fixed production costs</td>
<td>$30,000</td>
</tr>
<tr>
<td>Fixed S&amp;A expenses</td>
<td>(55,000)</td>
</tr>
<tr>
<td>Short-run performance margin</td>
<td>$ 35,000</td>
</tr>
<tr>
<td>Traceable fixed costs:</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>$10,000</td>
</tr>
<tr>
<td>Insurance</td>
<td>(5,000)</td>
</tr>
<tr>
<td>Segment margin</td>
<td>$ 20,000</td>
</tr>
<tr>
<td>Allocated common costs</td>
<td>(10,000)</td>
</tr>
<tr>
<td>Segment operating income</td>
<td>$ 10,000</td>
</tr>
</tbody>
</table>

**COMMON COSTS**

1. Common costs are the costs of products, activities, facilities, services, or operations shared by two or more cost objects.
   a. The term joint costs is frequently used to describe the common costs of a single process that yields two or more joint products.
   2. The difficulty with common costs is that they are indirect costs whose allocation may be arbitrary.
      a. A direct cause-and-effect relationship between a common cost and the actions of the cost object to which it is allocated is desirable. Such a relationship promotes acceptance of the allocation by managers who perceive the fairness of the procedure, but identification of cause and effect may not be feasible.
      b. An alternative allocation criterion is the benefit received. For example, advertising costs that do not relate to particular products may increase sales of all products. Allocation based on the increase in sales by organizational subunits is likely to be accepted as equitable despite the absence of clear cause-and-effect relationships.

Prepared by: Sameh.Y.El-lithy, CMA, CIA.
c. Two specific approaches to common cost allocation are the stand-alone method and the incremental method.

1) The **stand-alone method** allocates a common cost on a proportionate basis using data regarding each cost object.

2) The **incremental method** requires ranking the users of the cost object. The primary party is then allocated its stand-alone cost, with the secondary party receiving the balance of the common costs.

### Example: stand-alone method

A consultant in Tampa is planning to go to Chicago and meet with an international client.

<table>
<thead>
<tr>
<th>The round-trip Tampa/Chicago/Tampa airfare costs $540.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The consultant is also planning to attend a business meeting with a North Carolina client in Durham.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The round-trip Tampa/Durham/Tampa airfare costs $360.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The consultant decides to combine the two trips into a Tampa/Durham/Chicago/Tampa itinerary that will cost $760.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How much should the consultant charge to the North Carolina client?</th>
</tr>
</thead>
<tbody>
<tr>
<td>$360 ÷ ($360 + $540) = .40</td>
</tr>
<tr>
<td>.40 × $760 = $304</td>
</tr>
<tr>
<td>How much to the international client?</td>
</tr>
<tr>
<td>$760 – $304 = $456</td>
</tr>
</tbody>
</table>

### Example: The incremental method

Assume that the business meeting in Chicago is viewed as the primary party.

<table>
<thead>
<tr>
<th>What would be the cost allocation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>International client (primary) $540</td>
</tr>
<tr>
<td>Durham client (incremental) $760 – $540 = $220</td>
</tr>
</tbody>
</table>

3. Cost allocation is necessary for making economic decisions, e.g., the price to charge for a product, whether to make or buy a part, or whether to divest a segment.

4. Cost allocation is also necessary for external financial reporting and for calculation of reimbursements, such as those involved in governmental contracting.
5. Furthermore, cost allocation serves as a **motivator**. For example, designers of products may be required to include downstream costs, such as servicing and distribution, in their cost projections to fix their attention on how their efforts affect the total costs of the company.

   a. Another typical example of the motivational effects of cost allocation is that it tends to encourage marketing personnel to emphasize products with large contribution margins.

6. A persistent problem in large organizations is the treatment of the costs of headquarters and other **central support costs**. Such costs are very frequently allocated.

   a. Research has shown that central support costs are allocated to departments or divisions for the following reasons:

      1) The allocation reminds managers that support costs exist and that the managers would incur these costs if their operations were independent.
      2) The allocation also reminds managers that profit center earnings must cover some amount of support costs.
      3) Departments or divisions should be motivated to use central support services appropriately.
      4) Managers who must bear the costs of central support services that they do not control may be encouraged to exert pressure on those who do. Thus, they may be able to restrain such costs indirectly.

7. Negative behavioral effects may arise from arbitrary cost allocations.

   a. Managers’ morale may suffer when allocations depress operating results.
   b. Dysfunctional conflict may arise among managers when costs controlled by one are allocated to others.
   c. Resentment may result if cost allocation is perceived to be arbitrary or unfair. For example, an allocation on an ability-to-bear basis, such as operating income, penalizes successful managers and rewards underachievers and may therefore have a demotivating effect.
Financial Measures

1. **Product profitability analysis** allows management to determine whether a product is providing any coverage of fixed costs.

   **EXAMPLE:**

   a. At first glance, a dairy operation appears to be comfortably profitable.

