Managerial Accounting

TOOLS FOR BUSINESS DECISION MAKING

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Pricing

Managerial Accounting
Fifth Edition
Weygandt • Kimmel • Kieso
study objectives

1. Compute a target cost when the market determines a product price.

2. Compute a target selling price using cost-plus pricing.

3. Use time-and-material pricing to determine the cost of services provided.

4. Determine a transfer price using the negotiated, cost-based, and market-based approaches.

5. Explain issues involved in transferring goods between divisions in different countries.
preview of chapter 8

Pricing

External Sales
- Target costing
- Cost-plus pricing
- Variable-cost pricing
- Time-and-material pricing

Internal Sales
- Negotiated transfer prices
- Cost-based transfer prices
- Market-based transfer prices
- Effect of outsourcing on transfer pricing
- Transfers between divisions in different countries
The price of a good or service is affected by many factors.

Regardless of the factors involved, the price must cover the costs of the good or service as well as earn a reasonable profit.
To determine an appropriate price, a company must have a good understanding of market forces.

Where products are not easily differentiated from competitor goods, prices are not set by the company, but rather by the laws of supply and demand – such companies are called **price takers**.

Where products are unique or clearly distinguishable from competitor goods, prices are set by the company.

**External Sales**
In a highly competitive industry, the laws of supply and demand significantly affect product price.

No company can affect the price to a significant extent so, to earn a profit, companies must focus on controlling costs.

This requires setting a target cost that will provide the company’s desired profit.
Target Costing

- **Target cost**: Cost that provides the desired profit on a product when the market determines a product's price.

\[
\text{Market Price} - \text{Desired Profit} = \text{Target Cost}
\]

- If a company can produce its product for the target cost or less, it will meet its profit goal.

**SO 1** Compute a target cost when the market determines a product price.
First, a company should identify its market niche where it wants to compete.

Second, the company conducts market research to determine the target price - the price the company believes will place it in the optimal position for the target consumers.

Third, the company determines its target cost by setting a desired profit.

Last, the company assembles a team to develop a product to meet the company’s goals.

SO 1 Compute a target cost when the market determines a product price.
KRC Phones, Inc. is considering introducing a fashion cover for its phones. Market research indicates that 200,000 units can be sold if the price is no more than $20. If Fine Line decides to produce the covers, it will need to invest $1,000,000 in new production equipment. Fine Line requires a minimum rate of return of 25% on all investments. Determine the target cost per unit for the cover.

The desired profit for this new product line is $1,000,000 \times 25% = $250,000.

Each cover must result in profit of $250,000 / 200,000 units = $1.25.

### Target Costing

**Do it!**

<table>
<thead>
<tr>
<th>Market price</th>
<th>Desired profit</th>
<th>Target cost per unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$20</td>
<td>$1.25</td>
<td>$18.75 per unit</td>
</tr>
</tbody>
</table>

\[ \text{Solution on notes page} \]
Target Costing

Review Question

Target cost related to price and profit means that:

a. Cost and desired profit must be determined before selling price.

b. Cost and selling price must be determined before desired profit.

c. Price and desired profit must be determined before costs.

d. Costs can be achieved only if the company is at full capacity.

SO 1 Compute a target cost when the market determines a product price.
In an environment with little or no competition, a company may have to set its own price.

When a company sets price, the price is normally a function of product cost: cost-plus pricing.

Approach requires establishing a cost base and adding a markup to determine a target selling price.

Size of the markup (the “plus”) depends on the desired return on investment for the product:

\[
\text{ROI} = \frac{\text{net income}}{\text{invested assets}}
\]

SO 2  Compute a target selling price using cost-plus pricing.
In determining the proper markup, a company must consider competitive and market conditions.

Cost-plus formula is expressed as:

\[
\text{Cost} + \frac{\text{Markup Percentage} \times \text{Cost}}{\text{Cost}} = \text{Target Selling Price}
\]
Illustration: Cleanmore Products, Inc. is in the process of setting a selling price on its new top-of-the-line, 3-horsepower, 16-gallon, variable-speed wet/dry shop vacuum. The per unit variable cost estimates for the new shop vacuum are as follows.

<table>
<thead>
<tr>
<th>Per Unit</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>$23</td>
</tr>
<tr>
<td>Direct labor</td>
<td>17</td>
</tr>
<tr>
<td>Variable manufacturing overhead</td>
<td>12</td>
</tr>
<tr>
<td>Variable selling and administrative expenses</td>
<td>8</td>
</tr>
<tr>
<td>Variable cost per unit</td>
<td>$60</td>
</tr>
</tbody>
</table>

SO 2 Compute a target selling price using cost-plus pricing.
**Cost-Plus Pricing**

In addition, Cleanmore has the following fixed costs per unit at a budgeted sales volume of 10,000 units.

