Chapter 11

Lecture Notes

Chapter theme: Managers in large organizations have to delegate some decisions to those who are at lower levels in the organization. This chapter explains how **responsibility accounting systems**, **return on investment (ROI),** **residual income, operating performance measures, and the balanced scorecard** are used to help control decentralized organizations.

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1. **Decentralization in organizations**
   1. A **decentralized organization** does not confine decision-making authority to a few top executives; rather, **decision-making authority is spread throughout the organization**. The advantages and disadvantages of decentralization are as follows:
      1. **Advantages of decentralization**
         1. It enables top management to **concentrate** on strategy, higher-level decision making, and coordinating activities.

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* + - 1. It acknowledges that lower-level managers have more detailed information about local conditions that enable them to make **better operational decisions**.
      2. It enables lower-level managers to **quickly respond to customers**.
      3. It provides lower-level managers with the **decision-making experience** they will need when promoted to higher level positions.
      4. It often **increases motivation**, resulting in increased job satisfaction and retention, as well as improved performance.

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* + 1. **Disadvantages of decentralization**
       1. Lower-level managers may make decisions without fully understanding the **“big picture.”**
       2. There may be a **lack of coordination** among autonomous managers.

a. The **balanced scorecard** can help reduce this problem by communicating a company’s strategy throughout the organization.

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* + - 1. Lower-level managers may have **objectives that differ** from those of the entire organization.
         1. This problem can be reduced by **designing performance evaluation systems** that motivate managers to make decisions that are in the best interests of the company.

4. It may be difficult to effectively **spread innovative ideas** in a strongly decentralized organization.

II. **Responsibility accounting**

A. **Responsibility accounting systems** link lower-level managers’ decision-making authority with accountability for the outcomes of those decisions. The term **responsibility center** is used for any part of an organization whose manager has control over, and is accountable for cost, profit, or investments. The **three primary types** of responsibility centers are cost centers, profit centers, and investment centers.

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1. **Cost center**
2. The manager of a cost center has **control over costs**, but not over revenue or investment funds.
3. **Service departments** such as accounting, general administration, legal, and personnel are usually classified as cost centers, as are **manufacturing facilities**.

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1. **Standard cost variances and flexible budget variances**, such as those discussed in Chapters 10 and 11, are often used to evaluate cost center performance.
2. **Profit center**
3. The manager of a profit center has control over **both costs and revenue**.

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1. Profit center managers are often evaluated by comparing actual profit to targeted or budgeted profit.
2. **Investment center**
3. The manager of an investment center has control over **cost, revenue, and investments in operating assets**.

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1. Investment center managers are usually evaluated using return on investment (ROI) or residual income, as discussed later in this chapter.

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III. **Evaluating investment center performance – return on investment**

*Learning Objective 1: Compute return on investment (ROI) and show how changes in sales, expenses, and assets affect ROI.*

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A. **Key concepts/definitions**

i. Investment center performance is often evaluated using a measure called **return on investment (ROI)**, which is defined as follows:



ii. **Net operating income** is income before taxes and is sometimes referred to as EBIT (earnings before interest and taxes). **Operating assets** include cash, accounts receivable, inventory, plant and equipment, and all other assets held for operating purposes.

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1. Net **operating** income is used in the numerator because the denominator consists only of **operating assets**.

2. The operating asset base used in the formula is typically computed as the average of the assets between the **beginning** and the **end** of the year.

iii. **Net book value versus gross cost**

1. Most companies use the **net book value** (i.e., acquisition cost less accumulated depreciation) of depreciable assets to calculate average operating assets.

a. With this approach, **ROI mechanically increases over time** as the accumulated depreciation increases. Replacing a fully-depreciated asset with a new asset will decrease ROI.

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2. An alternative to net book value is the **gross cost** of the asset, which **ignores accumulated depreciation**.

a. With this approach, ROI does not grow automatically over time, rather **it stays constant**. Replacing a fully-depreciated asset does not adversely affect ROI.

B. **Understanding ROI**

i. Du Pont pioneered the use of ROI and recognized the importance of looking at the components of ROI, namely margin and turnover.

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1. **Margin** is computed as shown and is improved by increasing unit sales, increasing selling prices, or reducing operating expenses. The lower the operating expenses per dollar of sales, the higher the margin earned.

2. **Turnover** is computed as shown. It incorporates a crucial area of a manager’s responsibility – the investment in operating assets. Excessive funds tied up in operating assets depress turnover and lower ROI.

