

# Online Course Manual

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## Module 8

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## Module 8 Summary

**I. Centralized and Decentralized Organizational Structure.** The business firm's *organizational structure* (the way the organization is “structured” as regards which people are given authority to make decisions) may be either *centralized* or *decentralized*.

A. *Centralized* organizations are characterized by “top-down” management. Decision-making power is concentrated in the hands of relatively few people in the organizations (i.e., those at the “top”). In *decentralized* organizations decisions are made by persons at all levels within the organization. Only the smallest of organizations can rely on just one or a few people to make operating decisions, so most are decentralized to one extent or another.

B. *Advantages* of Decentralization.

1. Top management is free to focus on the “big picture,” setting goals and planning strategies without having to worry about details and minor problems.
2. All persons in the organization participate in the management of the business. This improves morale, provides training for mid-managers who may someday move into top-management positions, keeps employees informed and involved in the business, and provides a basis for the evaluation of the abilities of managers at all levels in the organization.

C. *Disadvantages* of Decentralization.

1. Decisions made by many different decision-makers may be poorly coordinated and may not conform to the company's overall goals and strategies. This can occur because lower-level managers are not fully aware of the company's broad strategies or because of “empire-building” within individual departments.
2. New ideas may not be acted upon as quickly since a consensus of opinion must be reached regarding their adoption.

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**II. Responsibility Accounting** (also called *profitability accounting*) pertains to an accounting system that accumulates and reports information for each *responsibility center* that the company wishes to evaluate and control.

A. A responsibility center may be a *cost center* (the managers of the center are only responsible for costs in the center), a *profit center* (costs and revenues are both generated in the center and the center's management is responsible for them), or an *investment center* (a profit center in which the managers are also responsible for decisions regarding the purchase and sale of assets within the center).

B. Only the costs and revenues that the responsibility center's managers are responsible for (called the *controllable costs and revenues*) are listed in the center's

evaluation reports. Recall from Module 1 that the corporate **organization chart** is a graphical representation of the positions of responsibility in the corporation.

1. At the uppermost levels of the corporation's organization chart, *all* costs, revenues and investments are listed, since managers at this level are responsible for everything that occurs within the entire company.
2. As reports are prepared for other responsibility centers further down the organization chart, fewer and fewer of the costs, revenues, and investments appear since lower-level managers are not responsible for as many of them.

C. **Service Departments** have the role of providing services to **operating departments**. While operating departments are *directly* involved in producing the organization's goods or services, service departments *indirectly* participate in this primary activity through their support of the operating departments. A "Painting Department," where the final finish is applied directly to the company's product is an example of an operating department. The Accounting, Personnel, Janitorial and Maintenance Departments are examples of service departments.

1. Since operating departments benefit from the services that service departments provide, the costs of operating the service departments must be charged to the operating departments and included with their other departmental costs. This must be done in order to (1) properly evaluate the performance of the operating departments and (2) to fully cost the goods and services they produce.
2. The process of assigning these costs to the operating departments and to production is referred to as service department cost allocation. This is usually done in two steps:
  - a. Assign the service department costs to the operating departments using an appropriate activity base. The resulting application rates are called **service department charge rates**.
  - b. Apply these costs along with the operating department costs to the goods and services produced.

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**III. Segments and Segment Reports.** Since decisions are made by several decision-makers in decentralized organizations, ways must be found to evaluate decisions and the managers who make them. Decentralized organizations do this by dividing the operation into individual **segments** for which records are kept. Segment reports may then be prepared for evaluation purposes.

- A. **Segment Reporting.** As we know, cost centers, profit centers, and investment centers are all called **responsibility centers**. Reports must be prepared for the organization's *responsibility centers* so they can be analyzed and evaluated.
1. Segments may be defined in many different ways with reports prepared accordingly. For example, individual production department reports may be prepared, product-line reports may be created, or reports may be prepared

for individual work cells. The company would probably prepare all three sets of reports and others as well for use in managing overall operations.