<table>
<thead>
<tr>
<th>Costs</th>
<th>Total Costs</th>
<th>Budgeted Volume</th>
<th>Cost Per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed manufacturing overhead</td>
<td>$280,000</td>
<td>10,000</td>
<td>$28</td>
</tr>
<tr>
<td>Fixed selling and administrative expenses</td>
<td>240,000</td>
<td>10,000</td>
<td>24</td>
</tr>
<tr>
<td>Fixed cost per unit</td>
<td></td>
<td></td>
<td><strong>$52</strong></td>
</tr>
</tbody>
</table>

**SO 2** Compute a target selling price using cost-plus pricing.
Cleanmore has decided to price its new shop vacuum to earn a 20% return on its investment (ROI) of $1,000,000.

Markup = 20% ROI of $1,000,000

Expected ROI = \[ \frac{\text{Expected ROI}}{\text{units}} = \] 

Sales price per unit =

| Variable cost |  |
| Fixed cost |  |
| Total cost |  |
| Desired ROI |  |

Illustration 8-6

SO 2 Compute a target selling price using cost-plus pricing.
Use markup on cost to set a selling price:

- **Compute the markup percentage to achieve a desired ROI of $20 per unit:**
  
  ![Illustration 8-7]

  Desired ROI Per Unit $20 ÷ Total Unit Cost = Markup Percentage

- **Compute the target selling price:**
  
  ![Illustration 8-8]

  Total Unit Cost + \left( \text{Total Unit Cost} \times \text{Markup Percentage} \right) = \text{Target Selling Price Per Unit}

\textbf{SO 2} Compute a target selling price using cost-plus pricing.
Cost-Plus Pricing

Limitations of Cost-Plus Pricing

**Advantage** of cost-plus pricing: Easy to compute.

**Disadvantages:**

- Does not consider demand side:
  - Will the customer pay the price?
- Fixed cost per unit changes with change in sales volume:
  - At lower sales volume, company must charge higher price to meet desired ROI.

SO 2 Compute a target selling price using cost-plus pricing.
Cost-Plus Pricing

Illustration: If budgeted sales volume for Cleanmore Products was 8,000 instead of 10,000, Cleanmore’s variable cost per unit would remain the same. However, the fixed cost per unit would change as follows.

| Fixed Manufacturing Overhead | Total Costs | $280,000 | Budgeted Volume | 8,000 | Cost Per Unit |
| Fixed Selling and Administrative Expenses | 240,000 | 8,000 | = | $35 |
| Fixed Cost Per Unit | = | = | = | 30 |

Cleanmore’s desired 20% ROI now results in a $25 ROI per unit \([(20\% \times $1,000,000) / 8,000]\).
**Cost-Plus Pricing**

Cleanmore computes the selling price at 8,000 units as follows.

<table>
<thead>
<tr>
<th>Per Unit</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable cost</td>
<td>$ 60</td>
</tr>
<tr>
<td>Fixed cost</td>
<td>65</td>
</tr>
<tr>
<td>Total cost</td>
<td>125</td>
</tr>
<tr>
<td>Desired ROI</td>
<td>25</td>
</tr>
<tr>
<td>Selling price per unit</td>
<td><strong>$150</strong></td>
</tr>
</tbody>
</table>

Illustration 8-10

At 8,000 units, how much would Cleanmore mark up its total unit costs to earn a desired ROI of $25 per unit.

\[
\text{Selling price per unit} = \frac{(\text{total unit cost})}{(\text{desired ROI})}
\]

**SO 2** Compute a target selling price using cost-plus pricing.
Variable-Cost Pricing

Alternative pricing approach:

Simply add a markup to variable costs.

- Avoids the problem of uncertain cost information related to fixed-cost-per-unit computations.
- Helpful in pricing special orders or when excess capacity exists.

Major disadvantage:

Managers may set the price too low and fail to cover fixed costs.
KRC Air Corporation produces air purifiers. Using a 45% markup percentage on total per unit cost, compute the target selling price.