<table>
<thead>
<tr>
<th></th>
<th>Milk</th>
<th>Cream</th>
<th>Cottage Cheese</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$300,000</td>
<td>$60,000</td>
<td>$180,000</td>
<td>$540,000</td>
</tr>
<tr>
<td>Variable costs</td>
<td>110,000</td>
<td>62,000</td>
<td>140,000</td>
<td>312,000</td>
</tr>
<tr>
<td>Contribution margin</td>
<td>$190,000</td>
<td>$(2,000)</td>
<td>$40,000</td>
<td>$228,000</td>
</tr>
<tr>
<td>Other traceable costs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>66,000</td>
<td>10,000</td>
<td>40,000</td>
<td>116,000</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>8,000</td>
<td>4,000</td>
<td>6,000</td>
<td>18,000</td>
</tr>
<tr>
<td>Product line margin</td>
<td>$116,000</td>
<td>$(16,000)</td>
<td>$(6,000)</td>
<td>$94,000</td>
</tr>
<tr>
<td>Fixed costs</td>
<td></td>
<td></td>
<td></td>
<td>24,000</td>
</tr>
<tr>
<td>Operating income</td>
<td></td>
<td></td>
<td></td>
<td>$70,000</td>
</tr>
</tbody>
</table>

b. A product profitability analysis shows an entirely different picture. Two product lines are losing money, and one is not even covering its own variable costs.

2. **Business unit profitability analysis** performs the same function on the segment level.

   a. **EXAMPLE**: A business unit profitability analysis for a company that provides research services allows management to see which branch offices are the most profitable.

<table>
<thead>
<tr>
<th></th>
<th>Sacramento</th>
<th>Omaha</th>
<th>Albany</th>
<th>Jacksonville</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$1,200,000</td>
<td>$600,000</td>
<td>$2,000,000</td>
<td>$4,600,000</td>
<td>$8,600,000</td>
</tr>
<tr>
<td>Variable costs of sales</td>
<td>800,000</td>
<td>460,000</td>
<td>1,400,000</td>
<td>3,200,000</td>
<td>5,860,000</td>
</tr>
<tr>
<td>Other variable costs</td>
<td>256,000</td>
<td>178,000</td>
<td>320,000</td>
<td>544,000</td>
<td>1,296,000</td>
</tr>
<tr>
<td>Contribution margin</td>
<td>$144,000</td>
<td>$164,000</td>
<td>$280,000</td>
<td>$856,000</td>
<td>$1,444,000</td>
</tr>
<tr>
<td>Traceable fixed costs</td>
<td>150,000</td>
<td>100,000</td>
<td>160,000</td>
<td>220,000</td>
<td>630,000</td>
</tr>
<tr>
<td>Business unit margin</td>
<td>$(6,000)</td>
<td>$(64,000)</td>
<td>$(120,000)</td>
<td>$(636,000)</td>
<td>$(814,000)</td>
</tr>
<tr>
<td>Nontraceable fixed costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>200,000</td>
</tr>
<tr>
<td>Operating income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$814,000</td>
</tr>
</tbody>
</table>
PERFORMANCE MEASURES

Measuring performance is an integral part of any management control system. Making strategic planning and control decisions requires information about how different subunits of the organization have performed.

Types of performance measures

A) Financial measures

1) Internal financial measures: Many performance measures, such as operating income, rely on internal financial information, increasingly companies are supplementing internal financial measures with measures based on:

2) External financial measures (such as stock prices)

B) Non-financial Measures:

1) Internal nonfinancial measures based on internal non-financial information (such as defect rates, Manufacturing lead times, Number of new patents).

2) External non-financial measure based on external non-financial information (such as customer satisfaction ratings and Market share).

Some organizations present financial and non-financial performance measures for their subunits in a single report called the balanced scorecard.

To emphasize the importance of using strategic information, both financial and Non-financial, accounting reports of a firm’s performance are now often based on critical successes factors in four different dimensions. One dimension is financial, the other three dimensions are non-financial (customer satisfaction, internal business processes, Innovation and learning).

We will focus on the most widely used performance measures for investment strategic business units covering on intermediate to long time horizon.

These are internal financial measures based on accounting number, routinely reported by organizations.
The Strategic Role of Investment Units

- To motivate managers to exert a high level of effort to achieve the goals of the firm.
- To provide the right incentive for managers to make decisions that are consistent with the goals of top management.
- To fairly determine the rewards earned by the managers for their effort and skill.

**RETURN ON INVESTMENT (ROI)**

ROI is an accounting measure of income (Profit) divided by an accounting measure of investment in the business unit.

\[
\text{ROI} = \frac{\text{Income}}{\text{Investment}}
\]

ROI is also called the accounting rate of return or the accrual accounting rate of return.

How do investment SBU achieve these three objectives?

1) ROI is clear and intuitive and is generally within the manager’s control, thus, ROI motivate managers to exert a high level of effort to achieve goals sit by top management.

2) ROI can achieve goal congruence since ROI is a critical financial performance measure for the firm as a whole. Each successful investment SBU contributes directly to firms’ success.