2. Contribution margin format income statements are often prepared for profit and investment centers. Recall that contribution margin statements follow the format shown below:

Sales Revenue	\$X
Variable Costs	(X)
Contribution Margin	\$X
Fixed Costs	(X)
Net Income	\$X

3. The income statement or cost report prepared for a segment should list only those costs for which the segment manager is responsible. This means that only the segment's variable costs and its traceable fixed costs should appear on the segment report and be used to determine the segment's income from operations.

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**IV. ROI and Residual Income.** Segment margin does measure the profitability of the segment and can be used to evaluate the manager's performance, but the use of absolute numbers can be misleading. For example, you would probably be impressed to hear that one of your friends earned a return of \$10,000 in the stock market last year; but if you then found out that the return was earned on a \$1,000,000 investment (a 1% rate of return) your opinion regarding your friend's success would probably change. The point here is that relative comparisons (the 1% rate of return is a measure of profit *relative* to investment) are more meaningful than absolute values (the \$10,000 profit).

- A. **ROI (Return on Investment)** is a relative measure of performance that calculates the rate of return earned by the segment. The segment's *net operating income* (earnings before interest and taxes, called **EBIT**) is divided by the average level of assets invested in the segment to calculate a rate of return:

$$ROI = \text{Income from Operations} \div \text{Average Operating Assets}$$

1. Note that use of the ROI provides the same kind of *relative* performance measure as the rate of return earned on the stock investment described earlier. Operating income, an absolute value, is not an adequate performance measure. The asset investment required to produce the income must also be factored into the evaluation, and ROI provides for this.
2. **EBIT** is used instead of total segment margin in order to factor out non-operating revenues and expenses (such as interest revenue or expense, gains

or losses on asset sales, etc.). This is done because it is segment *operating* performance that is being evaluated. Non-operating items distort the report and can result in faulty evaluations.

3. For the same reason, only **operating assets** (those used directly to support operations) are used in calculating ROI. Non-operating assets are short-term investments or other assets not used in operations. Some companies use the full original cost of the assets in the formula; but most companies (and the text) use the **book values** of the operating assets (i.e., original cost less accumulated depreciation).

B. **Usefulness of ROI as a Performance Measure.** It is helpful to look “inside” ROI to understand its real strengths and weaknesses as a performance measure.

1. ROI can be viewed as a composite ratio, one that is formed from two other ratios – a “profit margin” ratio and a “turnover” ratio:

$$\text{Profit Margin Ratio} = \frac{\text{Net Operating Income}}{\text{Sales}}$$

$$\text{Investment Turnover Ratio} = \frac{\text{Sales}}{\text{Average Operating Assets}}$$

- a. The meaning of the margin ratio is clear. If a margin ratio of 10% is calculated, then ten cents of operating income is produced from every dollar of sales. The other ninety cents was lost to COGS and operating expenses. A company with a high margin ratio is getting a lot of profit “bang” from each “buck” of sales. If the company wants to increase its margin, it must increase sales (without increasing expenses proportionately), decrease expenses (without reducing sales proportionately), or do both.
- b. The meaning of the turnover ratio is less obvious. If the turnover ratio is 2, then the company can generate \$2 of sales for every \$1 invested in assets. A company with a high turnover ratio relative to other companies in its industry is “lean and mean.” The company is using its assets efficiently, generating a large amount of sales revenue from them. Because it is able to keep its asset investment low while still producing adequate sales revenue, its expenses (maintenance, depreciation, insurance, property taxes) will be reduced and its profits will compare favorably with other companies in the industry.