<table>
<thead>
<tr>
<th>Variable Cost Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>$16</td>
</tr>
<tr>
<td>Direct labor</td>
<td>18</td>
</tr>
<tr>
<td>Variable manufacturing overhead</td>
<td>11</td>
</tr>
<tr>
<td>Fixed manufacturing overhead</td>
<td>10</td>
</tr>
<tr>
<td>Variable selling and administrative expenses</td>
<td>6</td>
</tr>
<tr>
<td>Fixed selling and administrative expenses</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total unit cost</strong></td>
<td><strong>$71</strong></td>
</tr>
</tbody>
</table>

\[ \text{Total unit cost} = \text{Direct materials} + \text{Direct labor} + \text{Variable manufacturing overhead} + \text{Fixed manufacturing overhead} + \text{Variable selling and administrative expenses} + \text{Fixed selling and administrative expenses} \]

\[ \text{Target selling price} = \text{Total unit cost} \times 1.45 \]

Solution on notes page

**SO 2** Compute a target selling price using cost-plus pricing.
Variable-Cost Pricing

Review Question

Cost-plus pricing means that:

a. Selling price = variable cost + (markup percentage + variable cost).

b. Selling price = cost + (markup percentage X cost).

c. Selling price = manufacturing cost + (markup percentage + manufacturing cost).

d. Selling price = fixed cost + (markup percentage X fixed cost).

SO 2 Compute a target selling price using cost-plus pricing.
An approach to cost-plus pricing in which the company uses **two** pricing rates:

- One for the **labor** used on a job - includes direct labor time and other employee costs.
- One for the **material** - includes cost of direct parts and materials and a material loading charge for related overhead.

Widely used in service industries, especially professional firms such as:

- Public Accounting, Law, Engineering

**SO 3** Use time-and-material pricing to determine the cost of services provided.
Illustration: Assume the following data for Lake Holiday Marina, a boat and motor repair shop.

<table>
<thead>
<tr>
<th></th>
<th>Time Charges</th>
<th>Material Loading Charges*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanics’ wages and benefits</td>
<td>$103,500</td>
<td>—</td>
</tr>
<tr>
<td>Parts manager’s salary and benefits</td>
<td>—</td>
<td>$11,500</td>
</tr>
<tr>
<td>Office employee’s salary and benefits</td>
<td>20,700</td>
<td>2,300</td>
</tr>
<tr>
<td>Other overhead (supplies, depreciation, property taxes, advertising, utilities)</td>
<td>26,800</td>
<td>14,400</td>
</tr>
<tr>
<td><strong>Total budgeted costs</strong></td>
<td><strong>$151,000</strong></td>
<td><strong>$28,200</strong></td>
</tr>
</tbody>
</table>

*The material loading charges exclude the invoice cost of the materials.
Time-and-Material Pricing

Using time-and-material pricing involves three steps:

1) calculate the per hour labor charge,

2) calculate the charge for obtaining and holding materials, and

3) calculate the charges for a particular job.
Step 1: Calculate the labor charge

- Express as a rate per hour of labor.

- Rate includes:
  - Direct labor cost (includes fringe benefits).
  - Selling, administrative, and similar overhead costs.
  - Allowance for desired profit (ROI) per hour.

- Labor rate for Lake Holiday Marina for 2011 based on:
  - 5,000 hours of repair time.
  - Desired profit margin of $8 per hour.

SO 3 Use time-and-material pricing to determine the cost of services provided.
**Time-and-Material Pricing**

**Step 1: Calculate the labor charge**

<table>
<thead>
<tr>
<th>Per Hour</th>
<th>Total Cost</th>
<th>÷</th>
<th>Total Hours</th>
<th>=</th>
<th>Per Hour Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourly labor rate for repairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanics’ wages and benefits</td>
<td>$103,500</td>
<td>÷</td>
<td>5,000</td>
<td>=</td>
<td>$20.70</td>
</tr>
<tr>
<td>Overhead costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office employee’s salary and benefits</td>
<td>20,700</td>
<td>÷</td>
<td>5,000</td>
<td>=</td>
<td>4.14</td>
</tr>
<tr>
<td>Other overhead</td>
<td>26,800</td>
<td>÷</td>
<td>5,000</td>
<td>=</td>
<td>5.36</td>
</tr>
<tr>
<td>Total hourly cost</td>
<td>$151,000</td>
<td>÷</td>
<td>5,000</td>
<td>=</td>
<td>30.20</td>
</tr>
<tr>
<td>Profit margin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.00</td>
</tr>
<tr>
<td>Rate charged per hour of labor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>$38.20</strong></td>
</tr>
</tbody>
</table>