3) ROI provides fairness of reports because use of investment SBUs provides a sound basis for comparing the performance of units of different size.

*Definition and Interpretation*

ROI is the most popular approach to measure performance.

Du Pont method, ROI is popular for two reasons:

1- It blends all ingredients of profitability, revenues, costs, and investment into a single percentage and,

2- It can be compared with the rate of return on opportunities, elsewhere, inside or outside the company.

ROI can provide more insight into performance when it is represented as its component,

\[
\frac{\text{Income (Profit)}}{\text{Investment}} = \frac{\text{Income}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Investment}}
\]

Also written as,

\[
\text{ROI} = \frac{\text{Return on Sales (ROS) \times Investment turnover}}{(\text{Profit margin})}
\]

Or

\[
\frac{\text{Revenues} - \text{Costs}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Investment}}
\]
B. How the Dupont model enhances basic return on investment calculations?

The Dupont method recognizes the two basic ingredients, in profit making.

**ROS**: Tells how much of each revenue dollar becomes income; the goal is to get higher income per revenue dollar.

The ROS measures the manager's ability to control expenses and increase revenues to improve profitability.

**Investment turnover**: tells how many revenue dollars are generated by each dollar of investment; the goal is to make each investment dollar "work harder" to generate more revenues.

Together, the two components of ROI tell a more complete story of the manager's performance and enhance top management's ability to evaluate and compare the different units; Dupont helps managers understand how they can control ROI.

An investment SBU manager can increase ROI in basically 3 ways:

1] Increase sales.
2] Reduce expenses.
3] Reduce assets.

A clear understanding of these three approaches to improving the ROI figure is critical to the effective management of an investment SBU.

**Question:**

Assume sales are $1,000,000, net income is $40,000, and invested capital is $250,000. If the organization's required rate of return (hurdle rate) is 12%, Is the organization meeting performance expectations using ROI?

**Solution :**

\[
\frac{40,000}{1,000,000} \times \frac{1,000,000}{250,000} = \frac{40,000}{250,000} = 16\%
\]

The organization is meeting their requirements based on ROI computations. The ROI of 16% exceeds the required rate of return of 12% .

**Residual income (RI):**

(RI) is an accounting measure of income minus a dollar amount for required return on an accounting measure of investment.

\[\text{RI} = \text{Income} - (\text{Required rate of return} \times \text{Investment})\]

**Definition and interpretation:**

Required rate of return multiplied by the investment is the imputed cost of the investment.

Imputed costs are cost recognized in particular situations that are not usually recognized in financial accounting systems. In other words, RI is the income earned after the unit has paid a charge for the funds it needs to invest in the unit.

**Q.** What required rate of return should Management use to compute residual income?

The cost of capital conceptually, it should be the cost of capital based on each division's risk level.

For example, an oil exploration division would warrant a higher required rate of return than an oil refining division.

Usually, target rate in the residual income method will be less than the highest return rates actually earned by the best performing investment centers in a company.
Historical weighted average cost of capital is often used as the target or hurdle rate, however, the imported rate optimally used is the target return set by the company's management.

Companies using RI vary in the way they define income (for example, operating income or net income) and investment (for example, total assets or total assets minus current liabilities).

Concept example illustrate that RI generally is more likely than ROI to induce goal congruence.

Assume that Hospitality Inns is considering upgrading room features and furnishings at San Francisco hotel. The upgrade will increase operating income of the San Francisco hotel by $70000 and increase its total assets by $400,000. The ROI for the expansion is 17.5% ($70000 / $400000), which is attractive to Hospitality Inns because it exceeds the required rate of return (assume that the WACC for the Hospitality Inns is 12%).

By making this expansion, however, the San Francisco hotel's ROI will decrease:

Pre – Upgrade ROI = $240,000 / $1,000,000 = 24%

Post – upgrade ROI = ($240,000 + $70000) / ($1,000,000 + $400000) = $310,000 / $1,400,000 = 22.1%

The annual bonus paid to the San Francisco manager may decrease if ROI affects the bonus calculation and the upgrading option is selected.

Consequently, the manager may not look upon the expansion favorably. In contrast, if the annual bonus is a function of RI, the San Francisco manager will view the expansion favorably: ( assume operating income for the San Francisco hotel is $240,000).

Pre-upgrade RI = $240,000 – (0.12 x $1,000,000) = $120,000
Post – upgrade RI = $310,000 – (0.12 x $1,400,000) = $142,000

Goal congruence (ensuring that subunit managers work toward achieving the company's goals) is more likely to be achieved by using RI rather than ROI as a measure of the subunit manager's performance.

Advantages and disadvantages of RI

[A] Advantages:

• Supports incentive to accept all projects with ROI greater than minimum rate of return as we explain in the previous example.