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*Helpful Hint: Emphasize that both margin and turnover affect profitability. As an example, ask students to compare the margins and turnovers of grocery stores to jewelry stores. In equilibrium, every industry should have roughly the same ROI. Groceries, because of their short shelf life, have high turnovers relative to fine jewelry. If the ROIs are to be comparable in grocery stores and in jewelry stores, the margins would have to be higher in jewelry stores.*

ii. To illustrate how to increase ROI, assume that Regal Company reports the results shown:

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1. Given this information, its current ROI is **15%**.

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2. Suppose that Regal’s manager invests in a **$30,000** piece of equipment that increases sales by **$35,000** while increasing operating expenses by **$15,000**.

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a. In this case, the ROI increases from **15% to 21.8%**.

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C. **Criticisms of ROI**

i. Just telling managers to increase ROI may not be enough. **Managers may not know how to increase ROI** in a manner that is consistent with the company’s strategy.

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1. This is why ROI is best used as part of a balanced scorecard.

ii. A manager who takes over a business segment typically **inherits** **many committed costs** over which the manager has no control. This may make it difficult to assess this manager relative to other managers.

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iii. A manager who is evaluated based on ROI may **reject investment opportunities** that are profitable for the whole company but that would have a negative impact on the manager’s performance evaluation.

*Helpful Hint: When discussing the criticisms of ROI and other measures of profitability, ask students to play the role of a manager who anticipates a short tenure. This manager will want to increase ROI as quickly as possible. Ask students to list the activities that could be undertaken to increase ROI that, in reality, would hurt the company as a whole.*

IV. **Residual income**

*Learning Objective 2: Compute residual income and understand its strengths and weaknesses.*

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A. **Defining** residual income

i. **Residual income** is the net operating income that an investment center earns **above the minimum required return on its assets**.

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1. **Economic Value Added** (EVA®) is an adaptation of residual income. We will not distinguish between these two terms.

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B. **Calculating** residual income

i. The equation for computing residual income is as shown. Notice:

* + - 1. This computation **differs** from ROI. ROI measures net operating income earned relative to the investment in average operating assets. Residual income measures net operating income earned less the minimum required return on average operating assets.

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ii. **Zepher, Inc. - an example**

1. Assume the information as given for a division of Zepher, Inc.

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2. The residual income (**$10,000**) is computed by subtracting the minimum required return (**$20,000**) from the actual income (**$30,000**).

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C. **Motivation and residual income**

i. The residual income approach encourages managers to **make** investments that are profitable for the entire company but that would be **rejected** by managers who are evaluated using the ROI formula. More specifically:

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1. It motivates managers to pursue investments where the ROI associated with those investments **exceeds** the company’s minimum required return but is **less than** the ROI being earned by the managers.

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23-32

*Quick Check – ROI versus residual income*

D. **Divisional comparison and residual income**

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i. The residual income approach has **one major disadvantage**. It cannot be used to compare the performance of divisions of different sizes.

ii. **Zepher, Inc. – continued**

1. Recall that the Retail Division of Zepher had average operating assets of **$100,000**, a minimum required rate of return of **20%**, net operating income of **$30,000**, and residual income of **$10,000**.

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2. Assume that the Wholesale Division of Zepher had average operating assets of **$1,000,000**, a minimum required rate of return of **20%**, net operating income of **$220,000**, and residual income of **$20,000**.

3. The residual income numbers suggest that the Wholesale Division **outperformed** the Retail Division because its residual income is $10,000 higher. However:

a. The Retail Division earned an ROI of **30%** compared to an ROI of **22%** for the Wholesale Division. The Wholesale Division’s residual income is larger than the Retail Division **simply because it is a bigger division**.

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1. **Operating performance measures**

*Learning Objective 3: Compute delivery cycle time, throughput time, and manufacturing cycle efficiency (MCE).*

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#### Key definitions/concepts

1. **Delivery cycle time** is the elapsed time from when a customer order is received to when the completed order is shipped.
2. **Throughput (manufacturing cycle) time** is the amount of time required to turn raw materials into completed products.

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1. This includes **process time, inspection time, move time, and queue time**. Process time is the only **value-added** activity of the four mentioned.
2. **Manufacturing cycle efficiency (MCE)** is computed by dividing value-added time by throughput time.

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An MCE **less than 1.0** indicates that non-value-added time is present in the production process.