Multiply the rate of $38.20 by the number of labor hours used on any particular job to determine the labor charges for the job.
**Time-and-Material Pricing**

**Step 2: Calculate the material loading charge**

- Material loading charge added to invoice price of materials.
- Covers the costs of purchasing, receiving, handling, storing + desired profit margin on materials.
- Expressed as a percentage of estimated costs of parts and materials for the year:

\[
\text{Material loading charge} = \left( \frac{\text{Estimated purchasing, receiving, handling, storing costs}}{\text{Estimated costs of parts/materials}} \right) + \text{Desired profit margin on materials}
\]
**Step 2: Calculate the material loading charge**

The marina estimates that the total invoice cost of parts and materials used in 2011 will be $120,000. The marina desires a 20% profit margin on the invoice cost of parts and materials.

<table>
<thead>
<tr>
<th>Overhead costs</th>
<th>Material Loading Charges</th>
<th>Total Invoice Cost, Parts and Materials</th>
<th>Material Loading Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parts manager’s salary and benefits</td>
<td>$11,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office employee’s salary</td>
<td>2,300</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13,800</td>
<td>120,000</td>
<td>11.50%</td>
</tr>
<tr>
<td>Other overhead</td>
<td>14,400</td>
<td>120,000</td>
<td>12.00%</td>
</tr>
<tr>
<td></td>
<td>$28,200</td>
<td>120,000</td>
<td>23.50%</td>
</tr>
<tr>
<td>Profit margin</td>
<td>20.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material loading percentage</td>
<td>43.50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Step 3: Calculate charges for a particular job

Labor charges
  +
Material charges
  +
Material loading charge
Lake Holiday Marina prepares a price quotation to estimate the cost to refurbish a used 28-foot pontoon boat. Lake Holiday Marina estimates the job will require 50 hours of labor and $3,600 in parts and materials.

<table>
<thead>
<tr>
<th>LAKE HOLIDAY MARINA</th>
<th>Time-and-Material Price Quotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job: Marianne Perino, repair of 28-foot pontoon boat</td>
<td>$1,910</td>
</tr>
<tr>
<td>Labor charges: 50 hours @ $38.20</td>
<td></td>
</tr>
<tr>
<td>Material charges</td>
<td>$3,600</td>
</tr>
<tr>
<td>Cost of parts and materials</td>
<td>1,566</td>
</tr>
<tr>
<td>Material loading charge (43.5% × $3,600)</td>
<td>5,166</td>
</tr>
<tr>
<td>Total price of labor and material</td>
<td>$7,076</td>
</tr>
</tbody>
</table>

**Illustration 8-14**
Presented below are data for Harmon Electrical Repair Shop for next year. The desired profit margin per labor hour is $10. The material loading charge is 40% of invoice cost. Harmon estimates that 8,000 labor hours will be worked next year. Compute the rate charged per hour of labor.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair-technician’s wages</td>
<td>$130,000</td>
</tr>
<tr>
<td>Fringe benefits</td>
<td>30,000</td>
</tr>
<tr>
<td>Overhead</td>
<td>20,000</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td>$180,000</td>
</tr>
</tbody>
</table>

**Profit margin**

**Rate charged per hour of labor**

*SO 3 Use time-and-material pricing to determine the cost of services provided.*
If Harmon repairs a TV that takes 4 hours to repair and uses parts of $50, compute the bill for this job.

Solution on notes page

**Time-and-Material Pricing**

**Do it!**

Materials cost
Materials loading charge
Total materials cost
Cost of TV repair
  Labor costs
  Materials cost
Total repair cost

*SO 3 Use time-and-material pricing to determine the cost of services provided.*
Crescent Electrical Repair has decided to price its work on a time-and-material basis. It estimates the following costs for the year related to labor.

- Technician wages and benefits: $100,000
- Office employee’s salary/benefits: $40,000
- Other overhead: $80,000

Crescent desires a profit margin of $10 per labor hour and budgets 5,000 hours of repair time for the year. The office employee’s salary, benefits, and other overhead costs should be divided evenly between time charges and material loading charges. Crescent labor charge per hour would be:

- a. $42
- b. $34
- c. $32
- d. $30

Solution on notes page

*SO 3 Use time-and-material pricing to determine the cost of services provided.*
Internal Sales

- Vertically integrated companies - grow in either direction of its suppliers or its customers.
- Frequently transfer goods to other divisions as well as outside customers.

How do you price goods "sold" with in the company?