• Can use the minimum rate of return to adjust for differences in risk

Disadvantages:

1) Use of an absolute amount to compare performance distorts comparison of units with unequal size; larger unit of an organization may produce larger dollar volumes of residual income even though their performance is identical to a smaller unit on a percentage basis (the same problem of profit SBUs).
As an example, consider the following residual income computations for Division X and Division Y:

<table>
<thead>
<tr>
<th>Division</th>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average operating assets (a) ............</td>
<td>$1,000,000</td>
<td>$250,000</td>
</tr>
<tr>
<td>Net operating income ....................</td>
<td>$120,000</td>
<td>$40,000</td>
</tr>
<tr>
<td>Minimum required return: 10% X (a) ...</td>
<td>100,000</td>
<td>25,000</td>
</tr>
<tr>
<td>Residual income ........................</td>
<td>$20,000</td>
<td>$15,000</td>
</tr>
</tbody>
</table>

Observe that Division X had slightly more residual income than Division Y but that Division X has $1,000,000 in operating assets as compared to only $250,000 in operating assets for Division Y. Thus, Division X’s greater residual income is probably more a result of its size than the quality of its management. In fact, it appears that the smaller division is better managed, since it has been able to generate nearly as much residual income with only one-fourth as much in operating assets to work with. This problem can be reduced to some degree by focusing on the percentage change in residual income from year to year rather than on the absolute amount of the residual income.

2) Reliance on computing a target rate of return may be sometimes difficult to establish.

3) Not as intuitive as ROI.
# Advantages and Limitations of ROI and Residual Income

<table>
<thead>
<tr>
<th>ROI</th>
<th></th>
<th>Residual income</th>
<th></th>
<th>Both ROI and residual income</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Easily understood  • Comparable to interest rates and to rates of returns on alternative investments  • Widely used</td>
<td>• Disincentive for high ROI units to invest in projects with ROI higher than the minimum rate of return but lower than the unit's current ROI.</td>
<td>• Supports incentive to accept all projects with ROI above the minimum rate of return  • Can use the minimum rate of return to adjust for differences in risk  • Can use a different minimum rate of return for different types of assets</td>
<td>• Favors large units when the minimum rate of return is low  • Not as intuitive as ROI  • Can be difficult to obtain a minimum rate of return</td>
<td>• <strong>Congruent</strong> with top management goals for return on assets  • <strong>Comprehensive financial measure.</strong> Includes all elements important to top management: revenues, costs, and investment  • <strong>Comparability</strong> expands top management’s span of control by allowing comparison of business units</td>
</tr>
</tbody>
</table>
Economic Value added (EVA)®

Is a more specific version of residual income.
It equals after-tax operating income minus the (after tax) weighted average cost of capital multiplied by total assets minus current liabilities.

EVA = After tax operating income —

\[ \text{WACC x (Total assets – Current liabilities)} \]

Definition and interpretation

Economic Value Added Issues :

1. Asset Valuation Issues
   a- The organization will capitalize research and development costs as part of its asset base along with other value adding investments in advertising and training.
   b- Balance sheet accounts are revalued to represent current cost.

2. Income Determination
   Income may be adjusted to eliminate the impact of certain transactions and thereby create a nearly cash bases income statement
   a- Adjustments to the balance sheet impact the income statement
   b- Deferred taxes are ignored.

EVA represents the business unit's true economic profit primarily because a charge for the cost of equity capital is implicit in the cost of capital.

The cost of equity is an opportunity cost, that is, the return that could have been obtained on the best alternative investment of similar risk.

EVA is useful for determining whether a segment of a business is increasing shareholder value.

Question :
XYZ Manufacturing has an investment in its southeast regional plant with an investment of $300,000 after adjustments for capitalization of research and development costs and revaluation of certain assets. The company's cost of capital is 12 percent, and their division produces a net income of $50,000 after adjustments for current year research and development, asset revaluations, and other accounting considerations. Calculate the economic value added.

Solution :

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>After tax income</td>
<td>$50,000</td>
</tr>
<tr>
<td>Investment</td>
<td>$300,000</td>
</tr>
<tr>
<td>Cost of capital</td>
<td>12%</td>
</tr>
<tr>
<td>Required return</td>
<td>(36,000)</td>
</tr>
<tr>
<td>Economic value added</td>
<td>$14,000</td>
</tr>
</tbody>
</table>

XYZ's economic value added is positive. XYZ has added to shareholder value.
Market value added (MVA):
Market value added is the degree to which aggregate market value increases. Market value is computed as the number of shares outstanding times the market price of the share. Increases in market value per share and in the aggregate represent the market value added and represent another measure of performance.

Advantages
1) MVA reflects the evaluation of the firm's future performance by the securities markets.

Disadvantages
1) MVA ignores the opportunity cost of capital. Meaning that MVA may show that an investment provided a profit, but it does not consider whether or not an investment at the going market rate for a similar risk investment would have generated a greater return.
TRANSFER PRICING

Coordination and performance evaluation
In decentralized organizations, much of the decision-making power resides in its individual subunits. In these cases, the management control system often uses transfer prices to coordinate the actions of the subunits and to evaluate their performance.