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*Quick Check – internal business process measures*

VI. **Balanced scorecard**

*Learning Objective 4: Understand how to construct and use a balanced scorecard.*

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#### Key concepts

1. A **balanced scorecard** consists of an integrated set of performance measures that are derived from and support a company’s strategy. Importantly, the measures included in a company’s balanced scorecard are **unique** **to its specific strategy**.

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1. The balanced scorecard enables top management to translate its strategy into four groups of performance measures – **financial, customer, internal business process, and learning and growth** − that employees can understand and influence.
   * + 1. The premise of these four groups of measures is that learning is necessary to **improve** internal business processes, which in turn **improves** the level of customer satisfaction, which in turn **improves** financial results.

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1. Note the emphasis on **improvement**, not just attaining some specific objective.
2. The balance scorecard relies on **non-financial measures** in addition to financial measures for **two reasons**:

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1. Financial measures are **lag indicators** that summarize the results of past actions. Non-financial measures are **leading indicators** of future financial performance.

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* + - 1. Top managers are ordinarily responsible for financial performance measures – not lower level managers. Non-financial measures are more likely to be **understood** and **controlled** by lower level managers.

1. While the entire organization has an overall balanced scorecard, each responsible individual should have his or her own **personal scorecard** as well.

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* + - 1. A personal scorecard should contain measures that can be **influenced** by the individual being evaluated and that **support** the measures in the overall balanced scorecard.

1. A balanced scorecard, whether for an individual or the company as a whole, should have measures that are linked together on a **cause-and-effect basis**.
2. Each link can be read as a hypothesis in the form “**If** we improve this performance measure, **then** this other performance measure should also improve.”

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1. In essence, the balanced scorecard lays out a **theory** of how a company can take concrete actions to attain desired outcomes. If the theory proves false or the company alters its strategy, the measures within the scorecard are **subject to change**.
2. **Incentive compensation for employees probably should be linked to balanced scorecard performance measures**.
3. However, this should only be done after the organization has been successfully managed with the scorecard for some time – **perhaps a year or more**. Managers must be confident that the measures are reliable, not easily manipulated, and understandable by those being evaluated with them.

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#### The balanced scorecard – an example

1. Assume that **Jaguar** pursues a strategy as shown on this slide. Examples of measures that Jaguar might select with their corresponding cause-and-effect linkages include:

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* + - 1. If “**employee skills in installing options**” increases, then the “**number of options available**” should increase and the “**time to install an option**” should decrease.

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* + - 1. If the “**number of options available**” increases and the “**time to install an option”** decreases, then **“customer surveys: satisfaction with options available”** should increase.
      2. If the “**customer surveys: satisfaction with options available**” increases, then the “**number of cars sold**” should increase.

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* + - 1. If the “**time to install an option**” decreases and the “**customer surveys: satisfaction with options available**” increases, then the “**contribution margin per car**” should increase.

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* + - 1. If the “**number of cars sold**” and the “**contribution margin per car**” increase, then the “**profit**” should increase.

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VII. **Appendix 11A: transfer pricing (Slide #57 is a title slide)**

A. **Key concepts/definitions**

i. A **transfer price** is the price charged when one segment of a company provides goods or services to another segment of the company. While domestic transfer prices have no direct effect on the entire company’s reported profit, they can have a dramatic effect on the reported **profitability of a division**.

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ii. The fundamental objective in setting transfer prices is to motivate managers to act in the **best interests of the overall company**. **Suboptimization** occurs when managers do not act in the best interests of the overall company or even their own divisions.

*Helpful Hint: Emphasize that a good transfer price is one that induces division managers to do whatever is in the best interest of the entire company. Students often take for granted that divisions should make all purchases internally whenever possible – which of course is not the case. They also sometimes lose sight of the purpose of transfer pricing in their zeal to be “fair” to the various divisions.*

iii. There are **three primary approaches** to setting transfer prices, namely negotiated transfer prices, transfers at the cost to the selling division, and transfers at market price.

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B. **Negotiated transfer prices**

*Learning Objective 5: Determine the range, if any, within which a negotiated transfer price should fall.*

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i. A **negotiated transfer price** results from discussions between the selling and buying divisions.

1. Negotiated transfer prices have **two advantages**:

a. They **preserve the autonomy** of the divisions, which is consistent with the spirit of decentralization.

b. The managers negotiating the transfer price are likely to have much **better information** about the potential costs and benefits of the transfer than others in the company.