2. Note that ROI could be expressed as follows:

$$ROI = \frac{\text{Operating Income}}{\text{Operating Assets}} = \frac{\text{Operating Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Operating Assets}}$$

$$ROI = \text{Profit Margin Ratio} \times \text{Turnover Ratio}$$

3. This relationship (originated by the DuPont Corporation) provides insight into the meaning of ROI. How can ROI be increased? If the margin ratio rises (by improving profitability and/or reducing average assets), or if turnover increases (by increasing sales and/or decreasing assets), then ROI will grow. A company that invests in unproductive assets will have a poor turnover ratio and will probably have a low ROI. Likewise, a company that is not able to mark up its products by very much will have a poor profit margin ratio and also have a low ROI. Heaven help the company that has older, inefficient assets *and* an unpopular product with low demand.

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- C. **Residual Income** is related to ROI, and is another measure through which managers may be evaluated. To calculate residual income, the **minimum required rate of return** (the rate of return the company wants to earn on its investment in the assets used by the segment) must be known.

1. The minimum required rate of return is multiplied by the average operating assets (as defined in the section on ROI above) invested in the segment. The result represents the EBIT that the segment should produce in order to produce an ROI that is equal to the company's minimum required rate of return.

$$\begin{aligned} & \text{Average Operating Assets} \\ & \times \text{Minimum Required Rate Return} \\ & = \text{Minimum Required Dollar Amount Return} \end{aligned}$$

2. The result of this multiplication, the minimum required EBIT return in dollars, is then subtracted from the segment margin to calculate *residual income*, the income that is left over (the residue) after the required return is provided.

$$\begin{aligned} & \text{Segment Income from Operations} \\ & - \text{Minimum Required Dollar Amount Return} \\ & = \text{Residual Income} \end{aligned}$$

The greater the segment's residual income, the better the job done by its management.

- The residual income evaluation method encourages managers to take advantage of any opportunity to earn rates of return greater than the company's overall required rate of return. If ROI is the only measure used, managers are reluctant to enter into any business transaction that does not provide a rate of return that is at least as large as the ROI earned by the segment on the previous performance report. To do so would only result in a new ROI that is lower the last figure, and reflects poorly on the segment. This is illustrated in the example below.

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You may click the link below to play a video that walks you through the solution to the sample problem below.

[Link to ROI and Residual Income Illustration](#)

### ***ROI and Residual Income Example:***

**ROI:** The Carpet Installation Department of Greson's Carpet Company is accounted for as an investment center, with ROI used as the evaluation measure. Last year's performance report for the company was as follows:

	<u>Department</u>		
	<u>Installation</u>	<u>Sales</u>	<u>Total</u>
Revenue	\$ 15,000	\$ 45,000	\$ 60,000
Variable Costs	(10,000)	(20,000)	(30,000)
Fixed Costs	<u>(2,000)</u>	<u>(12,000)</u>	<u>(14,000)</u>
Operating Income	<u>\$ 3,000</u>	<u>\$ 13,000</u>	<u>\$ 16,000</u>
Operating Assets	\$15,000	\$39,000	\$54,000
ROI	20%	33%	29.6%

Suppose the Installation Department manager is considering the purchase of carpet laying equipment that would cost \$5,000. The use of the equipment will produce variable cost savings of \$1,000 but will increase fixed costs by \$250. The net result is \$750 in savings per year. Since the

equipment costs \$5,000, the rate of return earned on an investment in this equipment is 15% ( $\$750 \div \$5,000$ ). Assume that the company requires a rate of return of 8% on any asset investments that it makes. If this is the case, the carpet laying equipment would be a good investment. However, if the Installation Department manager does buy the equipment, the department's performance will now be as follows (the numbers in italics are those that have changed):

*Example, Continued*

	<u>Installation Department</u>
Revenue	\$ 15,000
Variable Costs	(9,000)
Fixed Costs	<u>(2,250)</u>
Operating Income	<u>\$ 3,750</u>
Operating Assets	\$20,000
ROI	<i>18.8%</i>

Since the manager does not like to see the ROI earned by the department fall from the previous year's level, he or she may well decide not to purchase the equipment. This is not, however, in the company's best interest.