Definition
A transfer price is the price one subunit (department or division) charges for a product or service supplied to another subunit of the same organization. The products can be final products sold to outside customers or intermediate products provided to other internal units.

Example
If, for example, a car manufacturer has a separate division that manufactures engines, the transfer price is the price the engine division charges when it transfers engines to the car assembly division.

Motivation and performance evaluation
The transfer price creates revenues for the selling subunit (the engine division in our example) and purchase costs for the buying subunit (the assembly division in our example), affecting each subunit's operating income. These operating incomes can be used to evaluate subunit performance and to motivate their managers.

Intermediate product
The product or service transferred between subunits of an organization is called an intermediate product. This product may either be further worked on by the receiving subunit or, if transferred from production to marketing, sold to an external customer.

Goal congruence & management effort
As in all management control systems, transfer prices should help achieve a company's strategies and goals and fit its organization structure. In particular, they should promote goal congruence and a sustained high level of management effort. Subunits selling a product or service should be motivated to hold down their costs; subunits buying the product or service should be motivated to acquire and use inputs efficiently.

Performance evaluation
The transfer price should also help top management evaluate the performance of individual subunits and their managers. If top management favors a high degree of decentralization, transfer prices should also promote a high degree of subunit autonomy in decision making. That is, a subunit manager seeking to maximize the operating income of his or her subunit should have the freedom to transact with other subunits of the company (on the basis of transfer prices) or to transact with outside parties.

Objectives of Transfer Pricing
Transfer prices are used to accomplish certain objectives. It is against these objectives that alternative transfer-price options can be evaluated. As is the case with the financial-performance metrics discussed in part one of this chapter, we can identify three primary objectives for transfer prices:
1. **Motivate** a high level of effort on the part of subunit managers (i.e., extent to which a particular transfer-pricing method maintains divisional autonomy).

2. **Goal congruency** (i.e., achieve consistency between decisions made by managers and the goals of top management); for example, one important goal of transfer pricing is to minimize, within allowable limits, income-tax consequences of intradivisional transfers of goods and services.

3. **Reward managers fairly** for their effort and skill, and for the effectiveness of the decisions they make.

### Transfer-Pricing Methods

There are three methods for determining transfer prices:

1. **Market-based transfer prices.** Top management may choose to use the price of a similar product or service publicly listed in, say, a trade association Web site. Also, top management may select, for the internal price, the external price that a subunit charges to outside customers.

   The market-price method sets the transfer price as the current price of the product in the external market. Its key advantage is objectivity; it best satisfies the arm's-length criterion desired for both management and tax purposes. A key disadvantage is that the market price, especially for intermediate products, is often not available.

   Transferring products or services at market prices generally leads to optimal decisions when three conditions are satisfied:
   
   (1) The market for the intermediate product is perfectly competitive,
   
   (2) interdependencies of subunits are minimal, and
   
   (3) there are no additional costs or benefits to the company as a whole from buying or selling in the external market instead of transacting internally.

   A perfectly competitive market exists when there is a homogeneous product with buying prices equal to selling prices and no individual buyers or sellers can affect those prices by their own actions.

   By using market-base transfer prices in perfectly competitive markets, a company can achieve (1) goal congruence, (2) management effort, (3) subunit performance evaluation, and (4) subunit autonomy.

   In perfectly competitive markets, the **minimum price** the selling division is willing to accept from the buying division is the market price, because the selling division can always sell its output in the external market at that price. The **maximum price** the buying division is willing to pay to the selling division is the market price, because the buying division can always buy its input in the external market at that price.

2. **Cost-based transfer prices.** Top management may choose a transfer price based on the costs of producing the product in question.

   Cost-based transfer prices are helpful when market prices are unavailable, inappropriate, or too costly to obtain. For example, the product may be specialized or the internal product may be different from the products available externally in terms of quality and customer service.

   - Examples include
     - variable production costs,
     - variable and fixed production costs, and
     - full costs of the product.
Full costs of the product include all production costs plus costs from the other business functions (R&D, design, marketing, distribution, and customer service).

- The costs used in cost based transfer prices can be actual costs or budgeted costs.
- Sometimes, the cost-based transfer price includes a markup or profit margin that represents a return on subunit investment.

The variable-cost method sets the transfer price equal to the selling unit’s variable cost, with or without a markup. This method is desirable when the selling unit has excess capacity and the transfer price’s chief objective is to satisfy the internal demand for the goods. The relatively low transfer price encourages buying internally. To motivate an internal transfer and because of equity considerations, some companies add a markup to variable cost when determining the transfer price. One alternative in this regard is to add a lump-sum amount to variable costs. Also, variable costs can be defined either as actual or as standard costs.

The full-cost method sets the transfer price equal to variable costs plus an allocated share of the selling unit’s fixed costs, with or without a markup for profit. Advantages of this approach are that it is well understood and that the information is readily available in the accounting records. A key disadvantage is that it includes fixed costs, which can cause improper decision making (Chapter 11). To improve on the full-cost method, firms can use the activity-based cost method described in Chapter 5. 