**SO 3** Use time-and-material pricing to determine the cost of services provided.
**Internal Sales**

- **Transfer price** - price used to record the transfer between two divisions of a company.

- **Ways to determine a transfer price:**
  1. Negotiated transfer prices.
  2. Cost-based transfer prices.

- **Conceptually** - a negotiated transfer price is best.

- **Due to practical considerations**, companies often use the other two methods.

---

**SO 3** Use time-and-material pricing to determine the cost of services provided.
Illustration: Alberta Company sells hiking boots as well as soles for work & hiking boots.

- Two Divisions:
  - Sole Division - sells soles externally.
  - Boot Division - makes leather uppers for hiking boots which are attached to purchased soles.

- Each Division Manager compensated on division profitability.

- Management now wants Sole Division to provide at least some soles to the Boot Division.

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
**Negotiated Transfer Prices**

Computation of the contribution margin per unit for each division when the Boot Division purchases soles from an outside supplier.

<table>
<thead>
<tr>
<th>Boot Division</th>
<th>Sole Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price of hiking boots</td>
<td>Selling price of sole</td>
</tr>
<tr>
<td>Variable cost of manufacturing boot</td>
<td>Variable cost per sole</td>
</tr>
<tr>
<td>(not including sole)</td>
<td></td>
</tr>
<tr>
<td>Cost of sole purchased from outside suppliers</td>
<td>Contribution margin per unit</td>
</tr>
<tr>
<td>Contribution margin per unit</td>
<td><strong>Total contribution margin per unit</strong></td>
</tr>
</tbody>
</table>

“What would be a fair transfer price if the Sole Division sold 10,000 soles to the Boot Division?”

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Negotiated Transfer Prices

No Excess Capacity

- If Sole sells to Boot,
  - payment must at least cover variable cost per unit plus
  - its lost contribution margin per sole (opportunity cost).

- The minimum transfer price acceptable to Sole is:

<table>
<thead>
<tr>
<th>Variable Cost</th>
<th>+</th>
<th>Opportunity Cost</th>
<th>=</th>
<th>Minimum Transfer Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>$11</td>
<td>+</td>
<td>$7</td>
<td>=</td>
<td>$18</td>
</tr>
</tbody>
</table>

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Maximum Boot Division will pay is what the sole would cost from an outside buyer: $17

Illustration 8-18

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Negotiated Transfer Prices

No Excess Capacity

- Can produce 80,000 soles, but can sell only 70,000.
- Available capacity of 10,000 soles.
- Contribution margin of $7 per unit is not lost.
- The minimum transfer price acceptable to Sole:

\[
\text{Variable Cost} + \text{Opportunity Cost} = \text{Minimum Transfer Price}
\]

<table>
<thead>
<tr>
<th>Variable Cost</th>
<th>+</th>
<th>Opportunity Cost</th>
<th>=</th>
<th>Minimum Transfer Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>$11</td>
<td></td>
<td>$0</td>
<td></td>
<td>$11</td>
</tr>
</tbody>
</table>

**Illustration 8-19**

**SO 4** Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Negotiate a transfer price between $11 (minimum acceptable to Sole) and $17 (maximum acceptable to Boot)

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Variable Costs

- In the minimum transfer price formula, variable cost is the variable cost of units sold internally.

- May differ - higher or lower - for units sold internally versus those sold externally.

- The minimum transfer pricing formula can still be used - just use the internal variable costs.

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Transfer prices established:
- Minimum by selling division.
- Maximum by the purchasing division.

Often not used because:
- Market price information sometimes not easily obtainable.
- Lack of trust between the two divisions.
- Different pricing strategies between divisions.
The clock division of Control Central Corporation manufactures clocks and then sells them to customers for $10 per unit. Its variable cost is $4 per unit, and its fixed cost per unit is $2.50. Management would like the clock division to transfer 8,000 of these clocks to another division within the company at a price of $5. The clock division could avoid $0.50 per clock of variable packaging costs by selling internally. (a) Determine the minimum transfer price, assuming the clock division is not operating at full capacity.

Opportunity cost  +  Variable cost  =  Minimum transfer price

SO 4  Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Negotiated Transfer Prices

Do it! The clock division of Control Central Corporation manufactures clocks and then sells them to customers for $10 per unit. Its variable cost is $4 per unit, and its fixed cost per unit is $2.50. Management would like the clock division to transfer 8,000 of these clocks to another division within the company at a price of $5. The clock division could avoid $0.50 per clock of variable packaging costs by selling internally. (b) Determine the minimum transfer price, assuming the clock division is operating at full capacity.