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2. The **range of acceptable transfer prices** is the range of transfer prices within which the profits of both divisions participating in the transfer would increase.

a. The **lower limit** is determined by the selling division.

b. The **upper limit** is determined by the buying division.

ii.  **Grocery Storehouse– an example**

1. Assume the information as shown with respect to West Coast Plantations (WCP) and Grocery Mart (both companies are owned by Grocery Storehouse).

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a. The selling division’s (WCP) **lowest acceptable transfer price** is calculated as shown.

b. The buying division’s (Grocery Mart) **highest acceptable transfer price** is calculated as shown.

1. If Grocery Mart had no outside supplier for oranges, then its highest acceptable transfer price would be equal to the amount it expects to earn by selling the oranges, net of its own expenses.

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c. Let’s calculate the lowest and highest acceptable transfer prices under three scenarios.

2. If WCP **has sufficient idle capacity** (**3,000 crates**) to satisfy Grocery Mart’s demands (**1,000 crates**) without sacrificing sales to other customers, then the lowest and highest possible transfer prices are computed as follows:

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a. The **lowest** acceptable transfer price, as determined by the seller, is **$10**.

b. The **highest** acceptable transfer price, as determined by the buyer, is **$20**.

c. Therefore, **the** **range of acceptable transfer prices is $10-$20**.

3. If WCP **has no idle capacity** and must sacrifice other customer orders (**1,000 crates**) to meet the demands of Grocery Mart (**1,000 crates**), then the lowest and highest possible transfer prices are computed as follows:

a. The lowest acceptable transfer price, as determined by the seller, is **$25**.

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b. The **highest** acceptable transfer price, as determined by the buyer, is **$20**.

c. Therefore, there is **no** **range of acceptable transfer prices.**

d. This is a desirable outcome for Grocery Storehouse because it would be illogical to give up sales of **$25** to save costs of **$20**.

4. If WCP **has some idle capacity** (**500 crates**) and must sacrifice other customer orders (**500 crates**) to meet the demands of Grocery Mart (**1,000 crates**), then the lowest and highest possible transfer prices are computed as follows:

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a. The **lowest** acceptable transfer price, as determined by the seller, is **$17.50**.

b. The **highest** acceptable transfer price, as determined by the buyer, is **$20**.

c. Therefore, the **range of acceptable transfer prices** is **$17.50-$20**.

iii. **Evaluation of negotiated transfer prices**

1. If a transfer within the company would result in higher overall profits for the company, there is **always** a range of transfer prices within which both the selling and buying divisions would have higher profits if they agree to the transfer.

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2. Nonetheless, if managers are pitted against each other rather than against their past performance or reasonable benchmarks, a **noncooperative atmosphere** is almost guaranteed. Thus, negotiations often break down even though it would be in both parties’ best interests to agree to a transfer price.

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3. Given the disputes that often accompany the negotiation process, **most companies rely on some other means of setting transfer prices**.

C. **Transfers at the cost to the selling division**

i. Many companies set transfer prices at either the **variable cost or full (absorption) cost** incurred by the selling division. The drawbacks of this approach include:

1. Using full cost as a transfer price can lead to **suboptimization** because it does not distinguish between variable costs, which may be relevant to the transfer pricing decision, and fixed costs, which may be irrelevant.

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2. If cost is used as the transfer price, **the selling division will never show a profit on any internal transfer**. The only division that shows a profit is the division that makes the final sale to an outside party.

3. Cost-based transfer prices **do not provide incentives to control costs**. If the actual costs of one division are passed on to the next, there is little incentive for anyone to work on reducing costs.

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D. **Transfers at market price**

i. A **market price** (i.e., the price charged for an item on the open market) is often regarded as the best approach to the transfer pricing problem. A market-based transfer price:

1. **Works best when** the product or service is sold in its present form to outside customers and the selling division has no idle capacity.

a. With no idle capacity the real cost of the transfer from the company’s perspective is the opportunity cost of the lost revenue on the outside sale.

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2. **Does not work well when** the selling division has idle capacity. In this case, market-based transfer prices are likely to be higher than the variable cost per unit of the selling division. Consequently, the buying division may make pricing and other decisions based on incorrect, market-based cost information rather than the true variable cost incurred by the company as a whole.

E. **Divisional autonomy and suboptimization**

i. The principles of decentralization suggest that companies should grant managers **autonomy** to set transfer prices and to decide whether to sell internally or externally.

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ii. While subordinate managers may occasionally make suboptimal decisions, **top managers should allow their subordinates to control their own destiny** – even to the extent of granting subordinate managers the right to make mistakes.