Full-Cost Bases
In practice, many companies use transfer prices based on full costs. To approximate market prices, cost-based transfer prices are sometimes set at full cost plus a margin. These transfer prices, however, can lead to suboptimal decisions.

Advantages of full-cost-based transfer prices
However, surveys indicate that, despite their limitations, managers prefer to use full-cost-based transfer prices because
- they represent relevant costs for long-run decisions,
- they facilitate external pricing based on variable and fixed costs, and
- they are the least costly to administer.

Using full-cost-based transfer prices requires an allocation of each subunit’s fixed costs to products. Full-cost transfer pricing raises many issues.

- How are indirect costs allocated to products?
- Have the correct activities, cost pools, and cost-allocation bases been identified?
- Should the chosen fixed-cost rates be actual or budgeted?

Budgeted vs. actual
Using budgeted costs and budgeted rates
- lets both divisions know the transfer price in advance.
- It overcomes the problem of inefficiencies in actual costs getting passed along to the buying division. That’s because the transfer prices are based on budgeted (efficient) costs, not what the actual costs turn out to be.
• Also, variations in the total quantity of units produced by the selling division do not affect the transfer price.

3. Negotiated transfer prices. In some cases, the subunits of a company are free to negotiate the transfer price between themselves and then to decide whether to buy and sell internally or deal with outside parties. Subunits may use information about costs and market prices in these negotiations, but there is no requirement that the chosen transfer price bear any specific relationship to either cost or market-price data. Negotiated transfer prices are often employed when market prices are volatile and change occurs constantly. The negotiated transfer price is the outcome of a bargaining process between the selling and buying subunits.

The negotiated-price method involves a negotiation process and sometimes arbitration between units to determine the transfer price. This method is desirable when the units have a history of significant conflict and negotiation can result in an agreed-upon price. The primary limitation is that the method can reduce the desired autonomy of the units. Further, this method may be costly and time-consuming to implement.

Dual pricing
Firms can also use two or more methods, called dual pricing. For example, when numerous conflicts exist between two units, standard full cost might be used as the buyer’s transfer price, while the seller might use market price.

Dual pricing: using two separate transfer-pricing methods to price each transfer from one subunit to another. An example of dual pricing arises when the selling division receives a full-cost based price and the buying division pays the market price for the internally transferred products. The dual-pricing system promotes goal congruence.

Dual pricing is not widely used in practice even though it reduces the goal incongruence associated with a pure cost-based transfer-pricing method. One concern with dual pricing is that it leads to problems in computing the taxable income of subunits located in different tax jurisdictions.

Dual pricing is another internal price-setting alternative. For example, the seller could record the transfer to another segment at the usual market price that would be paid by an outsider. The buyer, however, would record a purchase at the variable cost of production.
1) Each segment’s performance would be improved by the use of a dual-pricing scheme.
2) The company would benefit because variable costs would be used for decision-making purposes. In a sense, variable costs would be the relevant price for decision-making purposes, but the regular market price would be used for evaluation of production divisions.
3) Under a dual-pricing system, the profit for the company will be less than the sum of the profits of the individual segments.
4) In effect, the seller is given a corporate subsidy under the dual-pricing system.
5) The dual-pricing system is rarely used because the incentive to control costs is reduced. The seller is assured of a high price, and the buyer is assured of an artificially low price. Thus, neither manager must exert much effort to show a profit on segmental performance reports.

EXHIBIT 19.9 Advantages and Limitations of Alternative Transfer-Pricing Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable cost</td>
<td>• Provides the proper motivation for the manager to make the correct short-term decision, in which the seller’s fixed costs are not expected to change. When the seller’s variable cost is less than the buyer’s outside price, the variable cost transfer price will cause internal sourcing, the correct decision.</td>
<td>• Inappropriate for long-term decision making in which fixed costs are relevant, and prices must cover fixed as well as variable costs.</td>
</tr>
<tr>
<td>Full cost</td>
<td>• Easy to implement.</td>
<td>• Irrelevance of fixed cost in short-term decision making; fixed costs should be ignored in the buyer’s choice of whether to buy inside or outside the firm.</td>
</tr>
<tr>
<td>Market price</td>
<td>• Helps to preserve unit autonomy.</td>
<td>• Should be adjusted for any cost savings associated with an internal transfer, such as reduced selling costs.</td>
</tr>
<tr>
<td>Negotiated price</td>
<td>• Can be the most practical approach when significant conflict exists.</td>
<td>• Need negotiation rule and/or arbitration procedure, which can reduce autonomy.</td>
</tr>
<tr>
<td></td>
<td>• Is consistent with the theory of decentralization.</td>
<td>• Potential tax problems; might not be considered arm’s length.</td>
</tr>
</tbody>
</table>

Choosing the Right Transfer-Pricing Method: The Firmwide Perspective

One aspect of transfer pricing is whether the transfer price will lead to actions that benefit the organization as a whole. Looked at differently, we might ask whether the transfer price motivates an internal transfer when this benefits the firm, and whether it motivates an external sale when such a sale is warranted (from the an organization-wide perspective). To guide such a decision, three questions must be addressed:

1. Is there an outside supplier?
2. Is the seller’s variable cost less than the market price?
3. Is the selling unit operating at full capacity?