Opportunity cost + Variable cost = Minimum transfer price

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Cost-Based Transfer Prices

- Uses costs incurred by the division producing the goods as its foundation.
- May be based on variable costs alone or on variable costs plus fixed costs.
- Selling division may also add markup.
- Can result in improper transfer prices causing:
  - Loss of profitability for company.
  - Unfair evaluation of division performance.

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Cost-Based Transfer Prices

Illustration: Alberta Company requires the division to use a transfer price based on the variable cost of the sole. With no excess capacity, the contribution margins per unit for the two divisions are:

Cost-based transfer price—10,000 units

<table>
<thead>
<tr>
<th>Boot Division</th>
<th>Sole Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price of hiking boots</td>
<td>Selling price of sole</td>
</tr>
<tr>
<td>$90</td>
<td>$11</td>
</tr>
<tr>
<td>Variable cost of manufacturing boot</td>
<td>Variable cost per sole</td>
</tr>
<tr>
<td>(not including sole)</td>
<td>11</td>
</tr>
<tr>
<td>Cost of sole purchased from sole division</td>
<td>Contribution margin</td>
</tr>
<tr>
<td>35</td>
<td>per unit</td>
</tr>
<tr>
<td><strong>Contribution margin per unit</strong></td>
<td><strong>$0</strong></td>
</tr>
<tr>
<td><strong>Total contribution margin per unit</strong></td>
<td><strong>$44 ($44 + $0)</strong></td>
</tr>
</tbody>
</table>

Illustration 8-22

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Cost-Based Transfer Prices

- Cost-based pricing is bad deal for Sole Division - no profit on transfer of 10,000 soles to Boot Division and loses profit of $70,000 on external sales.

- Boot Division is very happy; increases contribution margin by $6 per sole.

- If Sole Division has excess capacity, the division reports a zero profit on these 10,000 units and the Boot Division gains $6 per unit.

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Cost-Based Transfer Prices

- Overall, the Company is worse off by $60,000.

Does not reflect the division’s true profitability nor provide adequate incentive for the division to control costs.

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Market-Based Transfer Prices

- Based on existing market prices of competing goods.
- Often considered best approach because it is objective and generally provides the proper economic incentives.
- It is indifferent between selling internally and externally if can charge/pay market price.
- Can lead to bad decisions if have excess capacity
  
  **Why?** No opportunity cost

- Where there is not a well-defined market price, companies use cost-based systems.

**SO 4** Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Market-Based Transfer Prices

Review Question

The Plastics Division of Weston Company manufactures plastic molds and then sells them for $70 per unit. Its variable cost is $30 per unit, and its fixed cost per unit is $10. Management would like the Plastics Division to transfer 10,000 of these molds to another division within the company at a price of $40. The Plastics Division is operating at full capacity. What is the minimum transfer price that the Plastics Division should accept?

a. $10  
b. $30  
c. $40  
d. $70

Solution on notes page

SO 4 Determine a transfer price using the negotiated, cost-based, and market-based approaches.
Contracting with an external party to provide a good or service, rather than doing the work internally.

Companies that outsource all of their production:

Virtual Companies

Use incremental analysis to determine if outsourcing is profitable

As companies increasingly rely on outsourcing, fewer components are transferred internally thereby reducing the need for transfer pricing.
Transfers Between Divisions In Different Countries

- Going global increases transfers between divisions located in different countries.
- 60% of trade between countries is estimated to be transfers between divisions.
- Different tax rates make determining appropriate transfer price more difficult.

SO 5 Explain issues involved in transferring goods between divisions in different countries.
### Transfers Between Divisions - Different Countries

**Illustration:** Alberta’s Boot Division is located in a country with a corporate tax rate of 10%, and the Sole Division is located in a country with a tax rate of 30%. The following illustrates the *after-tax contribution margin per unit* under alternative transfer prices $18 and $11.

<table>
<thead>
<tr>
<th>At $18 Transfer Price</th>
<th>Sole Division</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boot Division</strong></td>
<td><strong>Sole Division</strong></td>
</tr>
<tr>
<td>Selling price of hiking boots</td>
<td>$90.00</td>
</tr>
<tr>
<td>Variable cost of manufacturing boot (not including sole)</td>
<td>35.00</td>
</tr>
<tr>
<td>Cost of sole purchased internally</td>
<td>18.00</td>
</tr>
<tr>
<td>Before-tax contribution margin</td>
<td>37.00</td>
</tr>
<tr>
<td>Tax at 10%</td>
<td>3.70</td>
</tr>
<tr>
<td><strong>After-tax contribution margin</strong></td>
<td><strong>$33.30</strong></td>
</tr>
</tbody>
</table>

Before-tax total contribution margin per unit to company = $37 + $7 = $44
After-tax total contribution margin per unit to company = $33.30 + $4.90 = $38.20
Why do the after-tax contribution margins differ?