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VIII. **Appendix 11B: Service Department Charges** **(Slide #71 is a title slide)**

*Learning Objective 6: Charge operating departments for services provided by service departments.*

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A. Most large organizations have both **operating departments** and **service departments**. The central purposes of the organization are carried out in the operating departments. In contrast, service departments do not directly engage in operating activities. This appendix discusses **why** and **how** service department costs are allocated to operating departments.

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1. **Four reasons for allocating service department costs**
   * + 1. To encourage operating departments to **wisely use** service department resources.
       2. To provide operating departments with **more complete cost data** for making decisions.

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* + - 1. To help **measure the profitability** of operating departments.
      2. To create an **incentive** for service departments to operate efficiently.

ii. The service department charges considered in this appendix can be viewed as a **transfer price** that is charged for services provided by service departments to operating departments.

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#### B. Charging costs by behavior

1. Whenever possible, **variable and fixed service department costs should be charged separately** to provide more useful data for planning and control of departmental operations.

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1. A **variable cost** should be charged to consuming departments according to **whatever activity causes the incurrence of the cost**.

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1. A **fixed cost** should be allocated to consuming departments in predetermined **lump-sum amounts** that are based on either the department’s **peak-period** or **long-run average** servicing needs. Importantly, fixed cost allocations:

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1. Are based on the amount of **capacity** each consuming department requires.
2. **Should not vary** from period to period.

*Helpful Hint: Ask students why it is better to charge managers a lump sum for access to service departments rather than including a “markup” for fixed costs in the charge for the use of services. The answer is that if the charge for the use of services exceeds variable costs and excess capacity exists, managers will demand too little of the service from the standpoint of the company as a whole. This discussion can be used to reinforce ideas developed when covering transfer pricing.*

1. **Budgeted** variable and fixed service department costs (rather than **actual** costs) should be allocated to operating departments.

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1. Variable service department costs should be charged using a predetermined rate applied to the actual services consumed.
2. The lump-sum amount of fixed costs should be based on budgeted fixed costs, not actual fixed costs.

#### Sipco – an example

* + 1. Assuming the facts as shown with respect to Sipco, the **allocation of maintenance costs to the two operating departments would be as follows:**

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* + - 1. The **variable costs** would be allocated by multiplying the **budgeted variable rate** (**$0.60** per machine hour) by the **actual activity level** for each operating department.

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* + - 1. The **fixed costs** would be allocated by multiplying the **percent of peak-period capacity** for each operating department by the **budgeted amount of fixed costs** (**$200,000**).

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83-85

*Quick Check – allocating costs by behavior*

#### Pitfalls in allocating fixed costs

* + 1. Rather than charge fixed costs to using departments in predetermined lump-sum amounts, some companies allocate them using a **variable allocation base** that fluctuates from period to period.

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* + - 1. This is a pitfall because it creates a situation where the fixed costs allocated to one department **are heavily influenced by what happens in other departments**.
    1. **Sales dollars** is an example of a variable allocation base. It is a **poor choice** for an allocation base because sales dollars **fluctuate from period to period**, whereas the costs being allocated are often largely **fixed**.

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* + - 1. This creates a situation where the sales in one department will **influence** the service department costs allocated to another department.
    1. **Autos R Us – an example**
       1. Assume the facts as shown with respect to Autos R Us.

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* + - 1. The allocations of service department costs for **year one** are as shown. Notice:

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* + - * 1. The New Cars Department generated **50%** of total sales and was allocated **$40,000** of service department costs.
      1. The allocations of service department costs for **year** two are as shown. Notice:
         1. The New Cars Department **increased sales by $500,000** while the other departments’ sales remained **unchanged**.
         2. The allocation of service department costs to the New Cars Department increased by **$5,714** while it **decreased** in the other two departments.

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* + - * 1. The manager of the New Cars Department is likely to complain that as a result of his efforts to expand sales, he is being forced to **carry a larger share** of the service department costs.

*Helpful Hint: Ask students to suppose they are a division manager in a company that allocates fixed costs on the basis of actual sales. Ask if the fixed costs allocated to their division will depend on sales in other divisions. If they say yes, ask if this fair. There will probably be a chorus of no’s. Ask how this differs from grading on a curve. After some direction, they should conclude that if you do better on an exam than others, your grade will be higher and other students’ grade will be lower. However, if your sales increase relative to other divisions, the fixed costs allocated to you will increase and that allocated to other divisions will decrease.*