Exhibit 19.10 shows the influence of each of these three factors on the choice of a transfer price and on the decision to purchase inside or out.

First: Is there an outside supplier? If not, there is no market price, and the best transfer price is based on cost or negotiated price. If there is an outside supplier, we must consider the relationship of the inside seller’s variable cost to the market price of the outside supplier by answering the second question.
Second: Is the seller's variable cost less than the market price? If not, the seller’s costs are likely far too high, and from the standpoint of the organization as a whole the buyer should buy outside. On the other hand, if the seller’s variable costs are less than the market price, we must consider the capacity in the selling unit by answering the third question.

(Note: We focus on variable costs in this second step because commonly the transfer pricing issue is addressed as a short-term decision in which fixed costs are not expected to differ whether the internal transfer is made or is not made. In this case, the analysis is very much like the make-or-buy decision problem covered in Chapter 11—the fixed costs of the seller are irrelevant since they will not change in the short run.)

Third: Is the selling unit operating at full capacity? That is, will the order from the internal buyer cause the selling unit to deny other sales opportunities? If not, the selling division should provide the order to the internal buyer at a transfer price somewhere between variable cost and market price. In contrast, if the selling unit is at full capacity, we must determine and compare the cost savings of internal sales versus the selling division's opportunity cost of lost sales. If the cost savings to the inside buyer are higher than the cost of lost sales to the seller, then from the standpoint of the organization as a whole, the buying unit should buy inside, and the proper transfer price should be the market price.

### A GENERAL GUIDELINE FOR TRANSFER-PRICING SITUATIONS

Market conditions, the goal of the transfer-pricing system, and the criteria of goal congruence, management effort, subunit performance evaluation, and subunit autonomy (if desired), must all be considered simultaneously. The transfer price a company will eventually choose depends on the economic circumstances and the decision at hand. The following general guideline (formula) is a helpful first step in setting a minimum transfer price in many situations:

\[
\text{Minimum transfer price} = \text{Incremental cost per unit} + \text{Opportunity cost per unit to the selling subunit}
\]

Incremental cost incurred up to the point of transfer
Definitions

*Incremental cost* in this context means the additional cost of producing and transferring the products or services.

*Opportunity cost* here is the maximum [contribution margin] forgone by the selling subunit if the products or services are transferred internally.

We distinguish incremental cost from opportunity cost because the financial accounting system typically records incremental cost but not opportunity cost.

For example, if the selling subunit is operating at capacity, the opportunity cost of transferring a unit internally rather than selling it externally is equal to the market price minus variable cost. That's because by transferring a unit internally, the subunit forgoes the contribution margin it could have obtained by selling the unit in the outside market.

The guideline measures a *minimum* transfer price because the selling subunit will be motivated to sell the product to the buying subunit only if the transfer price covers:

- the incremental cost the selling subunit incurs to produce the product and
- the opportunity cost it forgoes by selling the product internally rather than in the external market.

---

**Comparison of Methods**

Hence, transfer pricing should motivate managers; it should encourage goal congruence and managerial effort.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Market-Based</th>
<th>Cost-Based</th>
<th>Negotiated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieves goal congruence</td>
<td>Yes, when markets are competitive</td>
<td>Often, but not always. Yes, when based on budgeted costs; less incentive to control costs if transfers are based on actual costs</td>
<td>Yes</td>
</tr>
<tr>
<td>Motivates management effort</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Useful for evaluating subunit performance</td>
<td>Yes, when markets are competitive</td>
<td>Difficult unless transfer price exceeds full cost and even then is somewhat arbitrary</td>
<td>Yes, but transfer prices are affected by bargaining strengths of the buying and selling divisions</td>
</tr>
<tr>
<td>Preserves subunit autonomy</td>
<td>Yes, when markets are competitive</td>
<td>No, because it is rule-based</td>
<td></td>
</tr>
<tr>
<td>Other factors</td>
<td>Market may not exist, or markets may be imperfect or in distress</td>
<td>Useful for determining full cost of products and services; easy to implement</td>
<td>Bargaining and negotiations take time and may need to be reviewed repeatedly as conditions change</td>
</tr>
</tbody>
</table>

**Tax factors.** A wide range of tax issues on the interstate and international levels may arise, e.g., income taxes, sales taxes, value-added taxes, inventory and payroll taxes, and other governmental charges.
BALANCED SCORECARD

How can an organization translate its strategy into a set of performance measures?
It can do so by developing a balanced scorecard that provides the framework for a strategic measurement and management system. The balanced scorecard measures performance from four perspectives:
(1) financial,
(2) customer,
(3) internal business processes, and
(4) learning and growth.