<table>
<thead>
<tr>
<th>Boot Division</th>
<th>Sole Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price of hiking boots</td>
<td>$90.00</td>
</tr>
<tr>
<td>Variable cost of manufacturing boot (not including sole)</td>
<td>35.00</td>
</tr>
<tr>
<td>Cost of sole purchased internally</td>
<td>11.00</td>
</tr>
<tr>
<td>Before-tax contribution margin</td>
<td>44.00</td>
</tr>
<tr>
<td>Tax at 10%</td>
<td>4.40</td>
</tr>
<tr>
<td>After-tax contribution margin</td>
<td>$39.60</td>
</tr>
</tbody>
</table>

Before-tax total contribution margin per unit to company = $44 + $0 = $44
After-tax total contribution margin per unit to company = $39.60 + $0 = $39.60
Consistent with GAAP: includes both variable and fixed manufacturing costs as product costs

Both variable and fixed selling and administrative costs are excluded from product cost base

Steps in approach:

1. Compute the unit manufacturing cost.
2. Compute the markup percentage – must cover the desired ROI as well as selling/administrative expenses.
3. Set the target selling price

SO 6 Determine prices using absorption-cost pricing and variable-cost pricing.
Absorption-Cost Pricing - Illustration

Step 1: Compute the unit manufacturing cost.

Illustration 8A-1

<table>
<thead>
<tr>
<th>Per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
</tr>
<tr>
<td>Direct labor</td>
</tr>
<tr>
<td>Variable manufacturing overhead</td>
</tr>
<tr>
<td>Fixed manufacturing overhead ($280,000 ÷ 10,000)</td>
</tr>
<tr>
<td>Total unit manufacturing cost (absorption cost)</td>
</tr>
</tbody>
</table>

Additional information:

Illustration 8A-2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable selling and administrative expenses</td>
<td>$8</td>
</tr>
<tr>
<td>Fixed selling and administrative expenses ($240,000 ÷ 10,000)</td>
<td>$24</td>
</tr>
<tr>
<td>Desired ROI per unit</td>
<td>$20</td>
</tr>
</tbody>
</table>

SO 6 Determine prices using absorption-cost pricing and variable-cost pricing.
Absorption-Cost Pricing - Illustration

Step 2: Compute the markup percentage.

\[
\text{MP} = \frac{\text{Desired ROI Per Unit} + \text{Selling and Administrative Expenses Per Unit}}{\text{Manufacturing Cost Per Unit}}
\]

Illustration 8A-3

SO 6 Determine prices using absorption-cost pricing and variable-cost pricing.
Absorption-Cost Pricing - Illustration

**Step 3:** Set the target selling price.

<table>
<thead>
<tr>
<th>Manufacturing Cost per Unit + ( \left( \text{Markup Percentage} \times \text{Manufacturing Cost Per Unit} \right) ) = Target Selling Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>$80 + \left( 65% \times 80 \right) = $132</td>
</tr>
</tbody>
</table>

- Because of fixed costs, if more than 10,000 units are sold, the ROI will be greater than 20% and vice versa.
Proof of 20% ROI—absorption-cost pricing

<table>
<thead>
<tr>
<th>CLEANMORE PRODUCTS, INC.</th>
<th>Budgeted Absorption-Cost Income Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (10,000 units × $132)</td>
<td>$1,320,000</td>
</tr>
<tr>
<td>Cost of goods sold (10,000 units × $80)</td>
<td>800,000</td>
</tr>
<tr>
<td>Gross profit</td>
<td>520,000</td>
</tr>
<tr>
<td>Selling and administrative expenses [10,000 units × ($8 + $24)]</td>
<td>320,000</td>
</tr>
<tr>
<td>Net income</td>
<td>$ 200,000</td>
</tr>
</tbody>
</table>

**Budgeted ROI**

\[
\text{Net income} \div \text{Invested assets} = \frac{200,000}{1,000,000} = 20\%
\]

**Markup Percentage**

\[
\text{Net income + Selling and administrative expense} \div \text{Cost of goods sold} = \frac{200,000 + 320,000}{800,000} = 65\%
\]
Summary: Absorption-Cost Pricing

Most companies that use cost-plus pricing use either absorption cost or full cost as the basis.