Residual Income:

Suppose a residual income evaluation measure is used instead of ROI. Given the 8% required rate of return for the company, the original performance report would appear as follows:

	<u>Department</u>		
	<u>Installation</u>	<u>Sales</u>	<u>Total</u>
Revenue	\$ 15,000	\$ 45,000	\$ 60,000
Variable Costs	(10,000)	(20,000)	(30,000)
Fixed Costs	<u>(2,000)</u>	<u>(12,000)</u>	<u>(14,000)</u>
Operating Income	<u>\$ 3,000</u>	<u>\$ 13,000</u>	<u>\$ 16,000</u>
Operating Assets	\$15,000	\$39,000	
Required ROI	x <u>8%</u>	x <u>8%</u>	
Required Income	<u>\$1,200</u>	<u>\$ 3,120</u>	
Residual Income*	<u>\$1,800</u>	<u>\$9,880</u>	

\* = *Operating Income – Required Income*



If the Installation Department manager does purchase the equipment, the department's performance report would now appear as follows:

	<u>Installation Department</u>
Revenue	\$ 15,000
Variable Costs	(9,000)
Fixed Costs	<u>(2,250)</u>
Operating Income	<u>\$ 3,750</u>
Operating Assets	\$20,000
Required ROI	x 8%
Required Income	<u>\$1,600</u>
Residual Income	<u>\$2,150</u>

Since the residual income increases as a result of the purchase, the manager is free to acquire the equipment. This ensures the selection of assets by managers that will benefit the company, even if they produce declines in the ROI for the segment.

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- V. Transfer Pricing** is concerned with the determination of the "price" at which units are transferred among departments within the company, and not with the price at which the product is sold to the customer.
- A. The problem of assigning transfer prices to departments is important since, in a decentralized organization, the individual cost centers, profit centers and investment centers are held responsible for the costs incurred and revenues earned within the centers.
  - B. The determination of the *transfer price* (i.e., the "price" at which units are transferred into other centers) directly affects the center's costs and/or revenues.
    1. To illustrate this, consider the following scenario. You are the manager of the Bolt Department in your company, and you manufacture the bolts used to make your company's product. It currently costs \$.02 to make a bolt in your department. An outside supplier of bolts will sell bolts to your company for \$.01 each, and another manufacturer is willing to buy bolts from your company for \$.03 each. Suppose management has decided not to purchase the bolts from the outside supplier and not to sell the bolts to the other manufacturer, but rather to continue to use your bolts in the Assembly

- Department. How should the bolts be "priced" when they are sent to the Assembly Department?
2. You would prefer that they be priced at \$.03 since this will improve your department's profits, but this will increase the Assembly Department's costs and reduce its profit. The Assembly Department manager would prefer to use \$.01, but this will reduce your revenues and your department's profit. Deciding upon a fair transfer price is both important and difficult to do.
- C. Two general approaches are used to set transfer prices:
1. **Cost-based methods** establish a price based upon the cost of producing the item. Under a **cost-price** approach, the cost of producing the item becomes the transfer price; under a **cost-plus** approach the cost is increased by a profit percentage that is negotiated between the managers of the affected departments. In the illustration above, if a 10% profit percentage is agreed upon, the bolts would be priced at \$.022 [ $$.02 + ($.02 \times 10\%)$ ].
  2. **Market transfer prices** are represented by either (1) the price that would be paid if the units were purchased from outside suppliers or (2) the price that would be received if they were sold to parties outside the firm. In the example above, where a single market price cannot be determined, the method cannot be applied directly - though both the \$.01 purchase price and the \$.03 sales price would likely enter into the determination of a transfer price.
  3. Under either of the two approaches it is important that the managers of the cost centers affected be involved in the determination of the transfer price, and in either case it is preferable that the transfer price used be **a negotiated transfer price** (i.e., determined by bargaining between the managers).

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