IMPLEMENTATION OF STRATEGY AND THE BALANCED SCORECARD
The balanced scorecard translates an organization’s mission and strategy into a set of performance measures that provides the framework for implementing the strategy. The balanced scorecard does not focus solely on achieving financial objectives. It also highlights the nonfinancial objectives that an organization must achieve to meet its financial objectives.
The scorecard measures an organization’s performance from four perspectives:
(1) financial, (2) customer, (3) internal business processes, and (4) learning and growth.

A company's strategy influences the measures it uses to track performance in each of these perspectives. It’s called the balanced scorecard because it balances the use of financial and nonfinancial performance measures to evaluate short-run and long-run performance in a single report. The balanced scorecard reduces managers' emphasis on short-run financial performance, such as quarterly earnings. That's because the nonfinancial and operational indicators, such as quarterly earnings. That's because the nonfinancial and operational indicators, such as product quality and customer satisfaction, measure changes that a company is making for the long run.

The trend in performance evaluation is the balanced scorecard approach to managing the implementation of the firm’s strategy.
a. The balanced scorecard is an accounting report that connects the firm’s critical success factors to measurements of its performance.
1) Critical success factors (CSFs) are specific, measurable financial and nonfinancial elements of a firm’s performance that are vital to its competitive advantage.
b. A firm identifies its CSFs by means of a SWOT analysis that addresses internal factors (its strengths and weaknesses) and external factors (its opportunities and threats).
1) The firm’s greatest strengths are its core competencies, which are functions the company performs especially well. These are the basis for its competitive advantages and strategy.
2) Strengths and weaknesses are internal resources or a lack thereof, for example, technologically advanced products, a broad product mix, capable management, leadership in R&D, modern production facilities, and a strong marketing organization.
3) Opportunities and threats arise from such externalities as government regulation, advances in technology, and demographic changes. They may be reflected in such competitive conditions as
   a) Raising or lowering of barriers to entry into the firm’s industry by competitors
   b) Changes in the intensity of rivalry within the industry, for example, because of overcapacity or high exit barriers
   c) The relative availability of substitutes for the firm’s products or services
   d) Bargaining power of customers, which tends to be greater when switching costs are low and products are not highly differentiated
   e) Bargaining power of suppliers, which tends to be higher when suppliers are few

4) The SWOT analysis tends to highlight the basic factors of cost, quality, and the speed of product development and delivery.
c. Once the firm has identified its CSFs, it must establish specific, measurable ways for each CSF that are both relevant to the success of the firm and reliably stated.
1) Thus, the balanced scorecard varies with the strategy adopted by the firm.

a) For example, product differentiation or cost leadership either in a broad market or a narrowly focused market (a focus strategy). These measures provide a basis for implementing the firm’s competitive strategy.

2) The scorecard should include lagging indicators (such as output and financial measures) and leading indicators (such as many types of nonfinancial measures).

a) The latter should be used only if they are predictors of ultimate financial performance.

3) The scorecard should permit a determination of whether certain objectives are being achieved at the expense of others.

a) For example, reduced spending on customer service may improve short term financial results at a significant cost that is revealed by a long-term decline in customer satisfaction measures.

4) By providing measures that are nonfinancial as well as financial, long term as well as short term, and internal as well as external, the balanced scorecard de-emphasizes short term financial results and focuses attention on CSFs.

2. A typical balanced scorecard classifies objectives into one of four perspectives on the business:

<table>
<thead>
<tr>
<th>Financial Perspective</th>
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<tbody>
<tr>
<td>Objective: Increase shareholder value</td>
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<table>
<thead>
<tr>
<th>Customer Perspective</th>
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<tbody>
<tr>
<td>Objective: Increase customer satisfaction</td>
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</table>

<table>
<thead>
<tr>
<th>Internal Business Process Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective: Improve product quality</td>
</tr>
<tr>
<td>Objective: Improve internal processes</td>
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</table>

<table>
<thead>
<tr>
<th>Learning and Growth Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective: Increase employee confidence</td>
</tr>
<tr>
<td>Objective: Increase employee competence</td>
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</table>

4. The development and implementation of a comprehensive balanced scorecard requires active support and participation by senior management. This involvement will in turn assure the cooperation of lower-level managers in the identification of objectives, appropriate measures, targeted results, and methods of achieving the results.

a. The scorecard should contain measures at the detail level that permits everyone to understand how his/her efforts affect the firm’s results.

b. The scorecard and the strategy it represents must be communicated to all managers and used as a basis for compensation decisions.

c. The following are problems in implementation of the balanced scorecard approach:

1) Using too many measures, with a consequent loss of focus on CSFs
2) Failing to evaluate personnel on nonfinancial as well as financial measures
3) Including measures that will not have long-term financial benefits
4) Not understanding that subjective measures (such as customer satisfaction) are imprecise
5) Trying to achieve improvements in all areas at all times
6) Not being aware that the hypothesized connection between nonfinancial measures and ultimate financial success may not continue to be true.