Reasons:

1. Information readily available - cost effective.

2. Use of only variable costs may result in too low a price - suicidal price cutting.

3. Most defensible base for justifying prices.

SO 6 Determine prices using absorption-cost pricing and variable-cost pricing.
Variable-Cost Pricing

- Cost base consists of all variable costs associated with a product - manufacturing, selling, administrative.
- Since fixed costs are not included in base, markup must provide for fixed costs (manufacturing, selling, administrative) and the target ROI.
- Useful for making short-run decisions because variable and fixed cost behaviors are considered separately.

SO 6  Determine prices using absorption-cost pricing and variable-cost pricing.
Variable-Cost Pricing

Steps:

1. Compute the unit variable cost.
2. Compute markup percentage.
3. Set target selling price.
Variable-Cost Pricing - Illustration

Step 1: Compute the unit variable cost.

<table>
<thead>
<tr>
<th>Per Unit</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct materials</td>
<td>$23</td>
</tr>
<tr>
<td>Direct labor</td>
<td>17</td>
</tr>
<tr>
<td>Variable</td>
<td></td>
</tr>
<tr>
<td>manufacturing</td>
<td></td>
</tr>
<tr>
<td>overhead</td>
<td>12</td>
</tr>
<tr>
<td>Variable</td>
<td></td>
</tr>
<tr>
<td>selling and</td>
<td></td>
</tr>
<tr>
<td>administrative</td>
<td>8</td>
</tr>
<tr>
<td>expense</td>
<td></td>
</tr>
<tr>
<td>Total unit</td>
<td>$60</td>
</tr>
<tr>
<td>variable cost</td>
<td></td>
</tr>
</tbody>
</table>

Illustration 8A-6

SO 6 Determine prices using absorption-cost pricing and variable-cost pricing.
Variable-Cost Pricing - Illustration

Step 2: Compute the markup percentage.

\[
\text{Desired ROI Per Unit} + \text{Fixed Costs Per Unit} = \text{Markup Percentage} \times \text{Variable Cost Per Unit}
\]

\[
\text{MP} = \quad + \quad + \quad =
\]

SO 6 Determine prices using absorption-cost pricing and variable-cost pricing.
Variable-Cost Pricing - Illustration

Step 3: Set the target selling price.

\[
\begin{array}{c}
\text{Variable Cost Per Unit} + \left( \text{Markup Percentage} \times \text{Variable Cost Per Unit} \right) = \text{Target Selling Price} \\
$60 + (120\% \times $60) = $132
\end{array}
\]

- Using the $132 target price produces the desired 20% ROI at a volume level of 10,000 units.
Proof of 20% ROI—contribution approach

<table>
<thead>
<tr>
<th>CLEANMORE PRODUCTS, INC.</th>
<th>Budgeted Variable-Cost Income Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (10,000 vacuums × $132)</td>
<td>$1,320,000</td>
</tr>
<tr>
<td>Variable costs (10,000 vacuums × $60)</td>
<td>600,000</td>
</tr>
<tr>
<td>Contribution margin</td>
<td>720,000</td>
</tr>
<tr>
<td>Fixed manufacturing overhead (10,000 vacuums × $28)</td>
<td>$280,000</td>
</tr>
<tr>
<td>Fixed selling and administrative expenses (10,000 vacuums × $24)</td>
<td>240,000 520,000</td>
</tr>
<tr>
<td>Net income</td>
<td>$ 200,000</td>
</tr>
</tbody>
</table>

**Budgeted ROI**

\[
\frac{\text{Net income}}{\text{Invested assets}} = \frac{200,000}{1,000,000} = 20\%
\]

**Markup Percentage**

\[
\frac{\text{Net income} + \text{Fixed costs}}{\text{Variable costs}} = \frac{200,000 + 520,000}{600,000} = 120\%
\]

**SO 6** Determine prices using absorption-cost pricing and variable-cost pricing.
Summary: Variable-Cost Pricing

Avoids blurring effects of cost behavior on operating income.

Reasons:

1. More consistent with CVP analysis.

2. Provides data for pricing special orders by showing incremental cost of accepting one more order.

3. Avoids arbitrary allocation of common fixed costs to individual product lines.

SO 6 Determine prices using absorption-cost pricing and variable-cost pricing.
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